MORNINGSTAR
PARTNERS

October 18, 2022

New Mexico Oil Conservation Division
Attn: Mr. Bradford Billings
5200 Oakland Avenue, N.E., Suite 100
Albuquerque, New Mexico 87113

RE: *Incident Closure Request*
NTO1423253772-VACUUM GLORIETTA WEST UNIT 118
1RP-3260- Lea County, New Mexico
NTO1423253772 @ 30-025-31129

Dear Mr. Billings:

This letter is to request closure of the Vacuum Glorietta West Unit 118 Incident NTO1423253772. The discovery of the poly flow line failure was initially reported on 4/22/12. A site assessment and remediation plan were received and approved on 11/4/2015 NMOCD representative Kellie Jones.

Upon completion of all remediation activities, a site closure request was prepared in April of 2019 by the former operator's consulting group. The report along with the associated final C-141 records were supplied to MorningStar at the time of acquisition. However, these records are unavailable in the NMOCD portal "Incident Files" and it is unclear if this submission had been received or reviewed. As such, the closure request with all supporting data and records are being submitted at this time for NMOCD confirmation that this facility has been granted closure status as requested, with the understanding that this facility requires not further assessments or additional clean up actions.

If you have any questions regarding this request, please contact Alan Kane with Kane Environmental Engineering Inc. at (281) 370-6580 or email: alanjkane@comcast.net or Russell Hamm at (918) 693-4833 or email: rhammenviro@gmail.com.

Respectfully,

Dan Guillotte
Manager Environmental Health and Safety

CC: File, Kane Environmental Engineering Inc.
Attachments: Chevron/Arcadis Closure Request Report

Jason Michelson
Project Manager

Chevron Environmental Management Company
1500 Louisiana Street, #38116
Houston, Texas 77002
Work: 832-854-5601
Cell: 281-660-8564
jmichelson@chevron.com

August 14, 2020

New Mexico Oil Conservation Division, District 1
1625 N. French Drive
Hobbs, NM 88240

Re: Vacuum Glorieta West Unit #118
Site Closure Report
NMOCD Case No. 1RP-3260
Lea County, New Mexico

Dear whom it concerns,

Please find enclosed for your files, copies of the following report:

- Vacuum Glorieta West Unit #118 - Site Closure Report

The submittal was prepared by Arcadis U.S., Inc. (Arcadis) on behalf of Chevron Environmental Management Company (CEMC) and is being resubmitted by Arcadis per request of the New Mexico Oil Conservation Division.

Please do not hesitate to call Brett Krehbiel with Arcadis at 916-786-5382 or myself at 832-854-5601, should you have any questions.

Sincerely,

Jason Michelson

Encl. Vacuum Glorietta West Unit #118 - Site Closure Report

C.C. Amy Barnhill, Chevron/MCBU

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	nTO1423253772
District RP	1RP-3260
Facility ID	30-025-31129
Application ID	pTO1423253899

Release Notification

Responsible Party

Responsible Party: Chevron USA Inc.	OGRID
Contact Name: Jason Michelson	Contact Telephone: 832-854-5601
Contact email: jmichelson@chevron.com	Incident # *(assigned by OCD)*: nTO1423253772
Contact mailing address: 1500 Louisiana Street Houston, Texas 77002	

Location of Release Source

Latitude 32.782150 Longitude -103.496157
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Vacuum Glorietta West Unit #118	Site Type: Production Well
Date Release Discovered: 4/22/2012	API# *(if applicable)*: 30-025-31129

Unit Letter	Section	Township	Range	County
B	6	18S	35E	Lea

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls): 0.746	Volume Recovered (bbls): 0
☒ Produced Water	Volume Released (bbls): 9.61	Volume Recovered (bbls): 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release: 1-foot scrape on poly line caused integrity of line to give leading to spill of 9.61 bbls of produced water and 0.746 bbls of oil. Well shut in on discovery.		

State of New Mexico
Oil Conservation Division

Incident ID	nTO1423253772
District RP	1RP-3260
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Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release? **Release was less than 25 barrels.**
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? **See Initial C-141 Form submitted on 4/23/2012.**	

State of New Mexico
Oil Conservation Division

Incident ID	nTO1423253772
District RP	1RP-3260
Facility ID	30-025-31129
Application ID	pTO1423253899

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

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

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

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information - P**hotographic documentation is included as attachment to this Final C-141 Form.**
☒ 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

Incident ID	nTO1423253772
District RP	1RP-3260
Facility ID	30-025-31129
Application ID	pTO1423253899

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: _____Jason Michelson_____ Title: _____Project Manager_____

Signature:_____ Date: _8/14/2020_____

email: ___jmichelson@chevron.com_____ Telephone: _____832-854-5601_____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	nTO1423253772
District RP	1RP-3260
Facility ID	30-025-31129
Application ID	pTO1423253899

Closure

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

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

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

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection) – P**hotographic documentation of remediation activities and liner installation is attached to this Final C-141 Form.**

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

☒ Description of remediation activities

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

Printed Name: _____Jason Michelson_____ Title: _____Project Manager_____

Signature:_____ Date: __8/14/2020_____

email: ___jmichelson@chevron.com_____ Telephone: _____832-854-5601_____

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ARCADIS Design & Consultancy for natural and built assets

New Mexico Oil Conservation Division – District I
Environmental Specialist
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
Fax 916 786 0366
www.arcadis.com

ENVIRONMENT

Subject:
Site Closure Report
2018 HES Transfer Site – Vacuum Glorieta West Unit 118
NMOCD Case No. 1RP-3260
Lea County, New Mexico

Date:
April 8, 2019

Contact:
Brett Krehbiel

Phone:
916.786.5382

Email:
Brett.Krehbiel@arcadis.com

Our ref:
B0048616.0118

ARCADIS U.S., Inc.
TX Engineering License # F-533
Geoscientist License # 50158

Dear whom it concerns:

On behalf of Chevron Environmental Management Company (CEMC), Arcadis U.S., Inc. (Arcadis) prepared this Site Closure Report (Report) to document geophysical assessment activities performed at the Vacuum Glorieta West Unit (VGWU) 118, located in Lea County, New Mexico (site; **Figure 1**). The purpose of the Report is summarize the field activities completed and the results of samples collected during soil investigation activities conducted on site in 2012, 2013, 2016 and 2017, present final soil boring locations, results of the samples collected, and the evaluation performed as part of the investigations after the April 22, 2012 release of 9.61 barrels (bbls [42 gallons per bbl]) of produced water and 0.746 bbls of oil.

SITE DESCRIPTION AND BACKGROUND

The following site description and background section provides an overview of the site location and description, as well as the regional setting including geology, hydrogeology, nearby drinking water wells, surface water and climate.

Site Location and Description

The site is located within the Vacuum Glorieta West Unit (VGWU) approximately 14.5 miles southwest of Lovington, New Mexico. New Mexico Highway 238 is located approximately 0.54 mile east of the site. The closest agricultural area is 9 miles east of the site.

The site is located in the western edge of the Permian Basin, a 75,000-square-mile area in west Texas and New Mexico that is populated by numerous oil and

gas production wells. In New Mexico, the Permian Basin extends to Roosevelt County to the north and Chaves County to the west.

Climate

Monthly average temperatures near the site vary from a minimum of 27.9 degrees Fahrenheit (°F) in January to a maximum of 93.9°F in July (Western Regional Climate Center [WRCC] Hobbs, New Mexico [294026] weather station). Average annual precipitation recorded for the area of the site from the available WRCC period of record between 1912 and 2013 was approximately 15.75 inches per year (WRCC 2014a).

Due to the arid climate, the site experiences low precipitation and high evaporation rates. The average annual evaporation from the available WRCC period of record between 1914 and 2005 was approximately 87.68 inches per year (WRCC 2014b).

Regional Geology and Hydrogeology

The site is located on the Llano Estacado of the Western High Plains, an ecoregion of the Great Plains of North America. The site is positioned immediately east of the Mescalero Ridge, which demarcates the western boundary of the (Miocene to Pliocene) High Plains Ogallala Formation (Reeves 1972). A rapid drop in elevation of 200 to 250 ft occurs west of the northwest-trending Mescalero Ridge. The Ogallala formation is unconfined and is predominantly composed of unconsolidated alluvial fan deposits of sand and gravel near the base, overlain by interbedded sand and clay in the upper portion of the formation (Seni 1980). Repeated depositional events on the High Plains surface beginning approximately 7 million years ago, followed by aerial exposure, generated a thick sequence of caliche horizons that are competent enough to act as a cliff for the expression of Mescalero Ridge. These hard caliche deposits form the upper portion of the stratigraphic sequence. In the site area, the Ogallala Formation is underlain by red beds of the Upper Triassic-age Dockum Group consisting of claystones, sandstones, and siltstones. Aquifers within the Dockum Group are not considered a major fresh groundwater resource in the area due to poor water production rates and elevated natural dissolved solids.

The main source of fresh groundwater in the area comes from the Ogallala aquifer. The Ogallala aquifer has a thickness of approximately 100 ft in the vicinity of the site and is considered the primary source of fresh water in the area. Depth to the groundwater regionally ranges from approximately 120 ft to 135 ft below ground surface (bgs).

Water-supply wells located within the region are completed in the Ogallala aquifer, also known at the High Plains Aquifer (HPA). The HPA consists primarily of the High Plains Ogallala Formation, and in localized areas, alluvial sediment of Quaternary age.

Based on satellite imagery, no surface-water bodies were identified within a radius of approximately 1-mile of the site (GoogleEarth 2018). During October 2018, Arcadis reviewed information obtained from the New Mexico Office of the State Engineer (NMOSE) online database (NMOSE 2018). Results of the database inquiry indicated there were no water-supply wells located within a radius of 1,000 feet of the site. In addition, results of the database review indicate average depth to groundwater is 93 ft bgs. Results of the database review are included in **Attachment 1**.

INITIAL RELEASE RESPONSE ACTIVITIES

According to the submitted New Mexico Oil Conservation Division (NMOCD) Notification of Release and Correction Actions (Form C141), a flowline leak resulted in a release of 9.61 bbls of produced water and 0.746 bbls of oil on April 22, 2012. Chevron personnel from the Mid-Continent Business Unit (MCBU) stopped the release and conducted the initial response activities. On July 12, 2012, Chevron MCBU personnel excavated visually affected soil and collected ten discrete confirmation soil samples from the base of the excavation at approximately 2 fet bgs. Information regarding the disposal of the excavated soil was not available for this Report. After collecting the soil samples, the excavated area was reportedly backfilled with imported soil.

Pursuant to NMOCD requirements (NMOCD 1993), a C-141 form (**Attachment 2**) detailing the location, volume of release and initial and planned cleanup efforts were submitted for the site.

2012 AND 2013 SOIL INVESTIGATIONS

Chevron MCBU personnel collected ten soil samples (VGWU #118 SS #1 through VGWU #118 SS #10 on July 12, 2012 to initially assess the impacted area at VGWU-118. Sample locations are presented in **Figure 2**. Soil samples were collected in laboratory provided bottles and submitted to Cardinal Laboratories in Hobbs, NM for the following compounds:

- Benzene, toluene, ethylene, and xylenes (collectively referred to as BTEX) in accordance with United States Environmental Protection Agency (USEPA) Method 8021B
- Chloride in accordance with Standard Method 4500Cl-B
- Total petroleum hydrocarbons (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) in accordance with USEPA Method 8015M

In May 2013, Arcadis conducted site assessment activities to characterize the lateral and vertical extent of potentially affected soil at the site. Soil boring locations were selected based on the results of confirmation soil sampling completed at the site in July 2012, locations of pipelines and other equipment at the site, and the extent of the release as documented by Chevron MCBU personnel during the initial response activities. Seven soil samples from four soil borings (VGWU118-01 through VGWU118-03 and VGWU118-07) were collected from each boring location (for a total of 28 soil samples) beginning at a depth of 2 ft bgs and continuing at 5-foot intervals from 5 to 30 ft bgs. Additionally, three soil samples were collected at 2 ft bgs from three soil borings (VGWU118-04 through VGWU118-06). Soil samples were placed in laboratory-supplied containers and submitted under appropriate chain of custody protocols to Cardinal Laboratories for the following analyses:

- BTEX in accordance with USEPA Method 8021B
- Chloride in accordance with USEPA Method 4500Cl-B
- TPH GRO and TPH DRO in accordance with USEPA Method 8015M
- Percent moisture by ASTM International Method D2216

Following sampling, boreholes were filled with soil cuttings and grouted to ground surface. The ground surface was restored to match the surrounding conditions. Boring locations are shown on **Figure 2**. Boring logs are presented in **Attachment 3**.

The analytical results for BTEX, TPH-GRO, TPH-DRO and chloride for the 10 discrete confirmation soil samples collected in July 2012 and the 31 soil samples collected during the May 2013 site assessment are provided in **Table 1**. The site assessment activities and results are discussed in detail in the *Site Assessment Report: Vacuum Glorieta West Unit #118*, dated December 2, 2014.

2016 SOIL INVESTIGATIONS

Arcadis conducted additional soil assessment activities in June, September and November 2016. A total of twenty-nine soil samples were collected from ten (VGWU118-08 through VGWU118-19) soil borings at the site. Samples were collected at 2 and 4 ft bgs at each boring location. Additional samples were collected at 7 and 10 ft bgs at VGWU118-15 and VGWU118-18 and at 7 ft bgs at VGWU118-19 (**Figure 3**). Following sampling, boreholes were filled with native material to ground surface. The ground surface was restored to match the surrounding conditions.

Soil samples were placed in laboratory-supplied containers and submitted under appropriate chain of custody protocols to Xenco (Xenco) Laboratories in Midland, TX for the following analysis of chloride by USEPA Method 300/300.1. Analysis of soil samples from VGWU118-10, VGWU118-15 (7 and 10 ft bgs only), VGWU118-16, VGWU118-19 (9 fet bgs only) were put on hold pending analysis results. A total of 22 samples from the 2016 soil were analyzed for chloride.

Chloride was detected in 19 of the 22 soil samples analyzed with concentrations ranging from 11.2 milligrams per kilogram (mg/kg) (VGWU118-19 at 2 ft bgs) to 374 mg/kg (VGWU118-12 at 2 ft bgs). Pursuant to the C141 directive published in 1993 by the NMOCD, 2016 chloride results were initially compared to the soil remediation action level of 600 mg/kg required for vertical delineation, and 250 mg/kg required for lateral delineation. Although vertical delineation had been achieved, chloride was detected at concentrations greater than the soil remediation action level of 250 mg/kg for lateral delineation in all surface soil samples, with the exception of surface soil samples collected from VGWU118-08, VGWU118-09, VGWU118-13, VGWU118-15, VGWU118-17 and VGWU118-19. The cumulative analytical results for chloride are provided in **Table 1**. Laboratory analytical results with chain of custody documentation are provided in **Attachment 4**.

2016 AND 2017 SOIL EXCAVATION

Arcadis completed a limited excavation of the chloride affected soil to a maximum depth of 4 ft bgs beginning on November 1, 2016. Five-point composite sidewall samples were collected every 20 ft of sidewall to confirm removal of affected soil. A total of 13 sidewall composite samples (Composite Sample #1 through #13) were collected in laboratory-supplied containers and submitted under appropriate chain of custody protocols to Xenco (Xenco) Laboratories in Midland, TX for the analysis of chloride by USEPA Method 300/300.1. Analytical results are summarized in **Table 1**.

Chloride was detected in each sidewall sample collected in November 2016 with concentrations ranging from 24.3 mg/kg (Composite Sample #10) to 5,000 mg/kg (Composite Sample #12). Chloride concentrations exceeded 250 mg/kg for lateral delineation in 10 of the 13 samples.

In October 2017, excavation was continued to the north and southeast of the 2016 excavation area to complete removal of the affected soil to the extent possible (**Figure 4**). Aboveground and belowground pipeline and utility corridors transect the spill area and border the site to the north, south, and east. The

presence of aboveground and belowground pipeline and utility corridors pose a health and safety risk and prevent additional drilling and other subsurface work in this area. Delineation activities beyond the pipelines and oilfield equipment surrounding the release would not be representative of release area. The limited excavation up to 4 ft bgs was complete in December of 2017. A total of 30 sidewall samples (VGWU-118-001 through VGWU-118-030) were collected 2 ft bgs throughout the 2017 excavation to confirm impacted soil had been removed. Samples were collected in laboratory-supplied containers and submitted under appropriate chain of custody protocols to Xenco for the analysis of chloride by USEPA Method 300/300.1. Seven samples (VGWU-118-008 and VGWU-118-21 through VGWU-118-26) were put on hold with Xenco pending chloride results. Analytical results are summarized in **Table 1**.

Sidewall sample locations and results from the final excavation area are displayed in **Figure 4**. Chloride concentrations detected in sidewall samples collected from the final excavation range from 9.2 mg/kg (VGWU-118-027) to 544 mg/kg (VGWU-118-002).

Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC) concerning natural resources and wildlife, oil and gas, and releases which became effective on August 14, 2018. Closure criteria (CC) for chloride concentrations in the soil remains 600 mg/kg. Shallow soil (up to 4 ft bgs) with chloride concentrations greater than 600 mg/kg was excavated. Soil analytical results presented in this Report support a conclusion that affected soil associated with the release poses no significant threat to groundwater resources.

Following completion of the excavation, a liner was installed within the limits of each excavation footprint and clean fill was used to backfill the excavated areas. Following backfill, the surface was graded, broken up, seeded, and watered to promote revegetation Upon receiving laboratory confirmation, the excavated soil was transported offsite to Sundance Services for disposal in accordance with state and federal regulations.

CONCLUSION

Arcadis completed a limited excavation of chloride affected soil to a maximum depth of 4 ft bgs. Shallow soil (up to 4 ft bgs) with chloride concentrations greater than 600 mg/kg was excavated. The excavated area is presented on **Figure 4**. Sidewall confirmation samples collected from the excavation area and the corresponding soil analytical results confirm removal of affected soil.

Based on the data presented in this Report and concurrence from the NMOCD, no further assessments or additional cleanup actions are required at the site. No Further Action status is being requested for the site.

If you have any questions or comments regarding the information presented in this Report, please contact Brett Krehbiel at 916.786.5382 or at Brett.Krehbiel@arcadis.com.

New Mexico Oil Conservation Division – District I
April 8, 2019

Sincerely,

Arcadis U.S., Inc.

Brett Krehbiel
Project Manager

Greg Cutshall
Program Manager

Copies:
File

Enclosures:

Tables

1 Soil Analytical Results

Figures

1 Site Location Map
2 Soil Analytical Results

Attachments

1 Depth-to-Groundwater Data
2 C-141 Form
3 Soil Boring Logs
4 Laboratory Analytical Results and Chain of Custody

References

Arcadis U.S., Inc. 2014. Site Assessment Report, Vacuum Glorieta West Unit #118, Lea County New Mexico. December 2.

Google Earth. 2018. Lovington, New Mexico, 32°47'15.76"N, 103°30'52.71"W, Google Earth Imagery. October 16.

New Mexico Administrative Code. 2018. Title 19, Chapter 15 of the New Mexico Administrative Code for Natural Resources and Wildlife, Oil and Gas, and Releases, 19.15.29 NMAC. August.

NMOCD. 1993. Guidelines for Remediation of Leaks, Spills and Releases. August 13.

NMOSE. 2018a. Water Information, Maps and Data, Geospatial Data, OSE Well Data, http://www.ose.state.nm.us/water_info_data.html, October.

NMOSE. 2018b. New Mexico Water Rights Reporting System, http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html, October.

Reeves, C. C. 1972. Tertiary-Quarternary Stratigraphy and Geomorphology of West Texas and Southeastern New Mexico, New Mexico Geological Society, Guidebook 23 pp. 108-117.

Seni, S. J. 1980. Sand-Body Geometry and Depositional Systems, Ogallala Formation, Texas, University of Texas, Bureau of Economic Geology, Report of Investigations No. 105, pp. 36.

TABLES

Table 1
Soil Analytical Results
Vacuum Glorieta West Unit #118
Lea County, New Mexico

Boring Location ID	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Chloride (mg/kg)	% Moisture
NMAC Closure Criteria [b]			10	---	---	---	50	100		600	---
VGWU #118 SS #1	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	487	16	--
VGWU #118 SS #2	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	44	272	--
VGWU #118 SS #3	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	123	144	--
VGWU #118 SS #4	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	295	16	--
VGWU #118 SS #5	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	<10.0	96	--
VGWU #118 SS #6	7/12/2012	0 to 2	<0.050	0.221	0.385	0.937	--	37	**2,520**	384	--
VGWU #118 SS #7	7/12/2012	0 to 2	<0.050	0.841	2.27	3.32	--	**108**	**6,830**	112	--
VGWU #118 SS #8	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	50	**2,320**	--
VGWU #118 SS #9	7/12/2012	0 to 2	<0.050	<0.050	0.179	0.384	--	21	**3,050**	**6,240**	--
VGWU #118 SS #10	7/12/2012	0 to 2	<0.050	<0.050	<0.050	<0.150	--	<10.0	28	**15,800**	--
VGWU118 - 01	5/14/2013	2	<0.056	0.047	<0.056	<0.169	0.047	<16.9	**102**	**4,800**	11.3
	5/14/2013	5	<0.062	0.016	<0.062	<0.186	0.016	<18.6	<18.6	192	19.2
	5/14/2013	10	<0.061	0.020	<0.061	<0.184	0.020	<18.4	<16.0	32	18.4
	5/14/2013	15	<0.061	0.022	<0.061	<0.184	0.022	<18.4	<18.4	32	18.4
	5/14/2013	20	<0.063	0.022	<0.063	<0.188	0.022	<18.8	<18.8	<16	20.2
	5/14/2013	25	<0.052	0.042	<0.052	<0.155	0.042	<15.5	<15.5	32	2.9
	5/14/2013	30	<0.062	0.023	<0.062	<0.187	0.023	<18.7	<18.7	<16	20.0
VGWU118 - 02	5/14/2013	2	<0.057	<0.057	<0.057	<0.172	<0.344	<17.2	<17.2	**10,000**	12.8
	5/14/2013	5	<0.054	<0.054	<0.054	<0.162	<0.324	<16.2	<16.2	368	7.3
	5/14/2013	10	<0.054	<0.054	<0.054	<0.161	<0.322	<16.1	<16.1	80	6.9
	5/14/2013	15	<0.052	0.036	<0.052	<0.156	0.036	<15.6	<15.6	112	4.1
	5/14/2013	20	<0.054	0.035	<0.054	<0.162	0.035	<16.2	<16.2	384	7.1
	5/14/2013	25	<0.054	0.039	<0.054	<0.162	0.039	<16.2	<16.2	**1,090**	7.3
	5/14/2013	30	<0.065	0.031	<0.065	<0.195	0.031	<19.5	<19.5	224	23.0
VGWU118 - 03	5/14/2013	2	<0.054	0.034	<0.054	<0.161	0.034	<16.1	<16.1	**832**	7.0
	5/14/2013	5	<0.052	0.033	<0.052	<0.157	0.033	<15.7	<15.7	96	4.4
	5/14/2013	10	<0.054	0.028	<0.054	<0.161	0.028	<16.1	<16.1	48	6.9
	5/14/2013	15	<0.054	0.031	<0.054	<0.161	0.031	<16.1	<16.1	48	6.7
	5/14/2013	20	<0.052	0.019	<0.052	<0.157	0.019	<15.7	<15.7	48	4.5
	5/14/2013	25	<0.052	0.041	<0.052	<0.156	0.041	<15.6	<15.6	32	3.6
	5/14/2013	30	<0.051	<0.051	<0.051	<0.153	<0.307	<15.3	<15.3	32	2.2

Table 1
Soil Analytical Results
Vacuum Glorieta West Unit #118
Lea County, New Mexico

Boring Location ID	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Chloride (mg/kg)	% Moisture
NMAC Closure Criteria [b]			10	---	---	---	50	100		600	---
VGWU118 - 04	5/14/2013	2	--	--	--	--	--	--	--	48	--
VGWU118 - 05	5/14/2013	2	--	--	--	--	--	--	--	64	--
VGWU118 - 06	5/14/2013	2	--	--	--	--	--	--	--	128	--
VGWU118 - 07	5/14/2013	2	<0.058	0.025	<0.058	<0.175	0.025	<17.5	<17.5	**7,200**	14.2
	5/14/2013	5	<0.053	0.026	<0.053	<0.158	0.026	<15.8	<15.8	96	4.9
	5/14/2013	10	<0.051	<0.051	<0.051	<0.154	0.009	<15.4	<15.4	80	2.5
	5/14/2013	15	<0.051	<0.051	<0.051	<0.152	<0.304	<15.2	<15.2	80	1.4
	5/14/2013	20	<0.052	<0.052	<0.052	<0.157	<0.314	<15.7	<15.7	<16	4.4
	5/14/2013	25	<0.052	<0.052	<0.052	<0.157	<0.314	<15.7	<15.7	<16	4.4
	5/14/2013	30	<0.059	<0.059	<0.059	<0.178	<0.357	<17.8	19.7	<16	15.9
VGWU118-08	6/23/2016	2	--	--	--	--	--	--	--	<10	--
	6/23/2016	4	--	--	--	--	--	--	--	<10	--
VGWU118-09	6/23/2016	2	--	--	--	--	--	--	--	42.2	--
	6/23/2016	4	--	--	--	--	--	--	--	50.9	--
VGWU118-11	6/23/2016	2	--	--	--	--	--	--	--	28.7	--
	6/23/2016	4	--	--	--	--	--	--	--	300	--
VGWU118-12	6/23/2016	2	--	--	--	--	--	--	--	374	--
	6/23/2016	4	--	--	--	--	--	--	--	246	--
VGWU118-13	6/23/2016	2	--	--	--	--	--	--	--	13.2	--
	6/23/2016	4	--	--	--	--	--	--	--	125	--
VGWU118-14	6/23/2016	2	--	--	--	--	--	--	--	298	--
	6/23/2016	4	--	--	--	--	--	--	--	325	--
VGWU118-15	9/14/2016	2	--	--	--	--	--	--	--	18.5	--
	9/14/2016	4	--	--	--	--	--	--	--	<10	--
VGWU118-17	6/23/2016	2	--	--	--	--	--	--	--	248	--
	6/23/2016	4	--	--	--	--	--	--	--	115	--
VGWU118-18	9/14/2016	2	--	--	--	--	--	--	--	91.4	--
	9/14/2016	4	--	--	--	--	--	--	--	355	--
	9/14/2016	7	--	--	--	--	--	--	--	307	--
	9/14/2016	10	--	--	--	--	--	--	--	41.3	--

Table 1
Soil Analytical Results
Vacuum Glorieta West Unit #118
Lea County, New Mexico

Boring Location ID	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Chloride (mg/kg)	% Moisture
NMAC Closure Criteria [b]			10	---	---	---	50	100		600	---
VGWU118-19	11/8/2016	4	--	--	--	--	--	--	--	11.2	--
	11/8/2016	7	--	--	--	--	--	--	--	69.9	--
Composite Sample #1 (0'-4')	11/2/2016	0 to 4	--	--	--	--	--	--	--	220	--
Composite Sample #2 (0'-4')	11/2/2016	0 to 4	--	--	--	--	--	--	--	**2370**	--
Composite Sample #3 (0'-4')	11/2/2016	0 to 4	--	--	--	--	--	--	--	**1400**	--
Composite Sample #4 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	403	--
Composite Sample #5 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	88	--
Composite Sample #6 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**3450**	--
Composite Sample #7 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**4370**	--
Composite Sample #8 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	433	--
Composite Sample #9 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**1140**	--
Composite Sample #10 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	24.3	--
Composite Sample #11 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**4250**	--
Composite Sample #12 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**5000**	--
Composite Sample #13 (0'-4')	11/7/2016	0 to 4	--	--	--	--	--	--	--	**1690**	--
VGWU-118-001	10/5/2017	2	--	--	--	--	--	--	--	8.1	--
VGWU-118-002	10/5/2017	2	--	--	--	--	--	--	--	**544**	--
VGWU-118-003	10/5/2017	2	--	--	--	--	--	--	--	**2760**	--
VGWU-118-004	10/5/2017	2	--	--	--	--	--	--	--	41.3	--
VGWU-118-005	10/5/2017	2	--	--	--	--	--	--	--	67.9	--
VGWU-118-006	10/5/2017	2	--	--	--	--	--	--	--	15.0	--
VGWU-118-007	10/6/2017	2	--	--	--	--	--	--	--	**2030**	--
VGWU-118-009	10/17/2017	2	--	--	--	--	--	--	--	**2150**	--
VGWU-118-010	10/17/2017	2	--	--	--	--	--	--	--	13.9	--
VGWU-118-011	10/17/2017	2	--	--	--	--	--	--	--	**861**	--
VGWU-118-012	10/17/2017	2	--	--	--	--	--	--	--	**1530**	--
VGWU-118-013	10/17/2017	2	--	--	--	--	--	--	--	12.3	--
VGWU-118-014	10/17/2017	2	--	--	--	--	--	--	--	11.1	--
VGWU-118-015	10/17/2017	2	--	--	--	--	--	--	--	7.1	--
VGWU-118-016	10/17/2017	2	--	--	--	--	--	--	--	39.5	--
VGWU-118-017	10/17/2017	2	--	--	--	--	--	--	--	14.4	--

Table 1
Soil Analytical Results
Vacuum Glorieta West Unit #118
Lea County, New Mexico

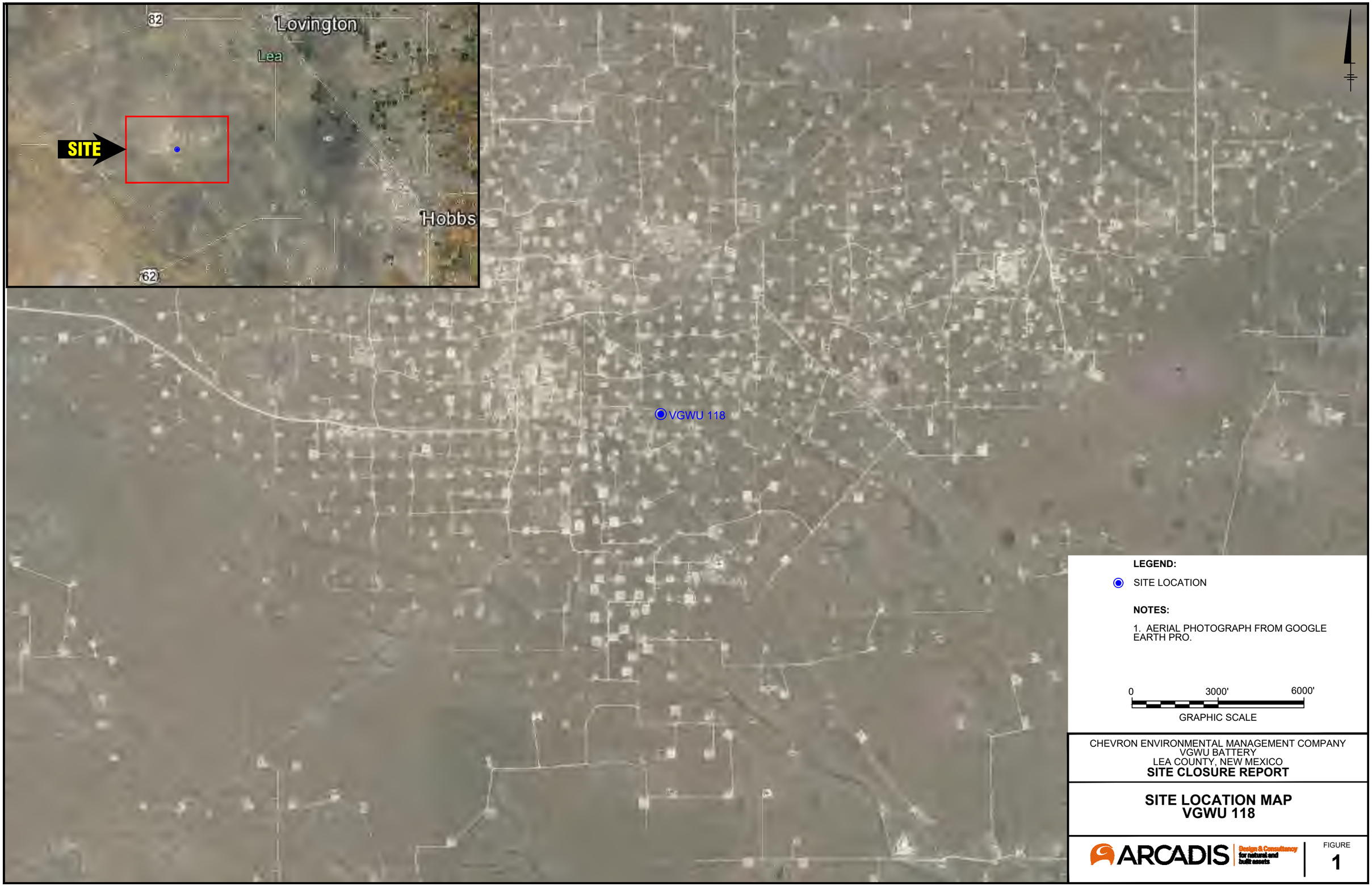
Boring Location ID	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Chloride (mg/kg)	% Moisture
NMAC Closure Criteria [b]			10	---	---	---	50	100		600	---
VGWU-118-018	10/17/2017	2	--	--	--	--	--	--	--	28.5	--
VGWU-118-019	10/17/2017	2	--	--	--	--	--	--	--	<4.96	--
VGWU-118-020	12/4/2017	2	--	--	--	--	--	--	--	38.5	--
VGWU-118-027	12/4/2017	2	--	--	--	--	--	--	--	9.2	--
VGWU-118-028	12/4/2017	2	--	--	--	--	--	--	--	18.1	--
VGWU-118-029	12/4/2017	2	--	--	--	--	--	--	--	**615**	--
VGWU-118-030	12/6/2017	2	--	--	--	--	--	--	--	10.5	--

Legend:

VALUE	Analytical value is greater than or equal to NMAC closure criteria
%	Percent
mg/kg	Miligram(s) per kilogram
<	Analyte was not detected above the specified method reporting limit
--	Not Analyzed/Not Listed
ft bgs	Feet below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
NMAC	New Mexico Administrative Code
TPH-GRO	Total Petroleum Hydrocarbons as Gasoline Range Organics
TPH-DRO	Total Petroleum Hydrocarbons as Diesel Range Organics

(a) Title 19, Chapter 15 of the NMAC for Natural Resources and Wildlife, Oil and Gas, and Releases, 19.15.29 NMAC. August.

FIGURES



LEGEND:

SITE LOCATION

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.

0 3000' 6000'

GRAPHIC SCALE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
VGWU BATTERY
LEA COUNTY, NEW MEXICO
SITE CLOSURE REPORT

SITE LOCATION MAP
VGWU 118

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM:
C:\Users\chuliab4677\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU 118\B0048616.1701\01-DWG\B0048615\0000-VGWU118.dwg LAYOUT: 1 SAVED: 1/17/2019 12:41 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/18/2019 10:19 AM BY:
CHUTIA, BARAKHA

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\chutiab4677\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU 118\B0048616.1701\01-DWG\B00486111601-VGWU118-2012 and 2013.dwg LAYOUT: 2 SAVED: 1/18/2019 3:23 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/21/2019 3:37 PM BY: CHUTIA, BARAKHA

VGWU118 - 03							
DATE	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013
DEPTH	2	5	10	15	20	25	30
TOLUENE	0.034	0.033	0.028	0.031	0.019	0.041	<0.051
ETHYLBENZENE	<0.054	<0.052	<0.054	<0.054	<0.052	<0.052	<0.051
TOTAL XYLENES	<0.161	<0.157	<0.161	<0.161	<0.157	<0.156	<0.153
TPH-GRO	<16.1	<15.7	<16.1	<16.1	<15.7	<15.6	<15.3
TPH-DRO	<16.1	<15.7	<16.1	<16.1	<15.7	<15.6	<15.3
CHLORIDE	**832**	96	48	48	48	32	32

VGWU118 - 07							
DATE	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013
DEPTH	2	5	10	15	20	25	30
TOLUENE	0.025	0.025	<0.051	<0.051	<0.052	<0.052	<0.059
ETHYLBENZENE	<0.058	<0.053	<0.051	<0.051	<0.052	<0.052	<0.059
TOTAL XYLENES	<0.175	<0.158	<0.154	<0.152	<0.157	<0.157	<0.178
TPH-GRO	<17.5	<15.8	<15.4	<15.2	<15.7	<15.7	<17.8
TPH-DRO	<17.5	<15.8	<15.4	<15.2	<15.7	<15.7	19.7
CHLORIDE	**7,200**	96	80	80	<16	<16	<16

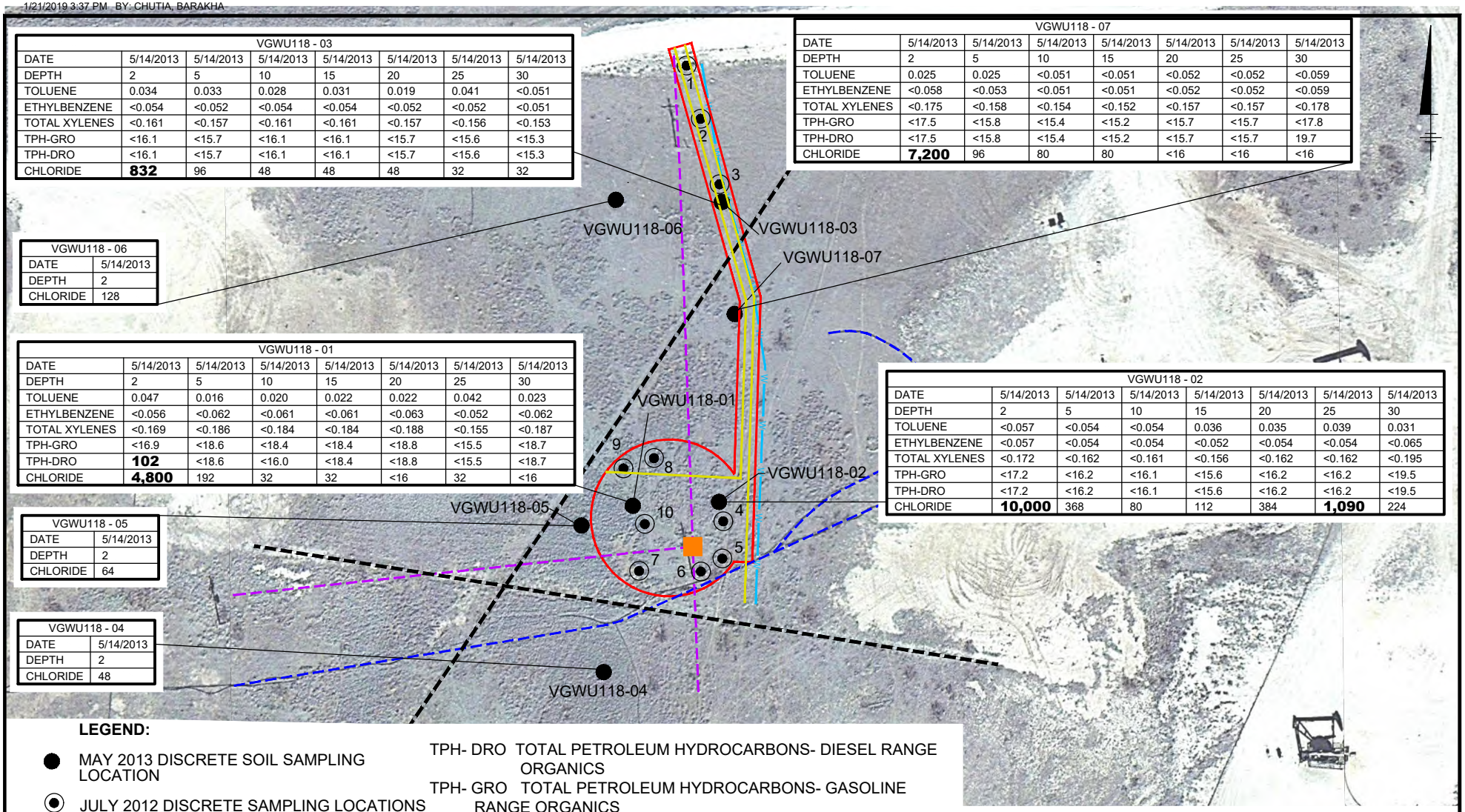
VGWU118 - 06	
DATE	5/14/2013
DEPTH	2
CHLORIDE	128

VGWU118 - 01							
DATE	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013
DEPTH	2	5	10	15	20	25	30
TOLUENE	0.047	0.016	0.020	0.022	0.022	0.042	0.023
ETHYLBENZENE	<0.056	<0.062	<0.061	<0.061	<0.063	<0.052	<0.062
TOTAL XYLENES	<0.169	<0.186	<0.184	<0.184	<0.188	<0.155	<0.187
TPH-GRO	<16.9	<18.6	<18.4	<18.4	<18.8	<15.5	<18.7
TPH-DRO	**102**	<18.6	<16.0	<18.4	<18.8	<15.5	<18.7
CHLORIDE	**4,800**	192	32	32	<16	32	<16

VGWU118 - 02							
DATE	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013
DEPTH	2	5	10	15	20	25	30
TOLUENE	<0.057	<0.054	<0.054	0.036	0.035	0.039	0.031
ETHYLBENZENE	<0.057	<0.054	<0.054	<0.052	<0.054	<0.054	<0.065
TOTAL XYLENES	<0.172	<0.162	<0.161	<0.156	<0.162	<0.162	<0.195
TPH-GRO	<17.2	<16.2	<16.1	<15.6	<16.2	<16.2	<19.5
TPH-DRO	<17.2	<16.2	<16.1	<15.6	<16.2	<16.2	<19.5
CHLORIDE	**10,000**	368	80	112	384	**1,090**	224

VGWU118 - 05	
DATE	5/14/2013
DEPTH	2
CHLORIDE	64

VGWU118 - 04	
DATE	5/14/2013
DEPTH	2
CHLORIDE	48



LEGEND:

- MAY 2013 DISCRETE SOIL SAMPLING LOCATION
- JULY 2012 DISCRETE SAMPLING LOCATIONS
- POTENTIAL UNDERGROUND UTILITY LINE NOT DETECTED BY THIRD PARTY SURVEYOR
- ABOVE GROUND UTILITY LINE
- OVERHEAD UTILITY LINE
- IDENTIFIED BURIED LINE
- WATER LINE
- APPROXIMATE EXTENT OF SPILL
- UTILITY INTERSECTION

TPH- DRO TOTAL PETROLEUM HYDROCARBONS- DIESEL RANGE ORGANICS

TPH- GRO TOTAL PETROLEUM HYDROCARBONS- GASOLINE RANGE ORGANICS

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. COORDINATES FOR ALL MAY 2013 SAMPLE LOCATIONS WERE COLLECTED USING A SUB METER TRIMBLE GPS UNIT.
3. UTILITIES WERE IDENTIFIED USING GROUND PENETRATING RADAR, RADIO FREQUENCY SURVEY OR VISUAL MEANS.
4. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg).
5. SAMPLE DEPTHS ARE MEASURED IN FEET BELOW GROUND SURFACE (feet bgs).
6. BOLD VALUES DENOTE CONCENTRATIONS ABOVE THE NMAC CRITERIA

0 80' 160'

GRAPHIC SCALE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
VGWU BATTERY,
LEA COUNTIES, NEW MEXICO
SITE CLOSURE REPORT

2013 DISCRETE SOIL SAMPLING ANALYTICAL DETECTIONS VGWU #118

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\chutiab4677\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU 118\B0048616.1701\01-DWG\B00486111601-VGWU118-2016.dwg LAYOUT: 2 SAVED: 1/18/2019 3:23 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/21/2019 12:56 PM BY: CHUTIA, BARAKHA

VGWU-118-12		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	374	246

VGWU-118-15		
DATE	9/14/2016	9/14/2016
DEPTH	2	4
CHLORIDE	18.5	<10

VGWU-118-11		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	28.7	300

VGWU-118-14		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	298	325

VGWU-118-13		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	13.2	125

VGWU-118-18				
DATE	9/14/2016	9/14/2016	9/14/2016	9/14/2016
DEPTH	2	4	7	10
CHLORIDE	91.4	355	307	41.3

VGWU-118-17		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	**247**	115

VGWU-118-09		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	42.2	50.9

VGWU-118-08		
DATE	6/23/2016	6/23/2016
DEPTH	2	4
CHLORIDE	<10	<10

VGWU-118-19		
DATE	11/8/2016	11/8/2016
DEPTH	4	7
CHLORIDE	11.2	69.9

VGWU118-06
VGWU118-03
VGWU118-07
VGWU118-17
VGWU118-15
VGWU118-14
VGWU118-16
VGWU118-12
VGWU118-11
VGWU118-13
VGWU118-18
VGWU118-02
VGWU118-05
VGWU118-09
VGWU118-08
VGWU118-01
VGWU118-10
VGWU118-19
VGWU118-04

LEGEND:

- MAY 2013 DISCRETE SOIL SAMPLING LOCATIONS
- JULY 2012 SHALLOW BORING LOCATION
- SEPTEMBER 2016 SHALLOW BORING LOCATION
- JUNE 2016 SHALLOW BORING LOCATION
- POTENTIAL UNDERGROUND UTILITY LINE NOT DETECTED BY THIRD PARTY SURVEYOR
- ABOVE GROUND UTILITY LINE
- OVERHEAD UTILITY LINE
- IDENTIFIED BURIED LINE
- WATER LINE
- APPROXIMATE EXTENT OF SPILL
- UTILITY INTERSECTION

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. UTILITIES WERE IDENTIFIED USING GROUND PENETRATING RADAR, RADIO FREQUENCY SURVEY OR VISUAL MEANS.
3. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg).
4. SAMPLE DEPTHS ARE MEASURED IN FEET BELOW GROUND SURFACE (feet bgs).
5. BOLD VALUES DENOTE CONCENTRATIONS ABOVE THE NMAC CRITERIA

0 80' 160'
GRAPHIC SCALE

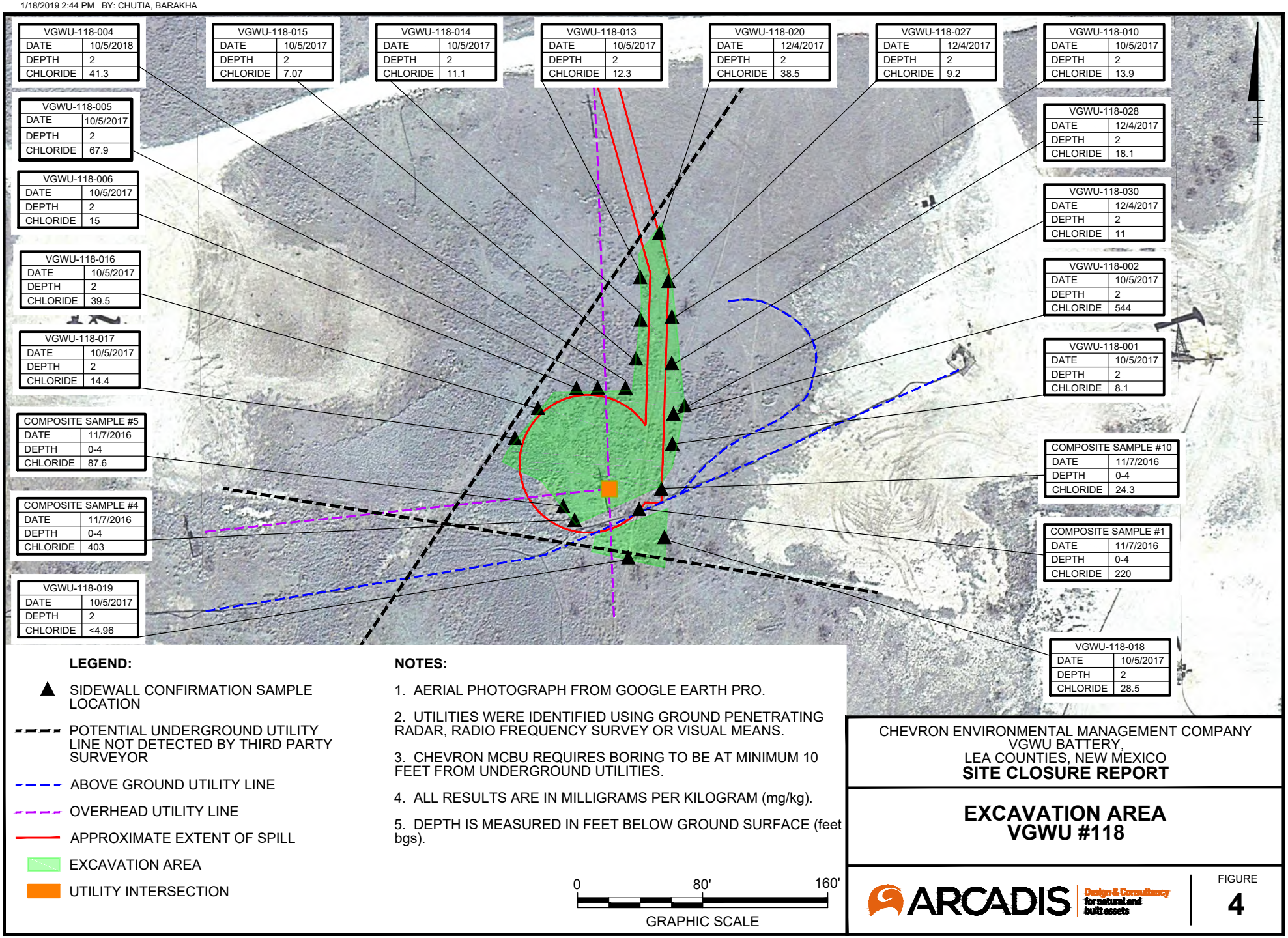
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
VGWU BATTERY,
LEA COUNTIES, NEW MEXICO
SITE CLOSURE REPORT

2016 SOIL BORING ANALYTICAL RESULTS VGWU #118

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\chutiab4677\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\VGWU 118\B0048616.1701\01-DWG\B00486111601-VGWU118-2017.dwg LAYOUT: 2 SAVED: 1/17/2019 5:51 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/18/2019 2:44 PM BY: CHUTIA, BARAKHA



LEGEND:

- SIDEWALL CONFIRMATION SAMPLE LOCATION
- POTENTIAL UNDERGROUND UTILITY LINE NOT DETECTED BY THIRD PARTY SURVEYOR
- ABOVE GROUND UTILITY LINE
- OVERHEAD UTILITY LINE
- APPROXIMATE EXTENT OF SPILL
- EXCAVATION AREA
- UTILITY INTERSECTION

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. UTILITIES WERE IDENTIFIED USING GROUND PENETRATING RADAR, RADIO FREQUENCY SURVEY OR VISUAL MEANS.
3. CHEVRON MCBU REQUIRES BORING TO BE AT MINIMUM 10 FEET FROM UNDERGROUND UTILITIES.
4. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg).
5. DEPTH IS MEASURED IN FEET BELOW GROUND SURFACE (feet bgs).

0 80' 160'
GRAPHIC SCALE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
VGWU BATTERY,
LEA COUNTIES, NEW MEXICO
SITE CLOSURE REPORT

EXCAVATION AREA VGWU #118

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

ATTACHMENT 1

Depth-to-Groundwater Data

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

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

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

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

POD Number	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 13392 POD20	L	LE	4	1	2	06	18S	35E	641081	3628000	200	138		
L 13392 POD15	L	LE	4	1	2	06	18S	35E	641119	3628041	204	137		
L 13392 POD19	L	LE	3	2	2	06	18S	35E	641155	3628080	221	138		
L 13392 POD14	L	LE	4	1	2	06	18S	35E	641118	3628007	223	133		
L 13392 POD18	L	LE	4	1	2	06	18S	35E	641143	3628014	239	138		
L 13041 POD1	L	LE		2	2	06	18S	35E	641152	3628026	240	130		
L 13041 POD2	L	LE		2	2	06	18S	35E	641152	3628026	240	140		
L 13041 POD3	L	LE		2	2	06	18S	35E	641152	3628026	240	140		
L 13041 POD4	L	LE		2	2	06	18S	35E	641152	3628026	240	140		
L 13392 POD17	L	LE	4	1	2	06	18S	35E	641149	3627992	257	138		
L 13392 POD16	L	LE	3	2	2	06	18S	35E	641171	3627989	276	138		
L 05523	L	LE	3	3	2	06	18S	35E	640855	3627660*	492	147	85	62
L 07119 S	L	LE	1	2	1	06	18S	35E	640445	3628259*	510	233	95	138
L 10337	L	LE	4	1	1	06	18S	35E	640268	3628055*	679	190	100	90
L 07119	L	LE	1	1	1	06	18S	35E	640068	3628255*	880	233	95	138

Average Depth to Water: **93 feet**

Minimum Depth: **85 feet**

Maximum Depth: **100 feet**

Record Count: 15

UTMNAD83 Radius Search (in meters):

Easting (X): 640942 **Northing (Y):** 3628144.44 **Radius:** 1000

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

ATTACHMENT 2

C-141 Form

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 #118	Facility Type Production Well

Surface Owner State of New Mexico	Mineral Owner State of New Mexico	API No. 3002531129

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	6	18.0S	35.0E					Lea

Latitude 32.782150° **Longitude** -103.496157°

NATURE OF RELEASE

Type of Release Produced Water Spill	Volume of Release 9.61 bbls of Produced Water and 0.746 bbls of oil	Volume Recovered 0 bbls
Source of Release Water Injection Station Pump	Date and Hour of Occurrence 04/22/12 07:00	Date and Hour of Discovery 04/22/12 07:00
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mr. Leking via voicemail	
By Whom? David Pagano	Date and Hour 04/223/12 11:00 AM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

NA

Describe Cause of Problem and Remedial Action Taken.*

1 foot scrape on poly line caused integrity of line to give leading to spill of 9.61bbls of pw and 0.746 bbls of oil. Well shut in on discovery.

Describe Area Affected and Cleanup Action Taken.*

Spill was located in pasture

On discovery vacuum truck contacted and vacuumed up the standing fluids which were sent 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: 04/23/12 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

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: Luke Welch
Address: 56 Texas Camp Road, Lovington NM 88260	Telephone No.: Office: (713) 372-0292 Mobile: (832) 627-9171
Facility Name: Vacuum Glorietta West Unit #118	Facility Type: Production Well

Surface Owner: State of New Mexico	Mineral Owner: State of New Mexico	API No. 3002531129

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	6	18.0S	35.0E					Lea

Latitude 32.782150° **Longitude** -103.496157°

NATURE OF RELEASE

Type of Release: Produced Water Spill	Volume of Release: 9.61 bbls of Produced Water and 0.746 bbls of oil	Volume Recovered: 0 bbls
Source of Release: Water Injection Station Pump	Date and Hour of Occurrence: 04/22/12 07:00	Date and Hour of Discovery: 04/22/12 07:00
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mr. Leking via voicemail	
By Whom? David Pagano	Date and Hour: 04/23/12 11:00M	
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.*

1 foot scrape on poly line caused integrity of line to give leading to spill of 9.61 bbls of pw and 0.746 bbls of oil. Well shut in on discovery.

Describe Area Affected and Cleanup Action Taken.*

Spill was located in pasture.
On discovery, vacuum truck contacted and vacuumed up the standing fluids, which were sent to disposal. Visually contaminated soil was excavated up to 2 feet.

Ten discrete soil confirmation samples were collected from the base of the excavation. An additional site assessment was conducted to confirm the extent of soil impacts.

Analytical results of the additional assessment are attached.

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: Luke Welch	Approved by Environmental Specialist:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: LWelch@chevron.com	Conditions of Approval:	Attached ☐
Date: Phone: (713) 372-0292		

* Attach Additional Sheets If Necessary

ATTACHMENT 3

Soil Boring Logs

Drilling Company: White Drilling/R Dallas
Well/Boring ID: VGWU118 - 01
Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118
Drilling Method: Air Rotary
Sampling Method: Shovel
Borehole Depth: 30' bgs
Descriptions By: R Nanny

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description
0–2	0		AK	2			SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR8/2), firm, blocky, dry, roots in sample, 50% sand, silt to very fine grained, subangular to subrounded, poorly sorted.
2					6.2	X	CALICHE, Pale Yellow (2.5YR8/4), soft, slightly moist, argillaceous, 90% caliche clay, 10% sand, silt to very fine grained, subangular to subrounded, poorly sorted.
2–7	-5	1	AK / AR	3	7.1	X	
7–15	-10	2	AR	5	2.8	X	SANDY CALICHE, Pale Yellow (2.5YR8/3), soft, powdery, 75% caliche, 25% sand, very fine to fine grained, subangular, poorly sorted, loose, dry, trace caliche, White (2.5YR8/1), indurated, nodular, 0.3 cm to 0.5 cm.
		3	AR	5			
15–20	-15	4	AR	5	4.0	X	SANDY CALICHE, Pale Yellow (2.5YR8/2), soft, powdery, dry, 80% caliche, 20% sand, very fine to fine grained, subrounded to subangular, poorly sorted, loose, formation contains sandy siliceous caliche, Pale Yellow (7.5YR7/4), fine to very fine grained, subrounded, poorly sorted, silica cemented, nodular, traces throughout formation.
20–25	-20	5	AR	5	4.7	X	SANDSTONE, Light Gray (10YR7/2), very fine to fine grained, subangular to subrounded, poorly sorted, weakly cemented, calcareous formation.
25–30	-25	6	AR	5	5.8	X	Same as above, formation sand becomes fine grained, subrounded, well sorted, contained trace indurated sandstone, Pale Yellow (2.5YR7/4), silica cemented, nodules 0.3 cm to 1 cm throughout formation.
30	-30				7.4	X	Same as above, nodules become 5% to 10% at 30 feet bgs.

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

Project: B0048611 Template: ChevronSoilBoring.ldfx
Data File: VGWU118 - 01 Soil Boring.dat Date: 6/25/2014 Created/Edited by: SA

Drilling Method: Air Rotary
Drilling Company: White Drilling/R Dallas

Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 02

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	3.4	☒		SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR4/2), soft, slightly pliable, moist, roots in sample, 50% clay and 50% sand, silt to very fine grained, subangular to subrounded, poorly sorted, trace caliche, White (5YR8/1), soft to firm, nodular, 0.2 cm to 0.3 cm.
			AK	3				CALICHE, Pale Yellow (2.5YR8/4), soft, slightly moist, argillaceous, 90% caliche clay, 10% sand, silt to very fine grained, subangular to subrounded, poorly sorted.
5	-5	2	AR	5	2.9	☒		SANDY CALICHE, Pale Yellow (2.5YR8/4), soft, powdery, 75% caliche, 25% sand, very fine to fine grained, subangular, poorly sorted, loose, dry. Formation contains trace caliche, White (2.5YR8/1), indurated, nodular, 0.3 cm to 0.5 cm throughout formation.
10	-10	3	AR	5	4.3	☒		
15	-15	4	AR	5	4.8	☒		Same as above, formation had a slight color change to Pale Yellow (2.5YR8/3), sand increased, grains turned to subrounded.
20	-20	5	AR	5	5.4	☒		SAND, Pale Yellow (2.5YR8/2), fine grained, subrounded, moderately sorted, loose, slightly moist. Formation contains traces sandstone, Light Brown (7.5YR6/4). Sand is same as described above, indurated, nodular, silica cemented.
25	-25	6	AR	5	5.3	☒		
30	-30				7.9	☒		

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

ARCADIS
Infrastructure, Water, Environment, Buildings

Project: B0048611 Template:ChevronSoilBoring.ldfx
Data File:VGWU118 - 02 Soil Boring.dat Date: 6/25/2014 Created/Edited by: SA

Drilling Company: White Drilling/R Dallas

Drilling Method: Air Rotary
Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 03

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	2.7	☒		SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR4/2), firm, blocky to slightly friable, dry, roots in sample, 50% clay, 50% sand, silt to very fine grained, trace fine grains in samples, subangular to subrounded, poorly sorted, trace caliche, White (5YR8/1), soft to friable, nodular.
			AK	3				SANDY CALICHE, White (2.5YR8/1), very firm to indurated, dry, 75% caliche, 25% sand, very fine to fine grained, subangular, poorly sorted.
5	-5	2	AR	5	2.8	☒		CLAYEY SAND, Light Gray (2.5YR7/2), very fine to fine grained, subangular, poorly sorted, loose, 70% sand, 40% clay, calcareous clay matrix, powdery, arenaceous, trace caliche as described above, nodular, 0.1 to 0.3 cm, firm to indurated.
10	-10	3	AR	5	6.2	☒		Same as above, formation had a slight color change to Light Gray (10YR7/2), loose.
15	-15	4	AR	5	6.4	☒		SANDY CALICHE, Pale Yellow (2.5YR8/2) firmly cemented, dry, 80% caliche, 20% sand, very fine to fine grained, subangular, poorly sorted, formation contains White (5YR8/1), indurated, sandy caliche nodules, rounded thoughout formation.
20	-20	5	AR	5	9.0	☒		SANDSTONE, Light Gray (10YR7/2), very fine to fine grained, subangular to subrounded, poorly sorted, weakly cemented, calcareous.
25	-25	6	AR	5	5.7	☒		Same as above, formation becomes fine grained, subrounded, well sorted. Formation contains trace indurated sandstone, Pale Yellow (2.5YR7/4), sand is same as above, silica cemented nodules.
30	-30				5.8	☒		Same as above, nodules become 10% at 30 feet bgs.

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

ARCADIS
Infrastructure, Water, Environment, Buildings

Project: B0048611 Template:ChevronSoilBoring.ldfx
Data File:VGWU118 - 03 Soil Boring.dat Date: 6/25/2014 Created/Edited by: SA

Drilling Method: Air Rotary
Drilling Company: White Drilling/R Dallas
Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 04

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	4.3	☒		SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR4/2), friable, dry, 50% clay and 50% sand, silt to fine grained, subrounded, poorly sorted, roots in sample. Formation contains trace caliche, White (5YR8/1), very fine to indurated, nodular throughout formation.
			AK	3				SANDY CALICHE, White (5YR8/1), powdery, arenaceous, dry, 80% caliche, 20% sand, very fine to fine grained, rounded, poorly sorted, formation contains trace indurated, siliceous caliche nodules, rounded throughout formation, Yellow (5YR8/3).
5	-5	2	AR	5	5.9	☒		
			AR					
10	-10	3	AR	5	6.7	☒		Same as above, formation becomes slightly softer, sand become 30%.
15	-15	4	AR	5	6.1	☒		Same as above, formation becomes soft, sand grain content becomes 40%, caliche is powdery within formation.
20	-20	5	AR	5	6.1	☒		SANDSTONE, Pale Yellow (2.5YR8/2), fine grained, subangular to subrounded, moderately to poorly sorted, calcareous, weakly cemented, friable, trace indurated, siliceous concretions, Pale Yellow (2.5YR7/4), rounded, throughout formation, formation is slightly calcareous.
25	-25	6	AR	5	5.9	☒		Same as above, formation sand becomes subrounded and well sorted, dry.
30	-30				3.6	☒		SAND at 30 feet bgs, Pale Yellow (2.5YR8/2), fine grained, subrounded, moderately to well sorted, loose, calcareous, 80% sand, 20% indurated siliceous concretions, Pale Yellow (2.5YR7/4), rounded throughout formation, dry.

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

Project: B0048611 Template:ChevronSoilBoring.ldfx
Data File:VGWU118 - 04 Soil Boring.dat Date: 6/25/2014 Created/Edited by: SA

Drilling Company: White Drilling/R Dallas

Drilling Method: Air Rotary
Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 05

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	4.0	☒		SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR4/2), firm, blocky, dry, roots in sample, 50% clay and 50% sand, silt to very fine grained, trace fine grains in sample, subangular to subrounded, poorly sorted.
			AK	3				CLAYEY SAND, Light Gray (2.5YR7/2), very fine to fine grained, subangular, poorly sorted, loose, 60% caliche, 40% sand, calcareous clay matrix, powdery, arenaceous, slight moisture, trace caliche, White (2.5YR8/1), firm to indurated, nodular, formation also contains trace siliceous caliche, Very Pale Brown (10YR7/3), indurated, rounded, nodular throughout formation.
5	-5	2	AR		3.4	☒		
			AR	5				
10	-10	3	AR	5	4.2	☒		SANDSTONE, Very Pale Brown (10YR8/2 to 10YR7/4), fine grained, subangular to subrounded, poorly sorted, indurated, calcite and silica cementation. Same as above, formation softens to friable.
15	-15	4	**AR**	5	5.9	☒		SANDSTONE, Light Gray (10YR7/2), very fine to fine grained, subangular to subrounded, poorly sorted, weakly cemented, calcareous, formation contains trace caliche, White (2.5YR8/1), indurated, nodular, 0.3 to 0.5 cm throughout formation.
20	-20	5	**AR**	5	4.1	☒		
25	-25	6	AR	5	5.0	☒		
30	-30				6.1	☒		

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

Drilling Company: White Drilling/R Dallas

Drilling Method: Air Rotary
Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 06

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	3.9			SILTY SANDY CLAY (Topsoil), Dark Grayish Brown (10YR4/2), firm, blocky to slightly friable, dry, roots in sample, 50% clay, 50% sand, silt to very fine grained, trace fine grains in sample, subangular to subrounded, poorly sorted.
			AK	3				SANDY CALICHE, White (2.5YR8/1), very firm to indurated, dry, 75% caliche, 25% sand, very fine to fine grained, subangular, poorly sorted.
5	-5	2	AR		5.1			CLAYEY SAND, Light Gray (2.5YR7/2), very fine to fine grained, subangular, poorly sorted, loose, 60% sand, 40% caliche calcareous clay matrix, powdery arenaceous, dry trace caliche described above, nodules 0.1 cm to 0.3 cm.
			AR	5				
10	-10	3	AR	5	5.2			Same as above, firm to indurated, slight color change to Light Gray (10YR7/2), loose formation.
								SANDY CALICHE, Pale Yellow (2.5YR8/2), firmly cemented, dry, 80% caliche, 20% sand, very fine to fine grained, subangular, poorly sorted. Formation contains White (5YR8/1), indurated sandy caliche nodules, rounded.
15	-15	4	AR	5	4.1			
20	-20	5	AR	5	4.1			SANDSTONE, Light Gray (10YR7/2), vrey fine to fine grained, subangular to subrounded, poorly sorted, weakly cemented, calcareous.
25	-25	6	AR	5	6.0			Same as above, formation sand becomes fine grained, subrounded, well sorted.
30	-30				5.9			Same as above, at 30 feet bgs, White (10YR8/1), fine grained, subrounded, well sorted, dry, very calcareous.

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

Drilling Company: White Drilling/R Dallas

Drilling Method: Air Rotary
Sampling Method: Shovel

Borehole Depth: 30' bgs
Descriptions By: R Nanny

Well/Boring ID: VGWU118 - 07

Client: Chevron EMC
Location: Vacuum Glorietta West Unit 118

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	AK	2	3.4	☒		SILTY SANDY CLAY, Light Gray (2.5YR7/2), soft, friable, slight moisture, 70% clay, 30% silt to vrey fine grained sand, subrounded, poorly sorted.
			AK	3				
5	-5	2	AR		4.6	☒		CLAYEY SAND, Light Gray (2.5YR7/2), very fine to fine grained, subangular to subrounded, poorly sorted, loose to slightly cemented, 80% sand, 20% clay matrix, soft, powdery, dry.
			AR	5				SANDY CALICHE, Pale Yellow (2.5YR8/2), very fine to indurated, dry, trace sand, very fine to fine grained, subrounded, poorly sorted, formation contained trace concretionary caliche nodules, indurated, calcite and silica cemented, rounded, throughout formation.
10	-10	3	AR	5	6.6	☒		
15	-15	4	AR	5	2.2	☒		Same as above, formation has a slight color change to Pale Yellow (2.5YR8/3), sand grain content increased to 30%.
20	-20	5	AR	5	0.4	☒		SANDSTONE, Very Pale Brown (10YR8/2), very fine to fine grained, subangular to subrounded, poorly sorted, very loosely cemented, calcareous, formation contains trace caliche, White (2.5YR8/1), indurated, nodular, rounded, 0.2 cm to 0.5 cm throughout formation.
25	-25	6	AR	5	4.0	☒		
30	-30				5.3	☒		Same as above, at 30 feet bgs, formation contains trace concretionary siliceous caliche nodules, 0.2 cm to 0.3 cm, rounded.

Remarks: ags = above ground surface; AK = air knife; amsl = above mean sea level; AR = air rotary; bgs = below ground surface; ppm = parts per million; cm = centimeter;

Project: B0048611 Template:ChevronSoilBoring.ldfx
Data File:VGWU118 - 07 Soil Boring.dat Date: 6/25/2014 Created/Edited by: SA

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-08

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-08(2')			SAND, fine; some silt; poorly graded; dry; tan.	Borehole bachfilled with Native material	
3								
4			SB-08(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-09

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016
Weather Conditions: NA

Logger: Ken Wicks
Editor: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-09(2')			SAND, fine; some silt; poorly graded; dry; gray.	Borehole bachfilled with Native material	
3								
4			SB-09(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-10.

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-10(2')			SAND, fine; some silt; poorly graded; dry; tan.	Borehole bachfilled with Native material	
3								
4			SB-10(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-11

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-11(2')			SAND, fine; some silt; poorly graded; dry; gray.	Borehole bachfilled with Native material	
3								
4			SB-11(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface;
ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-12

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-12(2')			SAND, fine; some silt; poorly graded; dry; gray.	Borehole bachfilled with Native material	
3								
4			SB-12(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-13

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-13(2')			SAND, fine; some silt; poorly graded; dry; tan.	Borehole bachfilled with Native material	
3								
4			SB-13(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

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Chevron

Boring No.: VGWU118-14

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine to coarse; few silt; poorly graded; dry; tan.		
2			SB-14(2')			SAND, fine to coarse; few silt; poorly graded; dry; tan.	Borehole bachfilled with Native material	
3								
4			SB-14(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-15

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 09/14/2016
Date Completed: 09/14/2016
Weather Conditions: NA

Logger: Melisa Phan
Editor: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SILT, nonplastic, 10% Caliche nodules, 10% Sand, fine to medium grained; dry; moderate reaction to HCl; dark gray (7.5YR 4/1). Note: Secondary color white(7.5YR 8/1); organic material roots (roots).		
2			VGWU118-15(2') @ 1400			SILT, nonplastic, 10% Caliche nodules, 10% Sand, fine to medium grained; dry; moderate reaction to HCl; gray (7.5YR 6/1). Note: Secondary color white(7.5YR 8/1); organic material roots (roots).		
3								
4								
5							Borehole bachfilled with Native material	
6								
7			VGWU118-15(7') @ 1402					
8								
9			VGWU118-15(9') @ 1401					
10			VGWU118-15(10') @ 1403			End of boring at 10.0 ft bgs.		
11								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

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Soil Boring Log

Chevron

Boring No.: VGWU118-16

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; dry; tan.		
2						SAND, fine; some silt; dry; tan.	Borehole bachfilled with Native material	
3								
4						End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

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Chevron

Boring No.: VGWU118-17

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 06/23/2016
Date Completed: 06/23/2016

Logger: Ken Wicks
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SAND, fine; some silt; poorly graded; dry; brown.		
2			SB-17(2')			SAND, coarse; some silt; well graded; dry; gray.	Borehole bachfilled with Native material	
3								
4			SB-17(4')			End of boring at 4.0 ft bgs.		
5								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ARCADIS Design & Consultancy for natural and built assets

Chevron

Boring No.: VGWU118-18

Soil Boring Log

Sheet: 1 of 1

Project Name: Chevron EMC
Project Number: B0048616.0118
Project Location: HES Transfer Sites

Date Started: 09/14/2016
Date Completed: 09/14/2016
Logger: Melisa Phan
Editor: NA
Weather Conditions: NA

Depth (feet)	Sample Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						SILT, nonplastic, 10% Caliche nodules, 10% Sand, fine to medium grained; dry; moderate reaction to HCl; dark gray (7.5YR 4/1). Note: Secondary color white(7.5YR 8/1); organic material roots (roots).		
2			VGWU118-18(2') @ 1430			SILT, nonplastic, 10% Caliche nodules, 10% Sand, fine to medium grained; dry; moderate reaction to HCl; gray (7.5YR 6/1). Note: Secondary color white(7.5YR 8/1); organic material roots (roots).		
3								
4								
5							Borehole bachfilled with Native material	
6								
7			VGWU118-18(7') @ 1431					
8								
9			VGWU118-18(9') @ 1432					
10			VGWU118-18(10') @ 1433			End of boring at 10.0 ft bgs.		
11								

Drilling Co.: HCI Drilling
Driller: Kenny Cooper
Drilling Method: Air Rotary
Drilling Fluid: None
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; ppm = parts per million; NA = not available or not applicable.

Sampling Method: Shovel
Sampling Interval: NA
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA
Converted to Well: ☐ Yes ☒ No
Surface Elev.: NA
North Coor: NA
East Coor: NA

CHEVRON HES D:\A-PROJECT FILES\BORELOGS\HES-BORING LOGS\GEC BANGALORE\TEMPLATE\GINT TEMPLATE (EXISTING)-HES.GPJ ARCADIS.GDT 25/1/19

ATTACHMENT 4

Laboratory Analytical Results and chain of Custody

CARDINAL Laboratories

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

July 18, 2012

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 07/12/12 17:07.

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #1 (H201602-01)

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	07/17/2012	ND	1.88	93.9	2.00	2.82	
Toluene*	<0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
Ethylbenzene*	<0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
Total Xylenes*	<0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**16.0**	16.0	07/17/2012	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**487**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *74.0 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *99.6 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #2 (H201602-02)

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	07/17/2012	ND	1.88	93.9	2.00	2.82	
Toluene*	<0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
Ethylbenzene*	<0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
Total Xylenes*	<0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	

Surrogate: 4-Bromofluorobenzene (PID *108 %* *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	**272**	16.0	07/17/2012	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**43.7**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *81.4 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *105 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #3 (H201602-03)

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	07/17/2012	ND	1.88	93.9	2.00	2.82	
Toluene*	<0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
Ethylbenzene*	<0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
Total Xylenes*	<0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**144**	16.0	07/17/2012	ND	400	100	400	0.00	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**123**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *85.0 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *112 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #4 (H201602-04)

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	07/17/2012	ND	1.88	93.9	2.00	2.82	
Toluene*	<0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
Ethylbenzene*	<0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
Total Xylenes*	<0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	

Surrogate: 4-Bromofluorobenzene (PID *104 %* *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	**16.0**	16.0	07/17/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**295**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *86.1 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *110 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #5 (H201602-05)

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	07/17/2012	ND	1.88	93.9	2.00	2.82	
Toluene*	<0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
Ethylbenzene*	<0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
Total Xylenes*	<0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	

Surrogate: 4-Bromofluorobenzene (PID *104 %* *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	**96.0**	16.0	07/17/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	<10.0	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *82.7 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *103 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #6 (H201602-06)

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	07/18/2012	ND	1.91	95.7	2.00	0.781	
Toluene*	**0.221**	0.050	07/18/2012	ND	1.94	97.1	2.00	2.18	
Ethylbenzene*	**0.385**	0.050	07/18/2012	ND	1.98	99.0	2.00	1.91	
Total Xylenes*	**0.937**	0.150	07/18/2012	ND	5.99	99.9	6.00	2.45	

Surrogate: 4-Bromofluorobenzene (PID *117 %* *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	**384**	16.0	07/17/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**36.8**	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**2520**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *91.8 %* *65.2-140*

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

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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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #7 (H201602-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/18/2012	ND	1.91	95.7	2.00	0.781	
Toluene*	**0.841**	0.050	07/18/2012	ND	1.94	97.1	2.00	2.18	
Ethylbenzene*	**2.27**	0.050	07/18/2012	ND	1.98	99.0	2.00	1.91	
Total Xylenes*	**3.32**	0.150	07/18/2012	ND	5.99	99.9	6.00	2.45	

Surrogate: 4-Bromofluorobenzene (PID *134 %* *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	**112**	16.0	07/17/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**108**	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**6830**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *106 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *228 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #8 (H201602-08)

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	07/18/2012	ND	1.91	95.7	2.00	0.781	
Toluene*	<0.050	0.050	07/18/2012	ND	1.94	97.1	2.00	2.18	
Ethylbenzene*	<0.050	0.050	07/18/2012	ND	1.98	99.0	2.00	1.91	
Total Xylenes*	<0.150	0.150	07/18/2012	ND	5.99	99.9	6.00	2.45	

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	**2320**	16.0	07/17/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**49.5**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *82.8 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *111 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #9 (H201602-09)

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	07/18/2012	ND	1.91	95.7	2.00	0.781	
Toluene*	<0.050	0.050	07/18/2012	ND	1.94	97.1	2.00	2.18	
Ethylbenzene*	**0.179**	0.050	07/18/2012	ND	1.98	99.0	2.00	1.91	
Total Xylenes*	**0.384**	0.150	07/18/2012	ND	5.99	99.9	6.00	2.45	

Surrogate: 4-Bromofluorobenzene (PID *115 %* *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	**6240**	16.0	07/18/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**20.6**	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**3050**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *86.3 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *163 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

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:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/18/2012	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 #118 SS #10 (H201602-10)

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	07/18/2012	ND	1.91	95.7	2.00	0.781	
Toluene*	<0.050	0.050	07/18/2012	ND	1.94	97.1	2.00	2.18	
Ethylbenzene*	<0.050	0.050	07/18/2012	ND	1.98	99.0	2.00	1.91	
Total Xylenes*	<0.150	0.150	07/18/2012	ND	5.99	99.9	6.00	2.45	

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**15800**	16.0	07/18/2012	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/17/2012	ND	166	83.1	200	6.45	
DRO >C10-C28	**28.4**	10.0	07/17/2012	ND	173	86.6	200	8.21	

Surrogate: 1-Chlorooctane *77.3 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *103 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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, 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 #:	505 287 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: TPH | BTEX | Chlorides

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
H20166														
1	Vacuum #118 SS#1	G	1				✓						7/12/12	4:00
2	Vacuum #118 SS#2													4:03
3	Vacuum #118 SS#3													4:06
4	Vacuum #118 SS#4													4:09
5	Vacuum #118 SS#5													4:12
6	Vacuum #118 SS#6													4:18
7	Vacuum #118 SS#7													4:20
8	Vacuum #118 SS#8													4:22
9	Vacuum #118 SS#9													4:33
10	Vacuum #118 SS#10													4:26

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: 7/12/12 Time: 5:07	Received By:	
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	3° C	Sample Condition: Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)

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

#26

CARDINAL Laboratories

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

June 10, 2013

JONATHAN OLSEN

ARCADIS U.S., INC. - HOUSTON

630 PLAZA DRIVE, SUITE 600

HIGHLANDS RANCH, CO 80129

RE: CHEVRON BUCKEYE

Enclosed are the results of analyses for samples received by the laboratory on 05/15/13 17:00.

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:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
VGW U118 - 07 (10')	H301174-01	Soil	14-May-13 15:25	15-May-13 17:00
VGW U118 - 07 (15')	H301174-02	Soil	14-May-13 15:30	15-May-13 17:00
VGW U118 - 07 (20')	H301174-03	Soil	14-May-13 15:35	15-May-13 17:00
VGW U118 - 07 (25')	H301174-04	Soil	14-May-13 15:40	15-May-13 17:00
VGW U118 - 07 (30')	H301174-05	Soil	14-May-13 15:50	15-May-13 17:00
VGW U118 - 02 (2')	H301174-06	Soil	14-May-13 16:02	15-May-13 17:00
VGW U118 - 02 (5')	H301174-07	Soil	14-May-13 16:07	15-May-13 17:00
VGW U118 - 02 (10')	H301174-08	Soil	14-May-13 16:14	15-May-13 17:00
VGW U118 - 02 (15')	H301174-09	Soil	14-May-13 16:20	15-May-13 17:00
VGW U118 - 02 (20')	H301174-10	Soil	14-May-13 16:25	15-May-13 17:00
VGW U118 - 02 (25')	H301174-11	Soil	14-May-13 16:28	15-May-13 17:00
VGW U118 - 02 (30')	H301174-12	Soil	14-May-13 16:32	15-May-13 17:00
VGW U118 - 04 (2')	H301174-13	Soil	14-May-13 16:57	15-May-13 17:00
VGW U118 - 06 (2')	H301174-20	Soil	14-May-13 12:32	15-May-13 17:00
VGW U118 - 05 (2')	H301174-27	Soil	14-May-13 13:17	15-May-13 17:00
VGW U118 - 01 (2')	H301174-34	Soil	14-May-13 13:54	15-May-13 17:00
VGW U118 - 01 (5')	H301174-35	Soil	14-May-13 13:57	15-May-13 17:00
VGW U118 - 01 (10')	H301174-36	Soil	14-May-13 14:00	15-May-13 17:00
VGW U118 - 01 (15')	H301174-37	Soil	14-May-13 14:05	15-May-13 17:00
VGW U118 - 01 (20')	H301174-38	Soil	14-May-13 14:12	15-May-13 17:00
VGW U118 - 01 (25')	H301174-39	Soil	14-May-13 14:17	15-May-13 17:00
VGW U118 - 01 (30')	H301174-40	Soil	14-May-13 14:25	15-May-13 17:00
VGW U118 - 03 (2')	H301174-41	Soil	14-May-13 14:32	15-May-13 17:00
VGW U118 - 03 (5')	H301174-42	Soil	14-May-13 14:37	15-May-13 17:00
VGW U118 - 03 (10')	H301174-43	Soil	14-May-13 14:40	15-May-13 17:00
VGW U118 - 03 (15')	H301174-44	Soil	14-May-13 14:45	15-May-13 17:00
VGW U118 - 03 (20')	H301174-45	Soil	14-May-13 14:50	15-May-13 17:00

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:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (25')	H301174-46	Soil	14-May-13 15:00	15-May-13 17:00
VGW U118 - 03 (30')	H301174-47	Soil	14-May-13 15:03	15-May-13 17:00
VGW U118 - 07 (2')	H301174-48	Soil	14-May-13 15:17	15-May-13 17:00
VGW U118 - 07 (5')	H301174-49	Soil	14-May-13 15:20	15-May-13 17:00

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (10')

H301174-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**97.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Moisture	**2.45**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**80.0**	16.0	mg/kg	4	3051610	DW	16-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*96.2 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Toluene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Ethylbenzene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Total Xylenes*	ND	0.154	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Total BTEX	**0.009**	0.308	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3051601*	AP	*16-May-13*	*8021B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (15')

H301174-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**1.39**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**98.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**80.0**	16.0	mg/kg	4	3051610	DW	16-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*94.0 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Toluene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Ethylbenzene*	ND	0.051	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Total Xylenes*	ND	0.152	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Total BTEX	ND	0.304	mg/kg dry	50	3051601	AP	16-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3051601*	AP	*16-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (20')

H301174-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**4.35**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**95.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	ND	16.0	mg/kg	4	3051610	DW	16-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*96.2 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.157	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.314	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (25')

H301174-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**4.41**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**95.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	ND	16.0	mg/kg	4	3051610	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*99.9 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.157	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.314	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*111 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (30')

H301174-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**15.9**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**84.1**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	ND	16.0	mg/kg	4	3051610	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	17.8	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	**19.7**	17.8	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*94.0 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.059	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.059	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.059	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.178	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.357	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (2')

H301174-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**87.2**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Moisture	**12.8**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**10000**	16.0	mg/kg	4	3051610	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	17.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	17.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*89.4 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.057	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.057	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.057	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.172	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.344	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (5')

H301174-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**7.33**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**92.7**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**368**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*96.3 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.162	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.324	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

Cardinal Laboratories

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CARDINAL Laboratories

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (10')

H301174-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**6.93**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**93.1**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**80.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.1	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	16.1	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*93.7 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Toluene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total Xylenes*	ND	0.161	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Total BTEX	ND	0.322	mg/kg dry	50	3051601	AP	17-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3051601*	AP	*17-May-13*	*8021B*	

Cardinal Laboratories

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CARDINAL Laboratories

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (15')

H301174-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**4.06**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**95.9**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**112**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.6	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.6	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*98.8 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.036**	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.156	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.036**	0.313	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*114 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

Cardinal Laboratories

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CARDINAL Laboratories

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (20')

H301174-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**7.13**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**92.9**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**384**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*104 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*104 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.035**	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.162	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.035**	0.323	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

Cardinal Laboratories

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CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (25')

H301174-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**7.33**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**92.7**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**1090**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	16.2	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*102 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.039**	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.162	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.039**	0.324	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 02 (30')

H301174-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**23.0**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**77.0**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**224**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	19.5	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	19.5	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*96.7 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.065	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.031**	0.065	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.065	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.195	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.031**	0.390	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*114 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 04 (2')

H301174-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
Chloride	**48.0**	16.0	mg/kg	4	3060505	DW	05-Jun-13	4500-Cl-B	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 06 (2')

H301174-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
Chloride	**128**	16.0	mg/kg	4	3060505	DW	05-Jun-13	4500-Cl-B	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 05 (2')

H301174-27 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
Chloride	**64.0**	16.0	mg/kg	4	3060505	DW	05-Jun-13	4500-Cl-B	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (2')

H301174-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**88.7**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Moisture	**11.3**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**4800**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.9	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	**102**	16.9	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*95.7 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.056	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.047**	0.056	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.056	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.169	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.047**	0.338	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (5')

H301174-35 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**19.2**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**80.8**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**192**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	18.6	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	18.6	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*95.6 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.016**	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.186	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.016**	0.371	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (10')

H301174-36 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**18.4**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**81.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**32.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	18.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	18.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*102 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.020**	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.184	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.020**	0.368	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

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VGW U118 - 01 (15')

H301174-37 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**18.4**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**81.6**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**32.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	18.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	18.4	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*86.0 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*94.7 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.022**	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.061	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.184	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.022**	0.368	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (20')

H301174-38 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**79.8**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Moisture	**20.2**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	ND	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	18.8	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	18.8	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*97.5 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*108 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.063	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.022**	0.063	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.063	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.188	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.022**	0.376	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (25')

H301174-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**97.1**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Moisture	**2.93**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**32.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.5	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	15.5	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*99.8 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.042**	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.155	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.042**	0.309	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 01 (30')

H301174-40 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**20.0**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**80.0**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	ND	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	18.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	18.7	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*99.6 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*108 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.023**	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.062	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.187	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.023**	0.375	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (2')

H301174-41 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**6.98**	0.100	%	1	3051612	DW	17-May-13	D2216	
% Solids	**93.0**	0.100	%	1	3051612	DW	17-May-13	D2216	
Chloride	**832**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.1	mg/kg dry	1	3052411	CK	20-May-13	8015M	
DRO >C10-C28	ND	16.1	mg/kg dry	1	3052411	CK	20-May-13	8015M	
Surrogate: 1-Chlorooctane		*91.9 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Surrogate: o-Terphenyl		*98.8 %*	*70-130*		*3052411*	CK	*20-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.034**	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.161	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.034**	0.323	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*111 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (5')

H301174-42 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**4.43**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Solids	**95.6**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**96.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.7	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	15.7	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*105 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.033**	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.157	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.033**	0.314	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (10')

H301174-43 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**6.88**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Solids	**93.1**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**48.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.1	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	16.1	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*101 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.028**	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.161	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.028**	0.322	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (15')

H301174-44 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**6.72**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Solids	**93.3**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**48.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	16.1	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	16.1	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*106 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.031**	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.054	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.161	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.031**	0.322	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*114 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (20')

H301174-45 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Moisture	**4.54**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Solids	**95.5**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**48.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.7	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	15.7	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*105 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*106 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.019**	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.157	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.019**	0.314	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*115 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (25')

H301174-46 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**96.4**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Moisture	**3.57**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**32.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.6	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	15.6	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*98.8 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*108 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.041**	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.052	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.156	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.041**	0.311	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*114 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 03 (30')

H301174-47 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**97.8**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Moisture	**2.20**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**32.0**	16.0	mg/kg	4	3051701	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.3	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	15.3	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*104 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.051	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	ND	0.051	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.051	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.153	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	ND	0.307	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*112 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (2')

H301174-48 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**85.8**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Moisture	**14.2**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**7200**	16.0	mg/kg	4	3051702	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	17.5	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	17.5	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*85.0 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*92.2 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.058	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.025**	0.058	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.058	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.175	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.025**	0.349	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

VGW U118 - 07 (5')

H301174-49 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
% Solids	**95.1**	0.100	%	1	3051613	DW	17-May-13	D2216	
% Moisture	**4.94**	0.100	%	1	3051613	DW	17-May-13	D2216	
Chloride	**96.0**	16.0	mg/kg	4	3051702	DW	17-May-13	4500-Cl-B	
Organic Compounds									**SUB-PBE**
GRO C6-C10	ND	15.8	mg/kg dry	1	3052412	CK	21-May-13	8015M	
DRO >C10-C28	ND	15.8	mg/kg dry	1	3052412	CK	21-May-13	8015M	
Surrogate: 1-Chlorooctane		*93.9 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*3052412*	CK	*21-May-13*	*8015M*	
Volatile Organic Compounds by EPA Method 8021									
Benzene*	ND	0.053	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Toluene*	**0.026**	0.053	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Ethylbenzene*	ND	0.053	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total Xylenes*	ND	0.158	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Total BTEX	**0.026**	0.316	mg/kg dry	50	3052011	AP	21-May-13	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		*113 %*	*89.4-126*		*3052011*	AP	*21-May-13*	*8021B*	

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3051610 - 1:4 DI Water										
Blank (3051610-BLK1)				Prepared & Analyzed: 16-May-13						
Chloride	ND	16.0	mg/kg							
LCS (3051610-BS1)				Prepared & Analyzed: 16-May-13						
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (3051610-BSD1)				Prepared & Analyzed: 16-May-13						
Chloride	432	16.0	mg/kg	400		108	80-120	0.00	20	
Duplicate (3051610-DUP1)		**Source: H301164-04**		Prepared & Analyzed: 16-May-13						
Chloride	528	16.0	mg/kg		560			5.88	20	
Matrix Spike (3051610-MS1)		**Source: H301164-04**		Prepared & Analyzed: 16-May-13						
Chloride	944	16.0	mg/kg	400	560	96.0	80-120			
Batch 3051612 - General Prep - Wet Chem										
Blank (3051612-BLK1)				Prepared: 16-May-13 Analyzed: 17-May-13						
% Moisture	ND	0.100	%							
% Solids	100	0.100	%							
Duplicate (3051612-DUP1)		**Source: H301174-01**		Prepared: 16-May-13 Analyzed: 17-May-13						
% Solids	97.8	0.100	%		97.6			0.215	20	
% Moisture	2.24	0.100	%		2.45			8.96	200	
Batch 3051613 - General Prep - Wet Chem										
Blank (3051613-BLK1)				Prepared: 16-May-13 Analyzed: 17-May-13						
% Moisture	ND	0.100	%							
% Solids	100	0.100	%							

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3051613 - General Prep - Wet Chem										
Duplicate (3051613-DUP1)		**Source: H301174-42**		Prepared: 16-May-13 Analyzed: 17-May-13						
% Solids	95.5	0.100	%		95.6			0.0837	20	
% Moisture	4.51	0.100	%		4.43			1.79	200	
Batch 3051701 - 1:4 DI Water										
Blank (3051701-BLK1)				Prepared & Analyzed: 17-May-13						
Chloride	ND	16.0	mg/kg							
LCS (3051701-BS1)				Prepared & Analyzed: 17-May-13						
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (3051701-BSD1)				Prepared & Analyzed: 17-May-13						
Chloride	432	16.0	mg/kg	400		108	80-120	0.00	20	
Duplicate (3051701-DUP1)		**Source: H301174-07**		Prepared & Analyzed: 17-May-13						
Chloride	336	16.0	mg/kg		368			9.09	20	
Matrix Spike (3051701-MS1)		**Source: H301174-07**		Prepared & Analyzed: 17-May-13						
Chloride	640	16.0	mg/kg	400	368	68.0	80-120			QM-07
Batch 3051702 - 1:4 DI Water										
Blank (3051702-BLK1)				Prepared & Analyzed: 17-May-13						
Chloride	ND	16.0	mg/kg							
LCS (3051702-BS1)				Prepared & Analyzed: 17-May-13						
Chloride	432	16.0	mg/kg	400		108	80-120			

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Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3051702 - 1:4 DI Water										
LCS Dup (3051702-BSD1)				Prepared & Analyzed: 17-May-13						
Chloride	416	16.0	mg/kg	400		104	80-120	3.77	20	
Duplicate (3051702-DUP1)		**Source: H301174-48**		Prepared & Analyzed: 17-May-13						
Chloride	8400	16.0	mg/kg		7200			15.4	20	
Matrix Spike (3051702-MS1)		**Source: H301174-48**		Prepared & Analyzed: 17-May-13						
Chloride	9040	16.0	mg/kg	400	7200	460	80-120			QM-07
Batch 3060505 - 1:4 DI Water										
Blank (3060505-BLK1)				Prepared & Analyzed: 05-Jun-13						
Chloride	ND	16.0	mg/kg							
LCS (3060505-BS1)				Prepared & Analyzed: 05-Jun-13						
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (3060505-BSD1)				Prepared & Analyzed: 05-Jun-13						
Chloride	432	16.0	mg/kg	400		108	80-120	0.00	20	
Duplicate (3060505-DUP1)		**Source: H301196-44**		Prepared & Analyzed: 05-Jun-13						
Chloride	592	16.0	mg/kg		528			11.4	20	
Matrix Spike (3060505-MS1)		**Source: H301196-44**		Prepared & Analyzed: 05-Jun-13						
Chloride	1020	16.0	mg/kg	400	528	124	80-120			QM-07

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Organic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3052411 - General Prep										
Blank (3052411-BLK1)				Prepared & Analyzed: 20-May-13						
GRO C6-C10	ND	15.0	mg/kg wet							
DRO >C10-C28	ND	15.0	mg/kg wet							
Surrogate: 1-Chlorooctane	*116*		mg/kg	*100*		*116*	*70-130*			
Surrogate: o-Terphenyl	*63.8*		mg/kg	*50.0*		*128*	*70-130*			
LCS (3052411-BS1)				Prepared & Analyzed: 20-May-13						
GRO C6-C10	1220	15.0	mg/kg wet	1000		122	75-125			
DRO >C10-C28	1230	15.0	mg/kg wet	1000		123	75-125			
Surrogate: 1-Chlorooctane	*112*		mg/kg	*100*		*112*	*70-130*			
Surrogate: o-Terphenyl	*53.5*		mg/kg	*50.0*		*107*	*70-130*			
Matrix Spike (3052411-MS1)		**Source: H301174-41**		Prepared & Analyzed: 20-May-13						
GRO C6-C10	1180	16.1	mg/kg dry	1080	ND	110	75-125			
DRO >C10-C28	1170	16.1	mg/kg dry	1080	ND	109	75-125			
Surrogate: 1-Chlorooctane	*113*		mg/kg	*100*		*113*	*70-130*			
Surrogate: o-Terphenyl	*54.5*		mg/kg	*50.0*		*109*	*70-130*			
Matrix Spike Dup (3052411-MSD1)		**Source: H301174-41**		Prepared & Analyzed: 20-May-13						
GRO C6-C10	1130	16.1	mg/kg dry	1080	ND	105	75-125	4.65	20	
DRO >C10-C28	1250	16.1	mg/kg dry	1080	ND	116	75-125	6.22	20	
Surrogate: 1-Chlorooctane	*109*		mg/kg	*100*		*109*	*70-130*			
Surrogate: o-Terphenyl	*55.6*		mg/kg	*50.0*		*111*	*70-130*			
Batch 3052412 - General Prep										
Blank (3052412-BLK1)				Prepared: 20-May-13 Analyzed: 21-May-13						
GRO C6-C10	ND	15.0	mg/kg wet							
DRO >C10-C28	ND	15.0	mg/kg wet							
Surrogate: 1-Chlorooctane	*123*		mg/kg	*100*		*123*	*70-130*			
Surrogate: o-Terphenyl	*61.2*		mg/kg	*50.0*		*122*	*70-130*			

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Organic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3052412 - General Prep										
LCS (3052412-BS1)				Prepared: 20-May-13 Analyzed: 21-May-13						
GRO C6-C10	1160	15.0	mg/kg wet	1000		116	75-125			
DRO >C10-C28	1200	15.0	mg/kg wet	1000		120	75-125			
Surrogate: 1-Chlorooctane	*126*		mg/kg	*100*		*126*	*70-130*			
Surrogate: o-Terphenyl	*59.8*		mg/kg	*50.0*		*120*	*70-130*			
LCS Dup (3052412-BSD1)				Prepared: 20-May-13 Analyzed: 21-May-13						
GRO C6-C10	1200	15.0	mg/kg wet	1000		120	75-125	3.39	20	
DRO >C10-C28	1230	15.0	mg/kg wet	1000		123	75-125	2.47	20	
Surrogate: 1-Chlorooctane	*125*		mg/kg	*100*		*125*	*70-130*			
Surrogate: o-Terphenyl	*63.3*		mg/kg	*50.0*		*127*	*70-130*			
Matrix Spike (3052412-MS1)		**Source: H301174-49**		Prepared: 20-May-13 Analyzed: 21-May-13						
GRO C6-C10	1120	15.8	mg/kg dry	1050	ND	106	75-125			
DRO >C10-C28	1260	15.8	mg/kg dry	1050	ND	120	75-125			
Surrogate: 1-Chlorooctane	*128*		mg/kg	*100*		*128*	*70-130*			
Surrogate: o-Terphenyl	*57.6*		mg/kg	*50.0*		*115*	*70-130*			
Matrix Spike Dup (3052412-MSD1)		**Source: H301174-49**		Prepared: 20-May-13 Analyzed: 21-May-13						
GRO C6-C10	1200	15.8	mg/kg dry	1050	ND	114	75-125	7.27	20	
DRO >C10-C28	1300	15.8	mg/kg dry	1050	ND	124	75-125	3.28	20	
Surrogate: 1-Chlorooctane	*126*		mg/kg	*100*		*126*	*70-130*			
Surrogate: o-Terphenyl	*57.1*		mg/kg	*50.0*		*114*	*70-130*			

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3051601 - Volatiles										
Blank (3051601-BLK1)				Prepared & Analyzed: 16-May-13						
Benzene	ND	0.050	mg/kg wet							
Toluene	0.011	0.050	mg/kg wet							
Ethylbenzene	ND	0.050	mg/kg wet							
Total Xylenes	ND	0.150	mg/kg wet							
Total BTEX	0.011	0.300	mg/kg wet							
Surrogate: 4-Bromofluorobenzene (PID)	*0.0555*		mg/kg wet	*0.0500*		*111*	*89.4-126*			
LCS (3051601-BS1)				Prepared & Analyzed: 16-May-13						
Benzene	2.08	0.050	mg/kg wet	2.00		104	76.4-135			
Toluene	1.88	0.050	mg/kg wet	2.00		94.2	80.2-135			
Ethylbenzene	2.01	0.050	mg/kg wet	2.00		101	78.5-133			
Total Xylenes	5.93	0.150	mg/kg wet	6.00		98.8	80.1-135			
Surrogate: 4-Bromofluorobenzene (PID)	*0.0538*		mg/kg wet	*0.0500*		*108*	*89.4-126*			
LCS Dup (3051601-BSD1)				Prepared & Analyzed: 16-May-13						
Benzene	2.17	0.050	mg/kg wet	2.00		109	76.4-135	4.20	16.4	
Toluene	1.95	0.050	mg/kg wet	2.00		97.7	80.2-135	3.70	16.6	
Ethylbenzene	2.10	0.050	mg/kg wet	2.00		105	78.5-133	4.30	16.1	
Total Xylenes	6.15	0.150	mg/kg wet	6.00		102	80.1-135	3.69	15.8	
Surrogate: 4-Bromofluorobenzene (PID)	*0.0538*		mg/kg wet	*0.0500*		*108*	*89.4-126*			
Batch 3052011 - Volatiles										
Blank (3052011-BLK1)				Prepared: 20-May-13 Analyzed: 21-May-13						
Benzene	ND	0.050	mg/kg wet							
Toluene	0.011	0.050	mg/kg wet							
Ethylbenzene	ND	0.050	mg/kg wet							
Total Xylenes	ND	0.150	mg/kg wet							
Total BTEX	0.011	0.300	mg/kg wet							
Surrogate: 4-Bromofluorobenzene (PID)	*0.0555*		mg/kg wet	*0.0500*		*111*	*89.4-126*			

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ARCADIS U.S., INC. - HOUSTON 630 PLAZA DRIVE, SUITE 600 HIGHLANDS RANCH CO, 80129	Project: CHEVRON BUCKEYE Project Number: B004860.0000 Project Manager: JONATHAN OLSEN Fax To: (713) 977-4620	Reported: 10-Jun-13 10:43

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3052011 - Volatiles										
LCS (3052011-BS1)				Prepared & Analyzed: 20-May-13						
Benzene	2.37	0.050	mg/kg wet	2.00		119	76.4-135			
Toluene	2.12	0.050	mg/kg wet	2.00		106	80.2-135			
Ethylbenzene	2.29	0.050	mg/kg wet	2.00		115	78.5-133			
Total Xylenes	6.67	0.150	mg/kg wet	6.00		111	80.1-135			
Surrogate: 4-Bromofluorobenzene (PID)	*0.0533*		mg/kg wet	*0.0500*		*107*	*89.4-126*			
LCS Dup (3052011-BSD1)				Prepared: 20-May-13 Analyzed: 21-May-13						
Benzene	2.32	0.050	mg/kg wet	2.00		116	76.4-135	2.27	16.4	
Toluene	2.10	0.050	mg/kg wet	2.00		105	80.2-135	1.17	16.6	
Ethylbenzene	2.28	0.050	mg/kg wet	2.00		114	78.5-133	0.595	16.1	
Total Xylenes	6.75	0.150	mg/kg wet	6.00		112	80.1-135	1.17	15.8	
Surrogate: 4-Bromofluorobenzene (PID)	*0.0555*		mg/kg wet	*0.0500*		*111*	*89.4-126*			

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Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

SUB-PBE	Analysis subcontracted to Permian Basin Environmental Lab, NELAP accreditation # T104704156-12-1.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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

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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:	ARCADIS-US	**BILL TO** P.O. #:	
Project Manager:	Jonathan Olson	Company:	
Address:	2929 Briarpark Dr., Suit 300	Attn:	
City:	Houston State: TX Zip: 77402	Address:	
Phone #:	713.953.4874 Fax #: 713.977.4620	City:	
Project #:	B0004860.0000 Project Owner: Chevron	State: Zip:	
Project Name:	Chevron Buckeye	Phone #:	
Project Location:	Buckeye - Oil Field	Fax #:	
Sampler Name:			

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	ANALYSIS REQUEST: Chlorides 300.1	TPH 8015, BTEX 8021B, MTBE
H301174																
1	VGWU118-07(10')	G	2			X						X	5-14-13	1525	1	1
2	VGWU118-07(15')	G	2			X						X	5-14-13	1530	1	1
3	VGWU118-07(20')	G	2			X						X	5-14-13	1535	1	1
4	VGWU118-07(25')	G	2			X						X	5-14-13	1540	1	1
5	VGWU118-07(30')	G	2			X						X	5-14-13	1550	1	1
6	VGWU118-02(2')	G	2			X						X	5-14-13	1602	1	1
7	VGWU118-02(5')	G	2			X						X	5-14-13	1607	1	1
8	VGWU118-02(10')	G	2			X						X	5-14-13	1614	1	1
9	VGWU118-02(15')	G	2			X						X	5-14-13	1620	1	1
10	VGWU118-02(20')	G	2			X						X	5-14-13	1625	1	1

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Relinquished By:	Date: 5-17-13 Time: 1700	Received By:	Phone Result: ☐ Yes ☐ No	Add'l Phone #:	
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No	Add'l Fax #:	
			REMARKS:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	3° C	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)		

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ARCADIS - US
Project Manager: Jonathan Olsen
Address: 2929 Briarpark Dr., Suite 300
City: Houston State: TX Zip: 77042
Phone #: 713.953.4874 Fax #: 713.977.4620
Project #: B004860.0000 Project Owner: Chevron
Project Name: Chevron Buckeye
Project Location: Buckeye Oilfield
Sampler Name: Ryan Murray

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX: GROUNDWATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: OIL	MATRIX: SLUDGE	MATRIX: OTHER	PRESERV: ACID/BASE	PRESERV: ICE / COOL	PRESERV: OTHER None	SAMPLING: DATE	SAMPLING: TIME	ANALYSIS REQUEST: Moisture & Chlorides USEPA 300.1	TPH 8015 & BTEX 8021B	Hold	Cl⁻ added 5/31/13
H301174																		
11	VGWU 118-02 (25')	G	2			X						X	5-14-13	1628	/	/		
12	VGWU 118-02 (30')	G	2			X						X	5-14-13	1632	/	/		
13	VGWU 118-04 (2')	G	2			X						X	5-14-13	1657	/	/	X	X
14	VGWU 118-04 (5')	G	2			X						X	5-14-13	1700	/	/	X	
15	VGWU 118-04 (10')	G	2			X						X	5-14-13	1705	/	/	X	
16	VGWU 118-04 (15')	G	2			X						X	5-14-13	1710	/	/	X	
17	VGWU 118-04 (20')	G	2			X						X	5-14-13	1715	/	/	X	
18	VGWU 118-04 (25')	G	2			X						X	5-14-13	1720	/	/	X	
19	VGWU 118-04 (30')	G	2			X						X	5-14-13	1728	/	/	X	

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Relinquished By: [signature] Date: 5-15-13 Time: 1700
Received By: Jodi Henson
Relinquished By: Date: Time:
Received By:

Phone Result: ☐ Yes ☑ No Add'l Phone #:
Fax Result: ☑ Yes ☐ No Add'l Fax #:
REMARKS: Hold VGWU 118-04 Samples

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 3.0 3.4
Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials) [initials]

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#44

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ARCADIS-US
Project Manager: Jonathan Olson
Address: 2929 Briarpark Dr., Suit 300
City: Houston State: TX Zip: 77402
Phone #: 713.953.4874 Fax #: 713.977.4620
Project #: Bo04860.0000 Project Owner: Chevron
Project Name: Chevron Buckeye
Project Location: Buckeye oil field
Sampler Name:

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER	ACID/BASE	ICE / COOL	OTHER: None	DATE	TIME	Chlorides 300.1	TPH 8015, BTEX 8021B, P3.5tw	Hold	Cl⁻ added 5/31/13
H301174																		
20	V6wu 118-06 (2')	G	2			X						X	5-14-13	1232	/	/	X	X
21	V6wu 118-06 (5')	G	2			X						X	5-14-13	1238	/	/	X	
22	V6wu 118-06 (10')	G	2			X						X	5-14-13	1243	/	/	X	
23	V6wu 118-06 (15')	G	2			X						X	5-14-13	1248	/	/	X	
24	V6wu 118-06 (20')	G	2			X						X	5-14-13	1255	/	/	X	
25	V6wu 118-06 (25')	G	2			X						X	5-14-13	1305	/	/	X	
26	V6wu 118-06 (30')	G	2			X						X	5-14-13	1310	/	/	X	
27	V6wu 118-05 (2')	G	2			X						X	5-14-13	1317	/	/	X	X
28	V6wu 118-05 (5')	G	2			X						X	5-14-13	1319	/	/	X	
29	V6wu 118-05 (10')	G	2			X						X	5-14-13	1320	/	/	X	

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Relinquished By: [signature] Date: 5-15-13 Time: 11:00 Received By: Jodi Henson

Relinquished By: Date: Time: Received By:

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☑ Yes ☐ No Add'l Fax #:
REMARKS: Hold V6wu 118-06 & V6wu 118-05 Samples

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 3°c

Sample Condition: Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No

CHECKED BY: (Initials) [initials]

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ARCADIS-US
Project Manager: Jonathan Olson
Address: 2929 Briarpark Dr., Suit 300
City: Houston State: TX Zip: 77402
Phone #: 713.953.4879 Fax #: 713.977.4620
Project #: B004860.0000 Project Owner: Chevron
Project Name: Chevron Buckeye
Project Location: Buckeye - oil field
Sampler Name:

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

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	ANALYSIS REQUEST: Chlorides, 300.1	TPH 8015, BTEX 8021B, Moisture	Hold
H5D1174																	
30	VGWU 118-05(15')	G	2			X						X	5-14-13	1325	1	1	X
31	VGWU 118-05(20')	G	2			X						X	5-14-13	1328	1	1	X
32	VGWU 118-05(25')	G	2			X						X	5-14-13	1335	1	1	X
33	VGWU 118-05(30')	G	2			X						X	5-14-13	1340	1	1	X
34	VGWU 118-01(2')	G	2			X						X	5-14-13	1354	1	1	
35	VGWU 118-01(5') 2nd 5-14-13	G	2			X						X	5-14-13	1357	1	1	
36	VGWU 118-01(10')	G	2			X						X	5-14-13	1400	1	1	
37	VGWU 118-01(15')	G	2			X						X	5-14-13	1405	1	1	
38	VGWU 118-01(20')	G	2			X						X	5-14-13	1412	1	1	
39	VGWU 118-01(25')	G	2			X						X	5-14-13	1417	1	1	

LEASE 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 direct, indirect and consequential damages, 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: 5-15-13 Time: 1100 Received By: Jodi Henson
Relinquished By: Date: Time: Received By:

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☑ Yes ☐ No Add'l Fax #:
REMARKS: Hold VGWU 118-05 samples

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 3°C

Sample Condition: Cool ☑ Yes ☐ No Intact ☐ Yes ☐ No
CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ARCADIS-US
Project Manager: Jonathan Olson
Address: 2929 Briarpark Dr., Suit 300
City: Houston State: TX Zip: 77402
Phone #: 713.953.4874 Fax #: 713.977.4620
Project #: B0044860.0000 Project Owner: Chevron
Project Name: Chevron Buckeye
Project Location: Buckeye oil Field
Sampler Name:

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER	ACID/BASE	ICE / COOL	OTHER None	DATE	TIME	Moisture 300.1	TPH 8015, BTEX 8021B, Moisture	Cl⁻ added 5/31/13
H301174	VGWU 118-01 (30')																
40	~~VGWU-01 (30')~~ RW 5-14-13	G	2			X						X	5-14-13	1425	1	/	
41	~~VGWU-03 (2')~~ VGWU 118 (2') RW 5-14-13	G	2			X						X	5-14-13	1432	1	/	
42	VGWU 118-03 (5')	G	2			X						X	5-14-13	1437	1	/	
43	VGWU 118-03 (10')	G	2			X						X	5-14-13	1440	1	/	
44	VGWU 118-03 (15')	G	2			X						X	5-14-13	1445	1	/	
45	VGWU 118-03 (20')	G	2			X						X	5-14-13	1450	1	/	
46	VGWU 118-03 (25')	G	2			X						X	5-14-13	1500	1	/	
47	VGWU 118-03 (30')	G	2			X						X	5-14-13	1503	1	/	X
48	VGWU 118-07 (2')	G	2			X						X	5-14-13	1517	1	/	
49	VGWU 118-07 (5')	G	2			X						X	5-14-13	~~1510~~ 1520 RW 5-14-13	1	/	

PLEASE NOTE: [illegible]

Relinquished By: [signature] Date: 5-15-13 Time: 1700
Received By: Jodi Henson
Relinquished By: Date: Time:
Received By:

Delivered By: (Circle One) 3°C
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials) [initials]

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 (575) 393-2326

#54

Analytical Report 532328

for

ARCADIS

Project Manager: Arti Patel

Chevron Sites

713.953.4841

20-JUL-16

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)

20-JUL-16

Project Manager: **Arti Patel**
ARCADIS
1004 N. Big Spring St.
Midland, TX 79701

Reference: XENCO Report No(s): **532328**
Chevron Sites
Project Address: Hobbs, NM

Arti Patel:

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) 532328. 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. 532328 will be filed for 60 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 532328

ARCADIS, Midland, TX

Chevron Sites

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU61-08B 80'	S	06-22-16 00:00	- 80 ft	532328-001
VGWU61-09B 80'	S	06-22-16 00:00	- 80 ft	532328-008
VGWU118-17 2'	S	06-23-16 00:00	- 2 ft	532328-009
VGWU118-17 4'	S	06-23-16 00:00	- 4 ft	532328-010
VGWU118-13 2'	S	06-23-16 00:00	- 2 ft	532328-013
VGWU118-13 4'	S	06-23-16 00:00	- 4 ft	532328-014
VGWU118-14 2'	S	06-23-16 00:00	- 2 ft	532328-015
VGWU118-14 4'	S	06-23-16 00:00	- 4 ft	532328-016
VGWU118-11 2'	S	06-23-16 00:00	- 2 ft	532328-017
VGWU118-11 4'	S	06-23-16 00:00	- 4 ft	532328-018
VGWU118-12 2'	S	06-23-16 00:00	- 2 ft	532328-019
VGWU118-12 4'	S	06-23-16 00:00	- 4 ft	532328-020
VGWU118-09 2'	S	06-23-16 00:00	- 2 ft	532328-021
VGWU118-09 4'	S	06-23-16 00:00	- 4 ft	532328-022
VGWU85-8 2'	S	06-21-16 00:00	- 2 ft	532328-023
VGWU85-8 4'	S	06-21-16 00:00	- 4 ft	532328-024
VGWU85-7 2'	S	06-21-16 00:00	- 2 ft	532328-025
VGWU85-7 4'	S	06-21-16 00:00	- 4 ft	532328-026
VGWU85-5 2'	S	06-21-16 00:00	- 2 ft	532328-027
VGWU85-5 4'	S	06-21-16 00:00	- 4 ft	532328-028
VGWU85-4B 30'	S	06-21-16 00:00	- 30 ft	532328-029
VGWU85-3B 30'	S	06-21-16 00:00	- 30 ft	532328-031
VGWU85-9 2'	S	06-21-16 00:00	- 2 ft	532328-033
VGWU85-9 4'	S	06-21-16 00:00	- 4 ft	532328-034
VGWU85-10 2'	S	06-21-16 00:00	- 2 ft	532328-035
VGWU85-10 4'	S	06-21-16 00:00	- 4 ft	532328-036
VGWU61-4B 30'	S	06-22-16 00:00	- 30 ft	532328-042
VGWU118-08 2'	S	06-23-16 00:00	- 2 ft	532328-056
VGWU118-08 4'	S	06-23-16 00:00	- 4 ft	532328-058
VGWU040-02B 80'	S	06-23-16 00:00	- 80 ft	532328-062
VGWU61-09B 30'	S	06-22-16 00:00	- 30 ft	Not Analyzed
VGWU61-09B 35'	S	06-22-16 00:00	- 35 ft	Not Analyzed
VGWU61-09B 40'	S	06-22-16 00:00	- 40 ft	Not Analyzed
VGWU61-09B 45'	S	06-22-16 00:00	- 45 ft	Not Analyzed
VGWU61-09B 55'	S	06-22-16 00:00	- 55 ft	Not Analyzed
VGWU61-09B 65'	S	06-22-16 00:00	- 65 ft	Not Analyzed
VGWU118-16 2'	S	06-23-16 00:00	- 2 ft	Not Analyzed
VGWU118-16 4'	S	06-23-16 00:00	- 4 ft	Not Analyzed
VGWU85-4B 35'	S	06-21-16 00:00	- 35 ft	Not Analyzed
VGWU85-3B 35'	S	06-21-16 00:00	- 35 ft	Not Analyzed
VGWU85-3B 40'	S	06-21-16 00:00	- 40 ft	Not Analyzed
VGWU85-3B 45'	S	06-21-16 00:00	- 45 ft	Not Analyzed
VGWU85-4B 40'	S	06-21-16 00:00	- 40 ft	Not Analyzed

Sample Cross Reference 532328

ARCADIS, Midland, TX

Chevron Sites

VGWU85-4B 45'	S	06-21-16 00:00	- 45 ft	Not Analyzed
Blank	S	06-22-16 00:00		Not Analyzed
VGWU61-4B 35'	S	06-22-16 00:00	- 35 ft	Not Analyzed
VGWU61-4B 40'	S	06-22-16 00:00	- 40 ft	Not Analyzed
VGWU61-4B 45'	S	06-22-16 00:00	- 45 ft	Not Analyzed
VGWU61-8B 30'	S	06-22-16 00:00	- 30 ft	Not Analyzed
VGWU61-8B 35'	S	06-22-16 00:00	- 35 ft	Not Analyzed
VGWU61-8B 40'	S	06-22-16 00:00	- 40 ft	Not Analyzed
VGWU61-8B 45'	S	06-22-16 00:00	- 45 ft	Not Analyzed
VGWU61-8B 50'	S	06-22-16 00:00	- 50 ft	Not Analyzed
VGWU61-8B 55'	S	06-22-16 00:00	- 55 ft	Not Analyzed
VGWU61-8B 60'	S	06-22-16 00:00	- 60 ft	Not Analyzed
VGWU61-8B 65'	S	06-22-16 00:00	- 65 ft	Not Analyzed
VGWU61-8B 70'	S	06-22-16 00:00	- 70 ft	Not Analyzed
VGWU61-8B 75'	S	06-22-16 00:00	- 75 ft	Not Analyzed
VGWU118-10 2'	S	06-23-16 00:00	- 2 ft	Not Analyzed
VGWU118-10 4'	S	06-23-16 00:00	- 4 ft	Not Analyzed
VGWU040-02B 45'	S	06-23-16 00:00	- 45 ft	Not Analyzed
VGWU040-02B 55'	S	06-23-16 00:00	- 55 ft	Not Analyzed
VGWU040-02B 65'	S	06-23-16 00:00	- 65 ft	Not Analyzed
VGWU040-02B 75'	S	06-23-16 00:00	- 75 ft	Not Analyzed

CASE NARRATIVE

Client Name: ARCADIS

Project Name: Chevron Sites

Project ID: *713.953.4841*
Work Order Number(s): *532328*

Report Date: *20-JUL-16*
Date Received: *06/24/2016*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 532328

ARCADIS, Midland, TX

Project Name: Chevron Sites

Project Id: 713.953.4841
Contact: Arti Patel
Project Location: Hobbs, NM

Date Received in Lab: Fri Jun-24-16 10:05 am
Report Date: 20-JUL-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	532328-001		532328-008		532328-009		532328-010		532328-013		532328-014	
	Field Id:	VGWU61-08B 80'		VGWU61-09B 80'		VGWU118-17 2'		VGWU118-17 4'		VGWU118-13 2'		VGWU118-13 4'	
	Depth:	80 ft		80 ft		2 ft		4 ft		2 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-22-16 00:00		Jun-22-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jun-30-16 17:00		Jul-06-16 10:00		Jun-28-16 19:58		Jun-28-16 20:05		Jun-28-16 20:13		Jun-28-16 20:21	
	Analyzed:	Jun-30-16 21:26		Jul-06-16 16:07		Jun-28-16 19:58		Jun-28-16 20:05		Jun-28-16 20:13		Jun-28-16 20:21	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		374	10.0	1440	100	248	10.0	115	10.0	13.2	10.0	125	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 532328

ARCADIS, Midland, TX

Project Name: Chevron Sites

Project Id: 713.953.4841
Contact: Arti Patel
Project Location: Hobbs, NM

Date Received in Lab: Fri Jun-24-16 10:05 am
Report Date: 20-JUL-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	532328-015		532328-016		532328-017		532328-018		532328-019		532328-020	
	Field Id:	VGWU118-14 2'		VGWU118-14 4'		VGWU118-11 2'		VGWU118-11 4'		VGWU118-12 2'		VGWU118-12 4'	
	Depth:	2 ft		4 ft		2 ft		4 ft		2 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jun-28-16 20:44		Jun-28-16 20:52		Jul-18-16 14:00		Jul-18-16 14:00		Jun-28-16 21:00		Jun-28-16 21:08	
	Analyzed:	Jun-28-16 20:44		Jun-28-16 20:52		Jul-18-16 20:50		Jul-18-16 21:13		Jun-28-16 21:00		Jun-28-16 21:08	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		298	10.0	325	50.0	28.7	10.0	300	50.0	374	50.0	246	50.0

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Kelsey Brooks
Project Manager

Certificate of Analysis Summary 532328

ARCADIS, Midland, TX

Project Name: Chevron Sites

Project Id: 713.953.4841
Contact: Arti Patel
Project Location: Hobbs, NM

Date Received in Lab: Fri Jun-24-16 10:05 am
Report Date: 20-JUL-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	532328-021		532328-022		532328-023		532328-024		532328-025		532328-026	
	Field Id:	VGWU118-09 2'		VGWU118-09 4'		VGWU85-8 2'		VGWU85-8 4'		VGWU85-7 2'		VGWU85-7 4'	
	Depth:	2 ft		4 ft		2 ft		4 ft		2 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-23-16 00:00		Jun-23-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jun-28-16 21:16		Jun-28-16 21:23		Jun-28-16 21:47		Jun-28-16 21:55		Jun-28-16 22:18		Jun-28-16 22:26	
	Analyzed:	Jun-28-16 21:16		Jun-28-16 21:23		Jun-28-16 21:47		Jun-28-16 21:55		Jun-28-16 22:18		Jun-28-16 22:26	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		42.2	10.0	50.9	10.0	100	10.0	53.0	10.0	533	50.0	879	50.0

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 532328

ARCADIS, Midland, TX

Project Name: Chevron Sites

Project Id: 713.953.4841
Contact: Arti Patel
Project Location: Hobbs, NM

Date Received in Lab: Fri Jun-24-16 10:05 am
Report Date: 20-JUL-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	532328-027		532328-028		532328-029		532328-031		532328-033		532328-034	
	Field Id:	VGWU85-5 2'		VGWU85-5 4'		VGWU85-4B 30'		VGWU85-3B 30'		VGWU85-9 2'		VGWU85-9 4'	
	Depth:	2 ft		4 ft		30 ft		30 ft		2 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00		Jun-21-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jul-18-16 14:00		Jul-18-16 14:00		Jun-28-16 22:34		Jun-28-16 22:41		Jun-28-16 22:49		Jun-29-16 11:00	
	Analyzed:	Jul-18-16 21:21		Jul-18-16 21:44		Jun-28-16 22:34		Jun-28-16 22:41		Jun-28-16 22:49		Jun-29-16 14:08	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4220	500	1840	100	66.7	10.0	57.5	10.0	279	50.0	523	50.0

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 532328

ARCADIS, Midland, TX

Project Name: Chevron Sites

Project Id: 713.953.4841
Contact: Arti Patel
Project Location: Hobbs, NM

Date Received in Lab: Fri Jun-24-16 10:05 am
Report Date: 20-JUL-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	532328-035		532328-036		532328-042		532328-056		532328-058		532328-062	
	Field Id:	VGWU85-10 2'		VGWU85-10 4'		VGWU61-4B 30'		VGWU118-08 2'		VGWU118-08 4'		VGWU040-02B 80'	
	Depth:	2 ft		4 ft		30 ft		2 ft		4 ft		80 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-21-16 00:00		Jun-21-16 00:00		Jun-22-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00		Jun-23-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jul-18-16 14:00		Jul-18-16 14:00		Jun-29-16 11:00		Jun-29-16 11:00		Jun-29-16 11:00		Jun-30-16 17:00	
	Analyzed:	Jul-18-16 21:52		Jul-18-16 22:00		Jun-29-16 14:16		Jun-29-16 14:39		Jun-29-16 14:47		Jun-30-16 21:42	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		85.1	10.0	495	50.0	50.1	10.0	<10.0	10.0	<10.0	10.0	93.3	10.0

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

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

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: Chevron Sites

Work Order #: 532328 **Project ID:** 713.953.4841

Analyst: MNR **Date Prepared:** 06/28/2016 **Date Analyzed:** 06/28/2016

Lab Batch ID: 997156 **Sample:** 710442-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	226	90	250	230	92	2	90-110	20	

Analyst: MNR **Date Prepared:** 06/29/2016 **Date Analyzed:** 06/29/2016

Lab Batch ID: 997207 **Sample:** 710482-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	242	97	250	248	99	2	90-110	20	

Analyst: MNR **Date Prepared:** 06/30/2016 **Date Analyzed:** 06/30/2016

Lab Batch ID: 997412 **Sample:** 710538-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	262	105	250	262	105	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: Chevron Sites

Work Order #: 532328 **Project ID:** 713.953.4841

Analyst: MNR **Date Prepared:** 07/06/2016 **Date Analyzed:** 07/06/2016

Lab Batch ID: 997589 **Sample:** 710653-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	236	94	250	232	93	2	90-110	20	

Analyst: MNR **Date Prepared:** 07/18/2016 **Date Analyzed:** 07/18/2016

Lab Batch ID: 998310 **Sample:** 711075-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	246	98	250	250	100	2	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS Recoveries

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 997156 **Project ID:** 713.953.4841

Date Analyzed: 06/28/2016 **Date Prepared:** 06/28/2016 **Analyst:** MNR

QC- Sample ID: 532328-022 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	50.9	250	272	88	80-120	

Lab Batch #: 997156

Date Analyzed: 06/28/2016 **Date Prepared:** 06/28/2016 **Analyst:** MNR

QC- Sample ID: 532432-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	5010	12500	16800	94	80-120	

Lab Batch #: 997207

Date Analyzed: 06/29/2016 **Date Prepared:** 06/29/2016 **Analyst:** MNR

QC- Sample ID: 532377-004 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	<10.6	266	241	91	80-120	

Lab Batch #: 997207

Date Analyzed: 06/29/2016 **Date Prepared:** 06/29/2016 **Analyst:** MNR

QC- Sample ID: 532470-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	108	250	339	92	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Form 3 - MS Recoveries

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 997412 **Project ID:** 713.953.4841

Date Analyzed: 06/30/2016 **Date Prepared:** 06/30/2016 **Analyst:** MNR

QC- Sample ID: 532336-008 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	1910	2500	4260	94	80-120	

Lab Batch #: 997412

Date Analyzed: 06/30/2016 **Date Prepared:** 06/30/2016 **Analyst:** MNR

QC- Sample ID: 532377-043 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	44.4	305	326	92	80-120	

Lab Batch #: 997589

Date Analyzed: 07/06/2016 **Date Prepared:** 07/06/2016 **Analyst:** MNR

QC- Sample ID: 532769-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	945	2500	3210	91	80-120	

Lab Batch #: 997589

Date Analyzed: 07/06/2016 **Date Prepared:** 07/06/2016 **Analyst:** MNR

QC- Sample ID: 532769-011 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	1190	2500	3550	94	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Form 3 - MS Recoveries

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 998310 **Project ID:** 713.953.4841

Date Analyzed: 07/18/2016 **Date Prepared:** 07/18/2016 **Analyst:** MNR

QC- Sample ID: 532328-017 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300 Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	28.7	250	258	92	80-120	

Lab Batch #: 998310

Date Analyzed: 07/18/2016 **Date Prepared:** 07/18/2016 **Analyst:** MNR

QC- Sample ID: 533521-001 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300 Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	<10.0	250	274	110	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Sample Duplicate Recovery

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 997156 **Project ID:** 713.953.4841

Date Analyzed: 06/28/2016 21:31 **Date Prepared:** 06/28/2016 **Analyst:** MNR

QC- Sample ID: 532328-022 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	50.9	44.2	14	20	

Lab Batch #: 997156

Date Analyzed: 06/28/2016 19:42 **Date Prepared:** 06/28/2016 **Analyst:** MNR

QC- Sample ID: 532432-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	5010	4940	1	20	

Lab Batch #: 997207

Date Analyzed: 06/29/2016 15:26 **Date Prepared:** 06/29/2016 **Analyst:** MNR

QC- Sample ID: 532377-004 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	<10.6	<10.6	0	20	U

Lab Batch #: 997207

Date Analyzed: 06/29/2016 13:37 **Date Prepared:** 06/29/2016 **Analyst:** MNR

QC- Sample ID: 532470-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	108	108	0	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

Sample Duplicate Recovery

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 997412 **Project ID:** 713.953.4841

Date Analyzed: 06/30/2016 20:08 **Date Prepared:** 06/30/2016 **Analyst:** MNR

QC- Sample ID: 532336-008 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	1910	1910	0	20	

Lab Batch #: 997412

Date Analyzed: 06/30/2016 18:11 **Date Prepared:** 06/30/2016 **Analyst:** MNR

QC- Sample ID: 532377-043 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	44.4	37.4	17	20	

Lab Batch #: 997589

Date Analyzed: 07/06/2016 11:20 **Date Prepared:** 07/06/2016 **Analyst:** MNR

QC- Sample ID: 532769-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	945	943	0	20	

Lab Batch #: 997589

Date Analyzed: 07/06/2016 14:03 **Date Prepared:** 07/06/2016 **Analyst:** MNR

QC- Sample ID: 532769-011 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	1190	1240	4	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

Sample Duplicate Recovery

Project Name: Chevron Sites

Work Order #: 532328

Lab Batch #: 998310 **Project ID:** 713.953.4841

Date Analyzed: 07/18/2016 20:57 **Date Prepared:** 07/18/2016 **Analyst:** MNR

QC- Sample ID: 532328-017 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	28.7	25.5	12	20	

Lab Batch #: 998310

Date Analyzed: 07/18/2016 19:08 **Date Prepared:** 07/18/2016 **Analyst:** MNR

QC- Sample ID: 533521-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	<10.0	<10.0	0	20	U

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS

Date/ Time Received: 06/24/2016 10:05:00 AM

Work Order #: 532328

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

Temperature Measuring device used :

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**Yes**
#5 *Custody Seals intact on shipping container/ cooler?	**Yes**
#6 Custody Seals intact on sample bottles?	**Yes**
#7 *Custody Seals Signed and dated?	**Yes**
#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)?	**Yes**
#21 VOC samples have zero headspace (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mary Negron Date: 06/24/2016

Checklist reviewed by: Kelsey Brooks Date: 06/24/2016

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 5

Lab Work Order # 532328

Arti Patel

Send Results to:

Contact & Company Name: ~~Kent Wiens~~	Telephone: 713.953.4844 ~~207.751.5557~~
Address:	Fax: Arti.Patel@arcadis.com
City / State / Zip	E-mail Address: ~~[illegible]@arcadis~~
Project Name/Location (City, State):	Project #:
Sampler's Printed Name:	Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

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, 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	Chloride	REMARKS
61 SB-8 80 ✓	6-22			✓	Soil	VGWU61-88 (80') MAN	hold
SB-9 30 ✓	↓			↓	↓		hold
35 ✓							hold
40 ✓							hold
45 ✓							hold
55 ✓							hold
65 ✓							hold
↓ ↓ 80 ✓	↓			↓	↓		hold
118 SB-17 2 ✓	6-23			✓	Soil		hold
118 SB-17 4 ✓	↓			↓	↓		Test
5 SB-16 2							Test
SB-16 4							hold
SB-13 2							hold
↓ SB-13 4	↓			↓	↓		Test
							Test

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:	Cooler Custody Seal (✓)	
Cooler packed with ice (✓)	☒ Intact	☐ Not Intact
Specify Turnaround Requirements:	Sample Receipt:	
Shipping Tracking #:	Condition/Cooler Temp: 25.1°	

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Kent Wiens	Perla Resendiz		Mary Negron
Signature:	[signature]	Perla Resendiz		[signature]
Firm:	Arcadis	MS		Xenco
Date/Time:	6/23 1545	6/23 16:05		6/24/16 10

Temp: 3.2°C IR ID:R-8
C/F:0 Corrected Temp: 3.2°C

0826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy ...Retained by Arcadis

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 532328

Send Results to:

Contact & Company Name: Arti Patel ~~Kevin Wicks~~
Telephone: 713.253.4891 ~~[illegible]~~
Address:
Fax:
City: State: Zip:
E-mail Address:
Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

PARAMETER ANALYSIS & METHOD

Chloride

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: ____

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	Chloride							REMARKS
118 SB-14 2 ✓	6/23			✓	Soil								Test
118 SB-14 4 ✓	6/23												Test
118 SB-11 2 ✓													hold
118 SB-11 4 ✓													hold
118 SB-12 2 ✓													Test
118 SB-12 4 ✓													Test
118 SB-09 2 ✓													Test
118 SB-07 4 ✓													test
85 SB-8 2 ✓	6/21												Test
85 SB-8 4 ✓													test
85 SB-7 2													Test
SB-7 4													Test
SB-5 2													hold
SB-5 4													hold

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:

Cooler Custody Seal (✓)
☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 5.1°

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Kevin Wicks	Perla Rosenits		
Signature:	[signature]	Perla Rosenits		
Firm:	Arcadis	MS		
Date/Time:	6/23/16 1600	6/23/16 16:00		

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

Received by OCD: 12/5/2022 11:47:56 AM

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 532328

Send Results to:

Contact & Company Name: ~~Ken Wicks~~ Arti Patel
Telephone: 713-453-4541 ~~203-...~~
Address:
Fax:
City: State: Zip:
E-mail Address:

Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative	
Filtered (✓)	
# of Containers	
Container Information	

PARAMETER ANALYSIS & METHOD: Chloride

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	Chloride							REMARKS
85	SB-4B 30	6-21			✓	Soil								~~hold~~ Test
↓	SB-4B 35	↓			↓	↓								hold
↓	SB-3B 30	↓			↓	↓								~~hold~~ Test
↓	SB-3B 35	↓			↓	↓								hold
↓	SB-9 2	↓			↓	↓								Test
↓	SB-9 4	↓			↓	↓								Test
↓	SB-10 2	↓			↓	↓								hold
↓	SB-10 4	↓			↓	↓								hold
↓	SB-3B 40	↓			↓	↓								hold
↓	SB-3B 45	↓			↓	↓								~~Test~~ hold
↓	SB-4B 40	↓			↓	↓								hold
✓	SB-4B 45	✓			↓	↓								~~Test~~ hold

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:

Cooler Custody Seal (✓)
☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 25.1

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Ken Wicks	Printed Name: Perla Resendis	Printed Name:	Printed Name:
Signature: [signature]	Signature: Perla Resendis	Signature:	Signature:
Firm: Arcadis	Firm/Courier: MS	Firm/Courier:	Firm:
Date/Time: 6/23/16 1600	Date/Time: 6/23/16 1600	Date/Time:	Date/Time:

Released to Imaging: 12/5/2022 11:49:05 AM

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 532328

Send Results to:

Contact & Company Name: ~~[illegible]~~ Arti Patel
Telephone: ~~[illegible]~~ 713.753.4841
Address:
Fax:
City: State: Zip:
E-mail Address:
Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative	
Filtered (✓)	
# of Containers	
Container Information	

PARAMETER ANALYSIS & METHOD: Chloride

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: ____

Sample ID	Date	Time	Comp	Grab	Matrix	Chloride	REMARKS
61 SB-4 30 ✓	6-22			✓	Soil		~~hold~~ test
SB-4 35 ✓	↓			↓	↓		hold
SB-4 40 ✓	↓			↓	↓		hold
SB-4 45 ✓	↓			↓	↓		~~test~~ hold
SB-8 30 ✓	↓			↓	↓		hold
35 ✓	↓			↓	↓		hold
40 ✓	↓			↓	↓		hold
45 ✓	↓			↓	↓		hold
50 ✓	↓			↓	↓		hold
55 ✓	↓			↓	↓		hold
60 ✓	↓			↓	↓		hold
65 ✓	↓			↓	↓		hold
70 ✓	↓			↓	↓		hold
75 ✓	↓			↓	↓		hold

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:
Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 25.1

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Ken Wicks	Perla Resendiz		
Signature:	[signature]	Perla Resendiz		
Firm:	Arcadis	MJ		
Date/Time:	6/23/16 1600	6/23/16 1600		

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ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 5 of 5

Lab Work Order # 532328

Send Results to:

Contact & Company Name: ~~Ken Wiens~~ Arti Patel	Telephone: ~~[illegible]~~ 713-753-4841
Address:	Fax:
City / State / Zip	E-mail Address:
Project Name/Location (City, State):	Project #:
Sampler's Printed Name:	Sampler's Signature:

Preservative								
Filtered (✓)								
# of Containers								
Container Information								

PARAMETER ANALYSIS & METHOD: Chloride

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: ___

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	Chloride	REMARKS
~~SB~~ 118 SB-08 2	6-23			✓	SOL		TEST
↓ SB-10 2	6-23			✓	SOL		hold
SB-08 4	6-23			✓	SOL		TEST
↓ SB-10 4	6-23			✓	SOL		hold
040 SB-02 45	6-23			✓	SOL		hold
↓ 55	6-23			✓	SOL		hold
↓ 80	6-23			✓	SOL		hold
~~118 SB-13 23~~	~~6-23~~			✓	~~SOL~~		~~hold~~ test MAN
~~118 SB-13 43~~	~~6-23~~			✓	~~SOL~~		~~hold~~ ~~test~~ MAN
040 SB-02 65	6-23			✓	Soil		
040 SB-02 75	6-23						

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:	Cooler Custody Seal (✓) ☒ Intact ☐ Not Intact
☐ Cooler packed with ice (✓)	
Specify Turnaround Requirements:	Sample Receipt:
Shipping Tracking #:	Condition/Cooler Temp: 25

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Ken Wiens	Kerla Rosenty		
Signature:	[signature]	Kerla Rosents		
Firm/Courier:	Arcadis	MS		
Date/Time:	6/23 1600	6/23/16 1600		

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ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 5

Lab Work Order # 532328

Send Results to:
Contact & Company Name: ~~Ken Wells~~ Arti Patel
Telephone: ~~267...~~ 713.953.4841
Address:
Fax:
City / State / Zip:
E-mail Address: Arti.Patel@arcadis.com
Project Name/Location (City, State):
Project #: [illegible]
Sampler's Printed Name:
Sampler's Signature:

Preservative / Filtered (✓) / # of Containers / Container Information

PARAMETER ANALYSIS & METHOD: Chloride

Sample ID		Date	Time	Comp	Grab	Matrix	Parameter	Remarks
SB-8'	80 ✓	6-22			✓	Soil	VGWU01-09B (90')	hold
SB-9	30 ✓	↓			↓	↓	VGWU01-09B (30')	hold
	35 ✓						VGWU01-09B (35')	hold
	40 ✓						(40')	hold
	45 ✓						(45')	hold
	55 ✓						(55')	hold
	65 ✓						(65')	hold
↓	80 ✓	↓					(80')	hold
SB-17	2 ✓	6-23			✓	Soil	VGWU18-17 (2')	Test
SB-17	4 ✓						VGWU18-17 (4')	Test
SB-16	2						VGWU18-16 (2')	hold
SB-16	4						VGWU18-16 (4')	hold
SB-13	2						VGWU18-13 (2')	Test
SB-13	4	↓			↓	↓	VGWU18-13 (4')	Test

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

Keys — 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(✓): Name corrections by [illegible] 07/12/16

Laboratory Information and Receipt

Cooler packed with ice (✓) / Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact

Sample Receipt: Condition/Cooler Temp: 25.1°

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Kenny Wells	Printed Name: Perla Resendiz	Printed Name:	Printed Name: Mary Negrete
Signature: [signature]	Signature: Perla Resendiz	Signature:	Signature: [signature]
Firm: Arcadis	Firm/Courier: MS	Firm/Courier:	Firm:
Date/Time: 6/23 1545	Date/Time: 6/23 16:05	Date/Time:	

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CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 532328

Send Results to:

Contact & Company Name: ~~Kevin Wilcus~~ Arti Patel
Telephone: ~~[illegible]~~ 713.255.5891
Address:
Fax:
City / State / Zip:
E-mail Address:
Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

PARAMETER ANALYSIS & METHOD: Chloride

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

Sample ID		Collection Date	Time	Comp	Grab	Matrix	Chloride		REMARKS
118 SB-14	2	6/23			✓	SO	✓	VGWU118-14(2')	Test
118 SB-14	4	6/23			✓	↓	✓	VGWU118-14(4')	Test
118 SB-11	2	↓			↓	↓	✓	VGWU118-11(2')	hold
118 SB-11	4	↓			↓	↓	✓	VGWU118-11(4')	hold
118 SB-12	2	↓			↓	↓	✓	VGWU118-12(2')	Test
118 SB-12	4	↓			↓	↓	✓	VGWU118-12(4')	Test
118 SB-09	2	↓			↓	↓	✓	VGWU118-09(2')	Test
118 SB-09	4	↓			↓	↓	✓	VGWU118-09(4')	Test
85 SB-8	2	6/21			↓	↓	✓	~~[illegible]~~ VGWU85-08(2')	Test
85 SB-8	4	↓			↓	↓	✓	~~[illegible]~~ VGWU85-08(4')	Test
85 SB-7	2	↓			↓	↓		VGWU85-07(2')	Test
SB-7	4	↓			↓	↓		VGWU85-07(4')	Test
SB-5	2	↓			↓	↓		VGWU85-05(2')	hold
SB-5	4	↓			↓	↓		VGWU85-05(4')	hold

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Sample name corrections by [illegible] 07/18/16

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:

Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 25.1°

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	Kevin Wilcus	Verla Roberts		
Signature	[signature]	Verla Roberts		
Firm	Arcadis	MO		
Date/Time	6/23/16 1600	6/23/16 16:00		

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 3 of 5

Lab Work Order # 532328

Send Results to:

Contact & Company Name: ~~Ken Wicks~~ Arti Pathi

Telephone: 713-953-4847 ~~[illegible]~~

Address:

Fax:

City / State / Zip:

E-mail Address:

Project Name/Location (City, State):

Project #:

Sampler's Printed Name:

Sampler's Signature:

Preservative	
Filtered (✓)	
# of Containers	
Container Information	

PARAMETER ANALYSIS & METHOD: Chloride

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: ___

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	Chloride	REMARKS
85 SB-4B 30	6-21			✓	Soil	VGWU85-4B (30')	~~hold~~ Test
SB-4B 35	↓			↓	↓	VGWU85-4B (35')	hold
SB-3B 30						VGWU85-3B (30')	~~hold~~ Test
SB-3B 35						VGWU85-3B (35')	hold
SB-9 2						VGWU85-09 (2')	Test
SB-9 4						VGWU85-09 (4')	Test
SB-10 2						VGWU85-10 (2')	hold
SB-10 4						VGWU85-10 (4')	hold
SB-3B 40						VGWU85-3B (40')	hold
SB-3B 45						VGWU85-3B (45')	~~Test~~ hold
SB-4B 40						VGWU85-~~4B~~ 4B (40')	hold
SB-4B 45						VGWU85-4B (45')	~~Test~~ hold

Special Instructions/Comments:

☐ Special QA/QC Instructions (✓):

Sample name corrections AAP 07/12/16.

Laboratory Information and Receipt

Lab Name:

☐ Cooler packed with ice (✓)

Specify Turnaround Requirements:

Shipping Tracking #:

Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact

Sample Receipt:

Condition/Cooler Temp: 2.5 / 1

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	Ken Wicks	Perla Resendiz		
Signature	[signature]	Perla Resendis		
Firm/Courier	Arcadis	MS		
Date/Time	6/23/16 1600	6/23/16 1600		

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order # 532328

Send Results to:

Contact & Company Name: Keerti Putti ~~[illegible]~~
Telephone: 713.953.4841 ~~[illegible]~~
Address:
Fax:
City / State / Zip:
E-mail Address:
Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative	
Filtered (✓)	
# of Containers	
Container Information	

PARAMETER ANALYSIS & METHOD: Chloride

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	Chloride	REMARKS
C1	SB-4 30 ✓	6-22			✓	Soil	VGWU61-4B(30')	~~hold~~ test
	SB-4 35 ✓						VGWU61-4B(35')	hold
	SB-4 40 ✓						VGWU61-4B(40')	hold
	SB-4 45 ✓						VGWU61-4B(45')	~~test~~ hold
	SB-8 30 ✓						VGWU61-8B(30')	hold
	35 ✓						VGWU61-8B(35')	hold
	40 ✓						VGWU61-8B(40')	hold
	45 ✓						VGWU61-8B(45')	hold
	50 ✓						VGWU61-8B(50')	hold
	55 ✓						VGWU61-8B(55')	hold
	60 ✓						VGWU61-8B(60')	hold
	65 ✓						VGWU61-8B(65')	hold
	70 ✓						VGWU61-8B(70')	hold
	75 ✓						VGWU61-8B(75')	hold

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Sample name corrections A. Patel AAP 04/12/16

Laboratory Information and Receipt

Lab Name:	Cooler Custody Seal (✓) ☒ Intact ☐ Not Intact	**Relinquished By** Printed Name: Ken Wicks	**Received By** Printed Name: Perla Resendis	**Relinquished By** Printed Name:	**Laboratory Received By** Printed Name:
☐ Cooler packed with ice (✓)		Signature: [signature]	Signature: Perla Resendis	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier: MJ	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: 25.1	Date/Time: 6/23/16 1600	Date/Time: 6/23/16 1604	Date/Time:	Date/Time:

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ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 5 of 5

Lab Work Order # 532328

Send Results to:

Contact & Company Name: Art Pyatt (Hope Wells, struck through)
Telephone: 713-753-4841 (earlier number struck through)
Address:
Fax:
City: State: Zip:
E-mail Address:
Project Name/Location (City, State):
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative / Filtered (✓) / # of Containers / Container Information

PARAMETER ANALYSIS & METHOD: Chloride

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: ____

Sample ID	Date	Time	Comp	Grab	Matrix	Chloride	REMARKS
~~SB~~ 118 SB-08 2	6-23			✓	Soil	VGWU118-08 (2')	Test
SB-10 2	6-23			✓	Soil	VGWU118-10 (2')	hold
SB-08 4	6-23			✓	Soil	VGWU118-08 (4')	Test
SB-10 4	6-23			✓	Soil	VGWU118-10 (4')	hold
040 SB-02 45	6-23			✓	Soil	VGWU040-02B (45')	hold
55	6-23			✓	Soil	VGWU040-02B (55')	hold
80	6-23			✓	Soil	VGWU040-02B (80')	hold
~~118 SB-13 2~~	~~6-23~~			✓	~~Soil~~		hold
~~118 SB-13 4~~	~~6-23~~			✓	~~Soil~~		~~hold~~ test MAN
040 SB-02 65	6-23			✓	Soil	VGWU040-02B (65')	~~hold~~ test MAN
040 SB-02 75	6-23			✓	Soil	VGWU040-02B (75')	

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:
Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 25.1

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	Key Wiens	Perla Resendiz		
Signature	[signature]	Perla Resendiz		
Firm	Arcadis	MJ		
Date/Time	6/23 1600	6/23/16 1605		

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS

Date/ Time Received: 06/24/2016 10:05:00 AM

Work Order #: 532328

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

Temperature Measuring device used :

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**Yes**
#5 *Custody Seals intact on shipping container/ cooler?	**Yes**
#6 Custody Seals intact on sample bottles?	**Yes**
#7 *Custody Seals Signed and dated?	**Yes**
#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)?	**Yes**
#21 VOC samples have zero headspace (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mary Negron Date: 06/24/2016

Checklist reviewed by: Kelsey Brooks Date: 06/24/2016

Analytical Report 536864

for

Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer

11-OCT-16

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)

Table of Contents

11-OCT-16

Project Manager: **Jonathan Olsen**
Arcadis - Houston
2929 Briarpark Dr., Ste 300
Houston, TX 77042

Reference: XENCO Report No(s): **536864**
HES Transfer
Project Address: Lovington 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) 536864. 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. 536864 will be filed for 60 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 536864

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWUO40-12 (2')	S	09-13-16 08:50		536864-001
VGWUO40-12 (4')	S	09-13-16 08:55		536864-002
VGWUO40-17 (2')	S	09-13-16 10:30		536864-003
VGWUO40-17 (4')	S	09-13-16 10:34		536864-004
VGWUO40-16 (2')	S	09-13-16 09:58		536864-005
VGWUO40-16 (4')	S	09-13-16 10:00		536864-006
VGWUO40-16 (50')	S	09-13-16 10:48		536864-007
VGWUO40-19 (2')	S	09-13-16 11:46		536864-008
VGWUO40-19 (4')	S	09-13-16 11:50		536864-009
VGWUO40-18 (2')	S	09-13-16 12:14		536864-010
VGWUO40-18 (4')	S	09-13-16 12:16		536864-011
VGWUO40-18 (70')	S	09-13-16 13:23		536864-012
VGWU85-06 (2')	S	09-13-16 14:41		536864-013
VGWU85-06 (4')	S	09-13-16 14:42		536864-014
VGWU85-06 (10')	S	09-13-16 14:44		536864-016
VGWU85-06 (50')	S	09-13-16 15:27		536864-017
VGWU85-11 (2')	S	09-13-16 16:00		536864-018
VGWU85-11 (4')	S	09-13-16 16:01		536864-019
VGWUSAT3-03 (4')	S	09-14-16 09:49		536864-023
VGWUSAT3-03 (40')	S	09-14-16 10:40		536864-024
VGWUSAT3-05 (4')	S	09-14-16 11:11		536864-025
VGWUSAT3-05 (40')	S	09-14-16 11:55		536864-026
VGWU118-15 (2')	S	09-14-16 14:00		536864-027
VGWU118-15 (4')	S	09-14-16 14:01		536864-028
VGWU118-18 (2')	S	09-14-16 14:30		536864-031
VGWU118-18 (4')	S	09-14-16 14:31		536864-032
VGWU118-18 (7')	S	09-14-16 14:32		536864-033
VGWU118-18 (10')	S	09-14-16 14:33		536864-034
VGWU85-06 (7')	S	09-13-16 14:43		Not Analyzed
VGWU85-11 (7')	S	09-13-16 16:02		Not Analyzed
VGWU85-11 (10')	S	09-13-16 16:05		Not Analyzed
VGWU85-11 (11')	S	09-13-16 16:21		Not Analyzed
VGWU118-15 (7')	S	09-14-16 14:02		Not Analyzed
VGWU118-15 (10')	S	09-14-16 14:03		Not Analyzed

CASE NARRATIVE

Client Name: Arcadis - Houston
Project Name: HES Transfer

Project ID:
Work Order Number(s): *536864*

Report Date: *11-OCT-16*
Date Received: *09/15/2016*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Jonathan Olsen
Project Location: Lovington NM

Date Received in Lab: Thu Sep-15-16 11:30 am
Report Date: 11-OCT-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	536864-001		536864-002		536864-003		536864-004		536864-005		536864-006	
	Field Id:	VGWUO40-12 (2')		VGWUO40-12 (4')		VGWUO40-17 (2')		VGWUO40-17 (4')		VGWUO40-16 (2')		VGWUO40-16 (4')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16 08:50		Sep-13-16 08:55		Sep-13-16 10:30		Sep-13-16 10:34		Sep-13-16 09:58		Sep-13-16 10:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Sep-20-16 08:00		Sep-20-16 08:00		Sep-20-16 08:00		Sep-20-16 08:00		Sep-20-16 08:00		Sep-20-16 08:00	
	Analyzed:	Sep-20-16 14:44		Sep-20-16 14:51		Sep-20-16 14:59		Sep-20-16 15:07		Sep-20-16 15:15		Sep-20-16 15:23	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		86.6	10.0	54.0	10.0	52.8	10.0	34.8	10.0	329	10.0	881	10.0

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Kelsey Brooks
Project Manager

Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:

Contact: Jonathan Olsen

Project Location: Lovington NM

Date Received in Lab: Thu Sep-15-16 11:30 am

Report Date: 11-OCT-16

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	536864-007		536864-008		536864-009		536864-010		536864-011		536864-012	
	Field Id:	VGWUO40-16 (50')		VGWUO40-19 (2')		VGWUO40-19 (4')		VGWUO40-18 (2')		VGWUO40-18 (4')		VGWUO40-18 (70')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16 10:48		Sep-13-16 11:46		Sep-13-16 11:50		Sep-13-16 12:14		Sep-13-16 12:16		Sep-13-16 13:23	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Sep-30-16 09:00		Sep-21-16 10:00		Sep-21-16 10:00		Sep-21-16 10:00		Sep-21-16 10:00		Sep-30-16 09:00	
	Analyzed:	Sep-30-16 13:18		Sep-21-16 12:10		Sep-21-16 12:33		Sep-21-16 12:41		Sep-21-16 12:49		Sep-30-16 13:26	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		16.4	5.00	54.2	10.0	59.6	10.0	65.3	10.0	318	10.0	142	5.00

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Kelsey Brooks
Project Manager

Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Jonathan Olsen
Project Location: Lovington NM

Date Received in Lab: Thu Sep-15-16 11:30 am
Report Date: 11-OCT-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	536864-013		536864-014		536864-016		536864-017		536864-018		536864-019	
	Field Id:	VGWU85-06 (2')		VGWU85-06 (4')		VGWU85-06 (10')		VGWU85-06 (50')		VGWU85-11 (2')		VGWU85-11 (4')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-13-16 14:41		Sep-13-16 14:42		Sep-13-16 14:44		Sep-13-16 15:27		Sep-13-16 16:00		Sep-13-16 16:01	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Sep-21-16 10:00		Sep-21-16 10:00		Sep-30-16 09:00		Oct-10-16 09:35		Sep-21-16 10:00		Sep-21-16 10:00	
	Analyzed:	Sep-21-16 12:57		Sep-21-16 17:46		Sep-30-16 13:47		Oct-10-16 19:19		Sep-21-16 13:28		Sep-21-16 13:36	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		6120	100	2540	50.0	3760	50.0	37.8	5.00	14.0	10.0	31.1	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:

Contact: Jonathan Olsen

Project Location: Lovington NM

Date Received in Lab: Thu Sep-15-16 11:30 am

Report Date: 11-OCT-16

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	536864-023		536864-024		536864-025		536864-026		536864-027		536864-028	
	Field Id:	VGWUSAT3-03 (4')		VGWUSAT3-03 (40')		VGWUSAT3-05 (4')		VGWUSAT3-05 (40')		VGWU118-15 (2')		VGWU118-15 (4')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Sep-14-16 09:49		Sep-14-16 10:40		Sep-14-16 11:11		Sep-14-16 11:55		Sep-14-16 14:00		Sep-14-16 14:01	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Sep-21-16 10:00		Sep-30-16 09:00		Sep-30-16 09:00		Oct-10-16 09:35		Sep-21-16 10:00		Sep-21-16 10:00	
	Analyzed:	Sep-21-16 13:44		Sep-30-16 13:54		Sep-30-16 14:01		Oct-10-16 19:26		Sep-21-16 13:51		Sep-21-16 13:59	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		454	10.0	12.0	5.00	943	5.00	ND	5.00	18.5	10.0	ND	10.0

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Kelsey Brooks
Project Manager

Certificate of Analysis Summary 536864

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Jonathan Olsen
Project Location: Lovington NM

Date Received in Lab: Thu Sep-15-16 11:30 am
Report Date: 11-OCT-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	536864-031		536864-032		536864-033		536864-034					
	Field Id:	VGWU118-18 (2')		VGWU118-18 (4')		VGWU118-18 (7')		VGWU118-18 (10')					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Sep-14-16 14:30		Sep-14-16 14:31		Sep-14-16 14:32		Sep-14-16 14:33					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Sep-21-16 10:00		Sep-21-16 10:00		Sep-30-16 09:00		Oct-10-16 09:35					
	Analyzed:	Sep-21-16 14:23		Sep-21-16 14:46		Sep-30-16 14:08		Oct-10-16 19:33					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		91.4	10.0	355	10.0	307	5.00	41.3	5.00				

Kelsey Brooks
Project Manager

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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: HES Transfer

Work Order #: 536864 **Project ID:**

Analyst: MNR **Date Prepared:** 09/20/2016 **Date Analyzed:** 09/20/2016

Lab Batch ID: 3000344 **Sample:** 713949-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	250	100	250	257	103	3	90-110	20	

Analyst: MNR **Date Prepared:** 09/21/2016 **Date Analyzed:** 09/21/2016

Lab Batch ID: 3000445 **Sample:** 713999-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	246	98	250	250	100	2	90-110	20	

Analyst: MNR **Date Prepared:** 09/30/2016 **Date Analyzed:** 09/30/2016

Lab Batch ID: 3001120 **Sample:** 714399-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	233	93	250	234	94	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: HES Transfer

Work Order #: 536864 **Project ID:**

Analyst: MNR **Date Prepared:** 10/10/2016 **Date Analyzed:** 10/10/2016

Lab Batch ID: 3001741 **Sample:** 714723-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	250	100	250	262	105	5	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: HES Transfer

Work Order # : 536864 **Project ID:**

Lab Batch ID: 3000344 **QC- Sample ID:** 536602-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/20/2016 **Date Prepared:** 09/20/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	2780	1250	4000	98	1250	4030	100	1	90-110	20	

Lab Batch ID: 3000344 **QC- Sample ID:** 536660-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/20/2016 **Date Prepared:** 09/20/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1970	1250	3230	101	1250	3210	99	1	90-110	20	

Lab Batch ID: 3000445 **QC- Sample ID:** 536864-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/21/2016 **Date Prepared:** 09/21/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	54.2	250	298	98	250	294	96	1	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: HES Transfer

Work Order # : 536864 **Project ID:**

Lab Batch ID: 3000445 **QC- Sample ID:** 536864-028 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/21/2016 **Date Prepared:** 09/21/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	250	100	250	244	98	2	90-110	20	

Lab Batch ID: 3001120 **QC- Sample ID:** 536657-006 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/30/2016 **Date Prepared:** 09/30/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	920	250	1160	96	250	1150	92	1	90-110	20	

Lab Batch ID: 3001120 **QC- Sample ID:** 537439-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 09/30/2016 **Date Prepared:** 09/30/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	4120	2500	6760	106	2500	6650	101	2	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: HES Transfer

Work Order # : 536864 **Project ID:**

Lab Batch ID: 3001741 **QC- Sample ID:** 538189-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/10/2016 **Date Prepared:** 10/10/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1720	250	1980	104	250	1970	100	1	90-110	20	

Lab Batch ID: 3001741 **QC- Sample ID:** 538316-006 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/10/2016 **Date Prepared:** 10/10/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	258	250	501	97	250	493	94	2	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

HES transfer sites
Chevron PM Rob Spear

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 3

Lab Work Order # 53698G4

Send Results to:

Contact & Company Name: Jonathan Olsen Arcadis	Telephone: 713.953.4874
Address: 2929 Briarpark Dr Suite 300	Fax:
City: Houston State: TX Zip: 77042	E-mail Address: Jonathan.Olsen@arcadis.com
Project Name/Location (City, State): Lovington, NM (HES)	Project #:
Sampler's Printed Name: Melisa Phan	Sampler's Signature:

Preservative	E								
Filtered (✓)	NA								
# of Containers	1								
Container Information	7								

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: _____

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Chloride	REMARKS
VGWU040-12(2')	9/13/16	850		X	SO	X	
VGWU040-12(4')	9/13/16	855		X	SO	X	
VGWU040-17(2')	9/13/16	1030		X	SO	X	
VGWU040-17(4')	9/13/16	1034		X	SO	X	
VGWU040-16(2')	9/13/16	958		X	SO	X	
VGWU040-16(4')	9/13/16	1000		X	SO	X	
VGWU040-16(58')	9/13/16	1048		X	SO	X	HOLD
VGWU040-19(2')	9/13/16	1146		X	SO	X	
VGWU040-19(4')	9/13/16	1150		X	SO	X	
VGWU040-18(2')	9/13/16	1214		X	SO	X	
VGWU040-18(4')	9/13/16	1216		X	SO	X	
VGWU040-18(70')	9/13/16	1323		X	SO	X	HOLD
~~VGWU040-85'~~ (4)							
VGWU85-06(2')	9/13/16	1441		X	SO	X	

Special Instructions/Comments:
Standard TAT

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓) ☒ Intact ☐ Not Intact	Printed Name: Melisa Phan	Printed Name: Dessirae Coss	Printed Name:	Printed Name: J KRAMER
☒ Cooler packed with ice (✓)		Signature:	Signature: Dessirae Coss	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt: Condition/Cooler Temp: 12 °C	Firm: Arcadis	Firm/Courier: MS.	Firm/Courier:	Firm: Xenco
Shipping Tracking #:		Date/Time: 9/14/16 1600	Date/Time: 9/14/16 4:00 pm	Date/Time:	Date/Time: 9.15.16 1130

20730626 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

Received 6.3°C

Chevron PM - Rob Speer
HES Transfer Sites

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 2 of 3

Lab Work Order # 536864

Send Results to:

Contact & Company Name: Jonathan Olsen, Arcadis
Address: 2929 Briarpark Dr, Suite 300
City: Houston, State: TX, Zip: 77092
Telephone: 713.953.4874
Fax:
E-mail Address: Jonathan.Olsen@arcadis.com
Project Name/Location (City, State): Lovington, NM (HES)
Project #:
Sampler's Printed Name: Melisa Pham
Sampler's Signature:

Preservative	E/C
Filtered (Y)	NA
# of Containers	1
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: Chloride	REMARKS
VGWU85-06(4')	9/13/16	1442		X	SO	X	
VGWU85-06(7')	9/13/16	1443		X	SO	X	HOLD
VGWU85-06(10')	9/13/16	1444		X	SO	X	HOLD
VGWU85-06(50')	9/13/16	1527		X	SO	X	HOLD
VGWU85-11(2')	9/13/16	1600		X	SO	X	~~HOLD~~
VGWU85-11(4')	9/13/16	1601		X	SO	X	
VGWU85-11(7')	9/13/16	1602		X	SO	X	HOLD
VGWU85-11(18')	9/13/16	1605		X	SO	X	HOLD
VGWU85-11(40')	9/13/16	1621		X	SO	X	HOLD
VGWUSAT3-03(4')	9/14/16	949		X	SO	X	
VGWUSAT3-03(40')	9/14/16	1040		X	SO	X	HOLD
VGWUSAT3-05(4')	9/14/16	1111		X	SO	X	HOLD
VGWUSAT3-05(40')	9/14/16	1155		X	SO	X	HOLD
VGWU118-15(2')	9/14/16	~~1300~~ 1400		X	SO	X	

Special Instructions/Comments: Standard TAT

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☒ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:
Cooler Custody Seal (✓): ☒ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 12°C

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Melisa Pham	Printed Name: Dessirae Cook	Printed Name:	Printed Name: KRAMER
Signature:	Signature: Dessirae Cook	Signature:	Signature:
Firm: Arcadis	Firm/Courier: MS	Firm/Courier:	Firm: XENCO
Date/Time: 9/14/16 1600	Date/Time: 9/14/16 4:00pm	Date/Time:	Date/Time: 9.15.16 1138

20730826 CofC AR Form 08.27.2015

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6.3°C

HES Transfer Sites
Chevron PM Rob Speer

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 3 of 3

Lab Work Order # 53608604

Send Results to:

Contact & Company Name: Jonathan Olsen Arcadis
Address: 2929 Briarpark Dr Suite 300
City: Houston State: TX Zip: 77042
Telephone: 713_953.4874
Fax:
E-mail Address: Jonathan.Olsen@arcadis.com
Project Name/Location (City, State): (HES) Lovington, NM
Project #:
Sampler's Printed Name: Melisa Phan
Sampler's Signature:

Preservative	E
Filtered (✓)	NA
# of Containers	1
Container Information	7

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, 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	Chloride	REMARKS
VGWW118-15(4')	9/14/16	1401					
VGWW118-15(7')	9/14/16	1402					HOLD
VGWW118-15(10')	9/14/16	1403					HOLD
VGWW118-18(2')	9/14/16	1430					
VGWW118-18(4')	9/14/16	1431					
VGWW118-18(7')	9/14/16	1432					HOLD
VGWW118-18(10')	9/14/16	1433					HOLD

Special Instructions/Comments: Standard TAT

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name: Melisa Phan	Printed Name: Dessirae Cobos	Printed Name:	Printed Name: J Kramer
☒ Cooler packed with ice (✓)	☒ Intact ☐ Not Intact	Signature:	Signature: Dessirae Cobos	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier: MS.	Firm/Courier:	Firm: Xenco
Shipping Tracking #:	Condition/Cooler Temp: 12°C	Date/Time: 9/14/16 1600	Date/Time: 9/14/16 4:00pm	Date/Time:	Date/Time: 9.15.16 1130

20730826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results; YELLOW – Lab copy; PINK – Retained by Arcadis

6.0-3°C


ORIGIN ID:HOBA (575) 392-7550
MAIL SERVICES ETC, LLC
4008 N GRIMES
HOBBS, NM 88240
UNITED STATES US
SHIP DATE: 14SEP16
ACTWGT: 27.0 LB MAN
CAD: 0909328/CAFE2915
DIMS: 29x18x13 IN
BILL RECIPIENT
TO XENCO LABORATORIES
XENCO LABORATORIES
1211 W FLORIDA AVE
MIDLAND TX 79701
(432) 563-1800
REF:
DEPT:
INV:
PO:
FedEx
Express
THU - 15 SEP 3:00P
STANDARD OVERNIGHT
TRK# 0201 6586 3912 4936
79701
TX-US LBB
41 MAFA

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 09/15/2016 11:30:00 AM

Work Order #: 536864

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)?	6.3
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**Yes**
#5 *Custody Seals intact on shipping container/ cooler?	**Yes**
#6 Custody Seals intact on sample bottles?	**Yes**
#7 *Custody Seals Signed and dated?	**Yes**
#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 (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**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
Jessica Kramer
Date: 09/15/2016

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 09/16/2016

Analytical Report 539912

for

Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer Sites

B0048611.1601

09-NOV-16

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)

09-NOV-16

Project Manager: **Jonathan Olsen**
Arcadis - Houston
2929 Briarpark Dr., Ste 300
Houston, TX 77042

Reference: XENCO Report No(s): **539912**
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) 539912. 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. 539912 will be filed for 60 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

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America

Sample Cross Reference 539912

Arcadis - Houston, Houston, TX

HES Transfer Sites

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Composite Soil #4 (0'-4')	S	11-07-16 08:35	0 - 4 ft	539912-001
Composite Soil #5 (0'-4')	S	11-07-16 08:48	0 - 4 ft	539912-002
Composite Soil #6 (0'-4')	S	11-07-16 08:52	0 - 4 ft	539912-003
Composite Soil #7 (0'-4')	S	11-07-16 09:06	0 - 4 ft	539912-004
Composite Soil #8 (0'-4')	S	11-07-16 09:08	0 - 4 ft	539912-005
Composite Soil #9 (0'-4')	S	11-07-16 09:12	0 - 4 ft	539912-006
Composite Soil #10 (0'-4')	S	11-07-16 09:15	0 - 4 ft	539912-007
Composite Soil #11 (0'-4')	S	11-07-16 12:17	0 - 4 ft	539912-008
Composite Soil #12 (0'-4')	S	11-07-16 12:20	0 - 4 ft	539912-009
Composite Soil #13 (0'-4')	S	11-07-16 12:23	0 - 4 ft	539912-010

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: HES Transfer Sites

Project ID: *B0048611.1601*
Work Order Number(s): *539912*

Report Date: *09-NOV-16*
Date Received: *11/08/2016*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 539912

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048611.1601
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Tue Nov-08-16 10:11 am
Report Date: 09-NOV-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	539912-001		539912-002		539912-003		539912-004		539912-005		539912-006	
	Field Id:	Composite Soil #4 (0'-4')		Composite Soil #5 (0'-4')		Composite Soil #6 (0'-4')		Composite Soil #7 (0'-4')		Composite Soil #8 (0'-4')		Composite Soil #9 (0'-4')	
	Depth:	0-4 ft		0-4 ft		0-4 ft		0-4 ft		0-4 ft		0-4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-07-16 08:35		Nov-07-16 08:48		Nov-07-16 08:52		Nov-07-16 09:06		Nov-07-16 09:08		Nov-07-16 09:12	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Nov-08-16 16:05		Nov-08-16 16:27		Nov-08-16 16:34		Nov-08-16 16:55		Nov-08-16 17:02		Nov-08-16 17:09	
	Analyzed:	Nov-08-16 16:05		Nov-08-16 16:27		Nov-08-16 16:34		Nov-08-16 16:55		Nov-08-16 17:02		Nov-08-16 17:09	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		403	5.00	87.6	5.00	3450	25.0	4370	50.0	433	5.00	1140	5.00

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 539912

Arcadis - Houston, Houston, TX

Project Name: HES Transfer Sites

Project Id: B0048611.1601
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Tue Nov-08-16 10:11 am
Report Date: 09-NOV-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	539912-007		539912-008		539912-009		539912-010					
	Field Id:	Composite Soil #10 (0'-4')		Composite Soil #11 (0'-4')		Composite Soil #12 (0'-4')		Composite Soil #13 (0'-4')					
	Depth:	0-4 ft		0-4 ft		0-4 ft		0-4 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Nov-07-16 09:15		Nov-07-16 12:17		Nov-07-16 12:20		Nov-07-16 12:23					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Nov-08-16 17:30		Nov-08-16 17:37		Nov-08-16 17:44		Nov-08-16 17:51					
	Analyzed:	Nov-08-16 17:30		Nov-08-16 17:37		Nov-08-16 17:44		Nov-08-16 17:51					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		24.3	5.00	4250	50.0	5000	50.0	1690	25.0				

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: HES Transfer Sites

Work Order #: 539912, 539912 **Project ID:** B0048611.1601

Analyst: MNR **Date Prepared:** 11/08/2016 **Date Analyzed:** 11/08/2016

Lab Batch ID: 3003523 **Sample:** 715859-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	237	95	250	246	98	4	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: HES Transfer Sites

Work Order # : 539912 **Project ID:** B0048611.1601

Lab Batch ID: 3003523 **QC- Sample ID:** 539906-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/08/2016 **Date Prepared:** 11/08/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1300	250	1550	100	250	1560	104	1	90-110	20	

Lab Batch ID: 3003523 **QC- Sample ID:** 539912-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/08/2016 **Date Prepared:** 11/08/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	3450	1250	4610	93	1250	4690	99	2	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

CHAIN OF CUSTODY

Page 1 Of 1

XENCO LABORATORIES

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Stafford,Texas (281-240-4200)

Dallas, Texas (214-902-0300)

Service Center - San Antonio, Texas (210-509-3334)

Odessa, Texas (432-563-1800)

Norcross, Georgia (770-449-8800)

Lakeland, Florida (863-646-8526)

Tampa, Florida (813-620-2000)

www.xenco.com

Xenco Quote #

Xenco Job # 539912

Client / Reporting Information

Company Name / Branch: Arcadis

Company Address: 10205 Westheimer Rd. Houston, TX 77042

Email: jonathan.olson@arcadis.com

Phone No: (713)953-4874

Project Contact: Jonathan Olson

Samplers's Name: Ryan Nanny

Project Information

Project Name/Number: HES Transfer Sites/B048611.1601

Project Location: Buckeye, NM

Invoice To:

PO Number:

Analytical Information

Chlorides

Matrix Codes

A= Air
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
WW= Waste Water
W = Wipe
O = Oil

WW= Waste Water

No.	Field ID / Point of Collection	Collection: Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Field Comments
1	Composite Soil #4 (0'-4')	0'-4'	11-7-16	0835	S	1								X	X
2	Composite Soil #5 (0'-4')	0'-4'	11-7-16	0848	S	1								X	X
3	Composite Soil #6 (0'-4')	0'-4'	11-7-16	0852	S	1								X	X
4	Composite Soil #7 (0'-4')	0'-4'	11-7-16	0906	S	1								X	X
5	Composite Soil #8 (0'-4')	0'-4'	11-7-16	0908	S	1								X	X
6	Composite Soil #9 (0'-4')	0'-4'	11-7-16	0912	S	1								X	X
7	Composite Soil #10 (0'-4')	0'-4'	11-7-16	0915	S	1								X	X
8	Composite Soil #11 (0'-4')	0'-4'	11-7-16	1217	S	1								X	X
9	Composite Soil #12 (0'-4')	0'-4'	11-7-16	1220	S	1								X	X
10	Composite Soil #13 (0'-4')	0'-4'	11-7-16	1223	S	1								X	X

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [x] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 3:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [x] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes: *24hr. TAT*

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		11-7-16 1615	1	2	11-7-16	2 11/8/16 1011
3	Relinquished by:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice: Y / N

Temp: IR ID:R-8 CF:+ 0.1 3.2 3.3C Corrected Temp:

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously

ORIGIN ID:HOBA (575) 392-7550
**
MAIL SERVICES ETC, LLC
4008 N GRIMES

HOBBS, NM 88240
UNITED STATES US

SHIP DATE: 07NOV16
ACTWGT: 71.0 LB MAN
CAD: 0909328/CAFE2915
DIMS: 25x15x14 IN

BILL RECIPIENT

TO XENCO LABORATORIES
XENCO LABORATORIES
1211 W FLORIDA AVE

MIDLAND TX 79701
(432) 563-1800
INV:
PO:
REF:
DEPT:

38C3/CBB1/329B

FedEx Express

E

TRK# 0201 6606 3912 9364

41 MAFA

TUE - 08 NOV 10:30A
PRIORITY OVERNIGHT

79701
TX-US LBB

Part # 156148-434 RRD 04/16

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 11/08/2016 10:11:00 AM

Work Order #: 539912

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)?	3.3
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**Yes**
#5 *Custody Seals intact on shipping container/ cooler?	**Yes**
#6 Custody Seals intact on sample bottles?	**No**
#7 *Custody Seals Signed and dated?	**No**
#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 (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**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
Jessica Kramer
Date: 11/08/2016

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 11/08/2016

Analytical Report 540193

for

Arcadis - Houston

Project Manager: Jonathan Olsen

HES Transfer

17-NOV-16

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)

Table of Contents

17-NOV-16

Project Manager: **Jonathan Olsen**
Arcadis - Houston
2929 Briarpark Dr., Ste 300
Houston, TX 77042

Reference: XENCO Report No(s): **540193**
HES Transfer
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) 540193. 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. 540193 will be filed for 60 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

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America

Sample Cross Reference 540193

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU118-19 (4')	S	11-08-16 13:37		540193-001
VGWU118-19 (7')	S	11-08-16 13:45		540193-002
VGWU118-19 (9')	S	11-08-16 14:02		Not Analyzed

Version: 1.%

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: HES Transfer

Project ID:
Work Order Number(s): *540193*

Report Date: *17-NOV-16*
Date Received: *11/10/2016*

Sample receipt non conformances and comments:

Level II Reporting

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 540193

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Jonathan Olsen
Project Location: Buckeye NM

Date Received in Lab: Thu Nov-10-16 06:50 pm
Report Date: 17-NOV-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	540193-001		540193-002									
	Field Id:	VGWU118-19 (4')		VGWU118-19 (7')									
	Depth:												
	Matrix:	SOIL		SOIL									
	Sampled:	Nov-08-16 13:37		Nov-08-16 13:45									
Inorganic Anions by EPA 300/300.1	***Extracted:***	Nov-16-16 12:59		Nov-16-16 12:59									
	Analyzed:	Nov-16-16 20:37		Nov-16-16 20:44									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Chloride		11.2	5.00	69.9	5.00								

Version: 1.%

Kelsey Brooks
Project Manager

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

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4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: HES Transfer

Work Order #: 540193 **Project ID:**

Analyst: SLU **Date Prepared:** 11/16/2016 **Date Analyzed:** 11/17/2016

Lab Batch ID: 3004056 **Sample:** 716177-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	265	106	250	259	104	2	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: HES Transfer

Work Order # : 540193 **Project ID:**

Lab Batch ID: 3004056 **QC- Sample ID:** 540433-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/16/2016 **Date Prepared:** 11/16/2016 **Analyst:** SLU

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	3840	2500	6490	106	2500	6310	99	3	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

ARCADIS
Infrastructure Water Environment Buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order # 540193

Send Results to:

Contact & Company Name: Jonathan Olson / Arcadis
Telephone: (713)953-4874
Address: 10205 Westheimer Road Suite 800
Fax: (713)977-4620
City: Houston State: TX Zip: 77042
E-mail Address: Jonathan.Olson@arcadis.com
Project Name/Location (City, State): HES Transfer / Andrews, NM
Project #: B004861.1601
Sampler's Printed Name: Ryan Hanny
Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	Chlorides	REMARKS
						A	E				
							E				
								3			
									8		
VGWU118-19(4')	11-8-16	1337		✓	SO					1	
VGWU118-13(7')	11-8-16	1345		✓	SO					1	
VGWU118-18(9')	11-8-16	1402		✓	SO					1	Hold *

11-10-16

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: _____

Special Instructions/Comments: * 5-day TAT * * Level II Reporting *

☐ Special QA/QC instructions(✓):

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 Hanny	Printed Name: Bill Rahmann	Printed Name: Bill Rahmann	Printed Name:
Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: 5-day TAT	Temp: IR ID:R-8 CF:+ 0.1 / 2°c Corrected Temp: 1.3°c	Firm: Arcadis for	Firm/Courier: Xenco	Firm/Courier: Xenco	Firm:
Shipping Tracking #		Date/Time: 11-10-16 1545 (11-10-16)	Date/Time: 11-10-16 15:45	Date/Time: 11-10-16 18:50	Date/Time:

20730626 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Page 3 of 4

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 11/10/2016 06:50:00 PM

Work Order #: 540193

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)?	1.3
#2 *Shipping container in good condition?	**N/A**
#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 (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**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
Jessica Kramer
Date: 11/11/2016

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 11/11/2016

Analytical Report 540846

for

Arcadis - Houston

Project Manager: Jonathan Olsen

Midland Odessa Discounted Fee Schedule

02-DEC-16

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)

Table of Contents

02-DEC-16

Project Manager: **Jonathan Olsen**
Arcadis - Houston
2929 Briarpark Dr., Ste 300
Houston, TX 77042

Reference: XENCO Report No(s): **540846**
Midland Odessa Discounted Fee Schedule
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) 540846. 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. 540846 will be filed for 60 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

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America

Sample Cross Reference 540846

Arcadis - Houston, Houston, TX

Midland Odessa Discounted Fee Schedule

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU-118 #1	S	11-21-16 14:26		540846-001
VGWU-118 #2	S	11-21-16 15:00		540846-002
VGWU-118 #3	S	11-21-16 15:10		540846-003

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: Midland Odessa Discounted Fee Schedule

Project ID:
Work Order Number(s): *540846*

Report Date: *02-DEC-16*
Date Received: *11/22/2016*

Sample receipt non conformances and comments:

Level II Reporting

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 540846

Arcadis - Houston, Houston, TX

Project Name: Midland Odessa Discounted Fee Schedule

Project Id:

Contact: Jonathan Olsen

Project Location: Buckeye NM

Date Received in Lab: Tue Nov-22-16 03:53 pm

Report Date: 02-DEC-16

Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	540846-001		540846-002		540846-003					
	Field Id:	VGWU-118 #1		VGWU-118 #2		VGWU-118 #3					
	Depth:										
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Nov-21-16 14:26		Nov-21-16 15:00		Nov-21-16 15:10					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Nov-30-16 09:04		Nov-30-16 09:04		Nov-30-16 09:04					
	Analyzed:	Nov-30-16 14:25		Nov-30-16 14:32		Nov-30-16 14:39					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		220	5.00	2370	25.0	1400	5.00				

Kelsey Brooks
Project Manager

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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: Midland Odessa Discounted Fee Schedule

Work Order #: 540846 **Project ID:**

Analyst: MNR **Date Prepared:** 11/30/2016 **Date Analyzed:** 11/30/2016

Lab Batch ID: 3004723 **Sample:** 716623-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	241	96	250	238	95	1	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Midland Odessa Discounted Fee Schedule

Work Order # : 540846 **Project ID:**

Lab Batch ID: 3004723 **QC- Sample ID:** 540677-034 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/30/2016 **Date Prepared:** 11/30/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	10.9	273	285	100	273	292	103	2	90-110	20	

Lab Batch ID: 3004723 **QC- Sample ID:** 541018-001 S **Batch #:** 1 **Matrix:** Sludge

Date Analyzed: 11/30/2016 **Date Prepared:** 11/30/2016 **Analyst:** MNR

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1130	250	1360	92	250	1380	100	1	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

CHAIN OF CUSTODY

Page ___ Of ___

XENCO LABORATORIES

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Dallas, Texas (214-902-0300) | Norcross, Georgia (770-449-8800) | Tampa, Florida (813-620-2000)

Service Center - San Antonio, Texas (210-509-3334) www.xenco.com

Xenco Quote # | Xenco Job # 540846

Client / Reporting Information

Company Name / Branch: ARCADIS

Company Address: 1004 N. Big Spring St STE 300

Email: jonathon.olsen@arcadis.com | Phone No:

Project Contact: Jonathon Olsen

Samplers's Name: Gary Longwell

Project Information

Project Name/Number:

Project Location: Buckeye

Invoice To:

PO Number:

Analytical Information

Matrix Codes

A= Air
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
WW= Waste Water
W = Wipe
O = Oil

WW= Waste Water

No.	Field ID / Point of Collection	Collection: Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	C1	Field Comments
1	VGWU-118 #2		11/2/16	1425	S	1								✓	1	
2	VGWU-118 #2		11/2/16	1500	S	1								✓	1	
3	VGWU-119 #3		11/2/16	1510	S	1								✓	1	
4																
5																
6																
7																
8																
9																
10																

Turnaround Time (Business days)

- [ ] Same Day TAT
- [X] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 3:00 pm

Data Deliverable Information

- [X] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Gary S. Longwell	11/2/16 1553		2	11-2-16 1553	2
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice

Temp: IR ID:R-8
CF:+ 0.1 1.6°C
Corrected Temp: 1.7°C

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 11/22/2016 03:53:00 PM

Work Order #: 540846

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)?	1.7
#2 *Shipping container in good condition?	**N/A**
#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 (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**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
Jessica Kramer
Date: 11/23/2016

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 11/23/2016

Certificate of Analysis Summary 570197

ARCADIS, Midland, TX

Project Name: HES

Project Id:
Contact: Brett Krehbiel
Project Location: Buckeye NM

Date Received in Lab: Mon Dec-04-17 04:00 pm
Report Date: 05-DEC-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	570197-001		570197-008		570197-009		570197-010					
	Field Id:	VGWu-118-020		VGWu-118-027		VGWu-118-028		VGWu-118-029					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Dec-04-17 09:07		Dec-04-17 11:51		Dec-04-17 11:58		Dec-04-17 13:09					
Chloride by EPA 300	***Extracted:***	Dec-05-17 16:00		Dec-05-17 16:00		Dec-05-17 16:00		Dec-05-17 16:00					
	Analyzed:	Dec-05-17 16:19		Dec-05-17 16:25		Dec-05-17 16:31		Dec-05-17 16:36					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		38.5	4.96	9.15	4.96	18.1	4.97	615	4.96				

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Mike Kimmel
Client Services Manager

Final 1.000

Analytical Report 570197

for

ARCADIS

Project Manager: Brett Krehbiel

HES

05-DEC-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

05-DEC-17

Project Manager: **Brett Krehbiel**
ARCADIS
1004 N. Big Spring St.
Midland, TX 79701

Reference: XENCO Report No(s): **570197**
HES
Project Address: Buckeye NM

Brett Krehbiel:

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) 570197. 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. 570197 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,

Mike Kimmel
Client Services Manager

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Sample Cross Reference 570197

ARCADIS, Midland, TX

HES

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWu-118-020	S	12-04-17 09:07		570197-001
VGWu-118-027	S	12-04-17 11:51		570197-008
VGWu-118-028	S	12-04-17 11:58		570197-009
VGWu-118-029	S	12-04-17 13:09		570197-010
VGWu-118-021	S	12-04-17 09:13		Not Analyzed
VGWu-118-022	S	12-04-17 10:02		Not Analyzed
VGWu-118-023	S	12-04-17 10:12		Not Analyzed
VGWu-118-024	S	12-04-17 10:34		Not Analyzed
VGWu-118-025	S	12-04-17 11:12		Not Analyzed
VGWu-118-026	S	12-04-17 11:35		Not Analyzed

CASE NARRATIVE

Client Name: ARCADIS

Project Name: HES

Project ID:
Work Order Number(s): *570197*

Report Date: *05-DEC-17*
Date Received: *12/04/2017*

Sample receipt non conformances and comments:

12/05/17: Per Brett only run samples 020,027,028,and 029.

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-020**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-001	Date Collected:	12.04.17 09.07		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**38.5**	4.96	mg/kg	12.05.17 16.19		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-027**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-008	Date Collected:	12.04.17 11.51		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9.15**	4.96	mg/kg	12.05.17 16.25		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-028**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-009	Date Collected:	12.04.17 11.58		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**18.1**	4.97	mg/kg	12.05.17 16.31		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-029**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-010	Date Collected:	12.04.17 13.09		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**615**	4.96	mg/kg	12.05.17 16.36		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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 570197

ARCADIS

HES

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Solid Date Prep: 12.05.17

MB Sample Id: 7635433-1-BLK LCS Sample Id: 7635433-1-BKS LCSD Sample Id: 7635433-1-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	254	102	249	100	90-110	2	20	mg/kg	12.05.17 14:02	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Soil Date Prep: 12.05.17

Parent Sample Id: 569375-044 MS Sample Id: 569375-044 S MSD Sample Id: 569375-044 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	623	247	847	91	852	93	90-110	1	20	mg/kg	12.05.17 14:20	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Soil Date Prep: 12.05.17

Parent Sample Id: 569375-046 MS Sample Id: 569375-046 S MSD Sample Id: 569375-046 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	967	246	1140	70	1130	66	90-110	1	20	mg/kg	12.05.17 15:43	X

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order # 570197

Send Results to:

Contact & Company Name: Brett Krehbiel / ARCADIS
Telephone: 432-312-7686
Address: 1004 N. Big Spring St STE 300
Fax: 432-687-5401
City: Midland State: TX Zip: 79701
E-mail Address: Brett.Krehbiel@arcadis.com
Project Name/Location (City, State): HES Buckeye, NM
Project #:
Sampler's Printed Name: Jerry Sihongsuwit
Sampler's Signature: [signature]

	Preservative	Filtered (✓)	# of Containers	Container Information
	—	—		6/7

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	✓							REMARKS
VGWU-118-020	12/4/17	0907		X	S	✓							
VGWU-118-021	12/4/17	0913		X	S	✓							
VGWU-118-022	12/4/17	1002		X	S	✓							
VGWU-118-023	12/4/17	1012		X	S	✓							
VGWU-118-024	12/4/17	1034		X	S	✓							
VGWU-118-025	12/5/17	1112		X	S	✓							
VGWU-118-026	12/5/17	1132		X	S	✓							
VGWU-118-027	12/5/17	1151		X	S	✓							
VGWU-118-028	12/5/17	1158		X	S	✓							
VGWU-118-029	12/5/17	1309		X	S	✓							

JBL

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: ____

Temp: 1.6 °C IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.4 °C

Special Instructions/Comments: 8 H Chlorides

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Xenco
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements: 24 STD
Shipping Tracking #:
Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	Jerry Sihongsuwit	Steve Butler	Steve Butler	B. Robinson
Signature	[signature]	[signature]	[signature]	[signature]
Firm	ARCADIS	Mail Services	FedEx Mail Serv.	Xenco
Date/Time	12/4/17 1552	12-4-17 1554	12-4-17 Noon	12-5-17 15:15

20730826 CofC AR Form 08.27.2016

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS

Date/ Time Received: 12/04/2017 04:00:00 PM

Work Order #: 570197

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)?	1.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water 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: Shawnee Smith Date: 12/05/2017

Shawnee Smith

Checklist reviewed by: Mike Kimmel Date: 12/05/2017

Mike Kimmel

Certificate of Analysis Summary 570432

ARCADIS, Midland, TX

Project Name: HES Transfer

Project Id: VGWU
Contact: Brett Krehbiel
Project Location: Buckeye NM

Date Received in Lab: Thu Dec-07-17 11:15 am
Report Date: 07-DEC-17
Project Manager: Kelsey Brooks

Analysis Requested								
	Lab Id:	570432-001						
	Field Id:	VGWU-118-030						
	Depth:							
	Matrix:	SOIL						
	Sampled:	Dec-06-17 13:05						
Chloride by EPA 300	***Extracted:***	Dec-07-17 12:30						
	Analyzed:	Dec-07-17 15:18						
	Units/RL:	mg/kg	RL					
Chloride		10.5	4.93					

Mike Kimmel
Client Services Manager

Analytical Report 570432

for

ARCADIS

Project Manager: Brett Krehbiel

HES Transfer

VGWU

07-DEC-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

07-DEC-17

Project Manager: **Brett Krehbiel**
ARCADIS
1004 N. Big Spring St.
Midland, TX 79701

Reference: XENCO Report No(s): **570432**
HES Transfer
Project Address: Buckeye NM

Brett Krehbiel:

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) 570432. 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. 570432 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,

Mike Kimmel
Client Services Manager

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Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 570432

ARCADIS, Midland, TX

HES Transfer

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU-118-030	S	12-06-17 13:05		570432-001

CASE NARRATIVE

Client Name: ARCADIS

Project Name: HES Transfer

Project ID: *VGWU*
Work Order Number(s): *570432*

Report Date: *07-DEC-17*
Date Received: *12/07/2017*

Sample receipt non conformances and comments:

12/05/17: Per Brett only run samples 020,027,028,and 029.

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 570432

ARCADIS, Midland, TX

HES Transfer

Sample Id:	**VGWU-118-030**	Matrix:	Soil	Date Received:	12.07.17 11.15
Lab Sample Id:	570432-001	Date Collected:	12.06.17 13.05		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.07.17 12.30	Basis:	Wet Weight
Seq Number:	3035238				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**10.5**	4.93	mg/kg	12.07.17 15.18		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

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	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 570432

ARCADIS

HES Transfer

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3035238 Matrix: Solid Date Prep: 12.07.17
MB Sample Id: 7635585-1-BLK LCS Sample Id: 7635585-1-BKS LCSD Sample Id: 7635585-1-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	255	102	258	103	90-110	1	20	mg/kg	12.07.17 09:29	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3035238 Matrix: Soil Date Prep: 12.07.17
Parent Sample Id: 566199-021 MS Sample Id: 566199-021 S MSD Sample Id: 566199-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	53.4	248	307	102	303	101	90-110	1	20	mg/kg	12.07.17 14:07	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3035238 Matrix: Soil Date Prep: 12.07.17
Parent Sample Id: 569852-001 MS Sample Id: 569852-001 S MSD Sample Id: 569852-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	484	250	730	98	722	95	90-110	1	20	mg/kg	12.07.17 12:44	

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Final 1.000

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order # 570432

Send Results to:

Contact & Company Name: Brett Kochbiel / ARCADIS
Telephone: 432-687-5400
Address: 1004 N. Big Spring St Ste 300
Fax: 432-687-5401
City: Midland State: TX Zip: 79701
E-mail Address: brett.kochbiel@arcadis
Project Name/Location (City, State): HF-5 Transfer Buckeye NM
Project #:
Sampler's Printed Name: Terry S. Longwell
Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD	REMARKS
VGWU-118-030	12/6/17	1305		X	S			1	8	1	24-hr TAT

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: _____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Temp: 4.3°C IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.1°C

Laboratory Information and Receipt

Lab Name: Xenco
☑ Cooler packed with ice (✓)
Specify Turnaround Requirements: 24 TAT
Shipping Tracking #:
Cooler Custody Seal (✓): ☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: 2.3°C

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Terry S. Longwell	Printed Name: Ryan Nanny	Printed Name: Ryan Nanny	Printed Name: Connie Hernandez
Signature:	Signature:	Signature:	Signature:
Firm: ARCADIS	Firm/Courier: Arcadis	Firm/Courier: Arcadis	Firm:
Date/Time: 12/6/17/1515	Date/Time: 12/6/17/1515	Date/Time: 12-6-17/1608	Date/Time: 9/7 11:15

20730526 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

Rec - Kanna Jimenez

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #: 570432

Send Results to:

Contact & Company Name: Brett Kuckbird / ARCADIS	Telephone: 432-687-5400
Address: 1004 N. Big Spring St Ste 300	Fax: 432-687-5401
City: Midland State: TX Zip: 79701	E-mail Address: brett.kuckbird@arcadis
Project Name/Location (City, State): HES Transfer Buckeye NM	Project #:
Sampler's Printed Name: Terry S. Longwell	Sampler's Signature:

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	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD	REMARKS
VGWU-118-030	12/6/17	1305		X	S			1	8	d	24-hr TAT

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Temp: 4.3°C IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.1°C

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Xenco	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: Terry S. Longwell	Printed Name: Ryan Nunez	Printed Name: Ryan Nunez	Printed Name: Connie Hernandez
☒ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: 24 TAT	Sample Receipt: Condition/Cooler Temp: 2.3°C	Firm: ARCADIS	Firm/Courier: Arcadis	Firm/Courier: Arcadis	Firm:
Shipping Tracking #:		Date/Time: 12/6/17/1515	Date/Time: 12/6/17/1515	Date/Time: 12-6-17/1608	Date/Time: 12/7 11:15

20730826 CofC AR Form 09.27.2015

Distribution: WHITE – Laboratory returns with results; YELLOW – Lab copy; PINK – Retained by Arcadis

Rec: Karina Jimenez

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS

Date/ Time Received: 12/07/2017 11:15:00 AM

Work Order #: 570432

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)?	4.1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water 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: Connie Hernandez Date: 12/07/2017

Checklist reviewed by: Mike Kimmel Date: 12/07/2017

Certificate of Analysis Summary 564892

Arcadis - Houston, Houston, TX

Project Name: HES Transfer VGWU-118

Project Id:
Contact: Brett Krehbiel
Project Location:

Date Received in Lab: Fri Oct-06-17 10:30 am
Report Date: 09-OCT-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	564892-001		564892-002		564892-003		564892-004		564892-005		564892-006	
	Field Id:	VGWU-118-001		VGWU-118-002		VGWU-118-003		VGWU-118-004		VGWU-118-005		VGWU-118-006	
	Depth:	2- In		2- In		2- In		2- In		2- In		2- In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-05-17 07:41		Oct-05-17 07:42		Oct-05-17 07:44		Oct-05-17 07:45		Oct-05-17 07:46		Oct-05-17 07:47	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Oct-06-17 17:00		Oct-06-17 17:00		Oct-06-17 17:00		Oct-06-17 17:00		Oct-06-17 17:00		Oct-06-17 17:00	
	Analyzed:	Oct-06-17 22:55		Oct-06-17 23:18		Oct-06-17 23:25		Oct-06-17 23:33		Oct-06-17 23:41		Oct-07-17 00:04	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		8.11	4.96	544	4.99	2760	24.7	41.3	4.94	67.9	4.92	15.0	4.94

Kelsey Brooks
Project Manager

Analytical Report 564892

for

Arcadis - Houston

Project Manager: Brett Krehbiel

HES Transfer VGWU-118

09-OCT-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)

09-OCT-17

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

Reference: XENCO Report No(s): **564892**
HES Transfer VGWU-118
Project Address:

Brett Krehbiel:

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) 564892. 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.

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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 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU-118-001	S	10-05-17 07:41	2 In	564892-001
VGWU-118-002	S	10-05-17 07:42	2 In	564892-002
VGWU-118-003	S	10-05-17 07:44	2 In	564892-003
VGWU-118-004	S	10-05-17 07:45	2 In	564892-004
VGWU-118-005	S	10-05-17 07:46	2 In	564892-005
VGWU-118-006	S	10-05-17 07:47	2 In	564892-006

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: HES Transfer VGWU-118

Project ID:
Work Order Number(s): *564892*

Report Date: *09-OCT-17*
Date Received: *10/06/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-001**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-001	Date Collected:	10.05.17 07.41	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**8.11**	4.96	mg/kg	10.06.17 22.55		1

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-002**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-002	Date Collected:	10.05.17 07.42	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**544**	4.99	mg/kg	10.06.17 23.18		1

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-003**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-003	Date Collected:	10.05.17 07.44	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2760**	24.7	mg/kg	10.06.17 23.25		5

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-004**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-004	Date Collected:	10.05.17 07.45	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**41.3**	4.94	mg/kg	10.06.17 23.33		1

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-005**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-005	Date Collected:	10.05.17 07.46	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**67.9**	4.92	mg/kg	10.06.17 23.41		1

Certificate of Analytical Results 564892

Arcadis - Houston, Houston, TX

HES Transfer VGWU-118

Sample Id:	**VGWU-118-006**	Matrix:	Soil	Date Received:	10.06.17 10.30
Lab Sample Id:	564892-006	Date Collected:	10.05.17 07.47	Sample Depth:	2 In
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.06.17 17.00	Basis:	Wet Weight
Seq Number:	3029837				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**15.0**	4.94	mg/kg	10.07.17 00.04		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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 564892

Arcadis - Houston

HES Transfer VGWU-118

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3029837 Matrix: Solid Date Prep: 10.06.17

MB Sample Id: 7632227-1-BLK LCS Sample Id: 7632227-1-BKS LCSD Sample Id: 7632227-1-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	247	99	251	100	90-110	2	20	mg/kg	10.06.17 22:39	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3029837 Matrix: Soil Date Prep: 10.06.17

Parent Sample Id: 564892-001 MS Sample Id: 564892-001 S MSD Sample Id: 564892-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8.11	248	262	102	269	105	90-110	3	20	mg/kg	10.06.17 23:02	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3029837 Matrix: Soil Date Prep: 10.06.17

Parent Sample Id: 564959-005 MS Sample Id: 564959-005 S MSD Sample Id: 564959-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	5.15	249	253	100	253	100	90-110	0	20	mg/kg	10.07.17 00:50	

CHAIN OF CUSTODY

Page 1 Of 1

XENCO LABORATORIES

Setting the Standard since 1990

Stafford,Texas (281-240-4200) | Odessa, Texas (432-563-1800) | Lakeland, Florida (863-646-8526)

Dallas Texas (214-902-0300) | Norcross, Georgia (770-449-8800) | Tampa, Florida (813-620-2000)

Service Center - San Antonio, Texas (210-509-3334) www.xenco.com

Xenco Quote # Q_14208 Xenco Job # 560892

Client / Reporting Information

Company Name / Branch: Arcadis - Houston
Company Address: 10205 Westheimer Rd., Suite 800, Houston TX 77042
Email: brett.krehbiel@arcadis.com Phone No:
Project Contact: Brett Krehbiel
Samplers's Name

Project Information

Project Name/Number: HES Transfer
Project Location: VGWLL-118
Invoice To:
PO Number:

Analytical Information

Matrix Codes

S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
W = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Chlorides	Field Comments
1	VGWLL-118-001	2'	10/5/17	0741	S	1								X	X	
2	VGWLL-118-002	2'		0742	S	1								X	X	
3	VGWLL-118-003	2'		0744	S	1								X	X	
4	VGWLL-118-004	2'		0745	S	1								X	X	
5	VGWLL-118-005	2'		0746	S	1								X	X	
6	VGWLL-118-006	2'	10/5/17	0747	S	1								X	X	
7																
8																
9																
10																

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [x] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [x] Level II Std QC
- [ ] Level III Std QC+ Forms
- [ ] Level 3 (CLP Forms)
- [ ] TRRP Checklist
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] TRRP Level IV
- [ ] UST / RG -411

Temp: 1.2 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.0

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Kyle Brooks	10/5/17 10:30		2		2
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
			3	4		4
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice: X	Cooler Temp. 3.0	Thermo. Corr. Factor
			5			

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 10/06/2017 10:30:00 AM

Work Order #: 564892

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 Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water 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: Shawnee Smith Date: 10/06/2017
Shawnee Smith

Checklist reviewed by: Kelsey Brooks Date: 10/06/2017
Kelsey Brooks

Certificate of Analysis Summary 565002

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Brett Krehbiel
Project Location: VGWU-118-0

Date Received in Lab: Fri Oct-06-17 04:04 pm
Report Date: 12-OCT-17
Project Manager: Kelsey Brooks

Analysis Requested							
	Lab Id:	565002-001					
	Field Id:	VGWU-118-007					
	Depth:	2- ft					
	Matrix:	SOIL					
	Sampled:	Oct-06-17 14:34					
Chloride by EPA 300	***Extracted:***	Oct-10-17 17:50					
	Analyzed:	Oct-11-17 04:01					
	Units/RL:	mg/kg	RL				
Chloride		2030	25.0				

Kelsey Brooks
Project Manager

Final 1.000

Analytical Report 565002

for

Arcadis - Houston

Project Manager: Brett Krehbiel

HES Transfer

12-OCT-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)

12-OCT-17

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

Reference: XENCO Report No(s): **565002**
HES Transfer
Project Address: VGWU-118-0

Brett Krehbiel:

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) 565002. 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. 565002 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 565002

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU-118-007	S	10-06-17 14:34	2 ft	565002-001
VGWU-118-008	S	10-06-17 14:36	2 ft	Not Analyzed

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: HES Transfer

Project ID:
Work Order Number(s): *565002*

Report Date: *12-OCT-17*
Date Received: *10/06/2017*

Sample receipt non conformances and comments:

VGWU-118-008 Placed on hold Per Melisa Darrow's e-mail 10/09/17-- KB

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 565002

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-007**	Matrix:	Soil	Date Received:	10.06.17 16.04
Lab Sample Id:	565002-001	Date Collected:	10.06.17 14.34	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.10.17 17.50	Basis:	Wet Weight
Seq Number:	3030189				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2030**	25.0	mg/kg	10.11.17 04.01		5

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

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 565002

Arcadis - Houston

HES Transfer

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030189 Matrix: Solid Date Prep: 10.10.17
MB Sample Id: 7632428-1-BLK LCS Sample Id: 7632428-1-BKS LCSD Sample Id: 7632428-1-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	245	98	246	98	90-110	0	20	mg/kg	10.11.17 00:26	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030189 Matrix: Soil Date Prep: 10.10.17
Parent Sample Id: 565168-005 MS Sample Id: 565168-005 S MSD Sample Id: 565168-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	42.2	249	294	101	295	102	90-110	0	20	mg/kg	10.11.17 00:49	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030189 Matrix: Ground Water Date Prep: 10.10.17
Parent Sample Id: 565207-002 MS Sample Id: 565207-002 S MSD Sample Id: 565207-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.99	250	252	101	253	101	90-110	0	20	mg/kg	10.11.17 02:36	

CHAIN OF CUSTODY

Page 1 Of 1

XENCO LABORATORIES

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Norcross, Georgia (770-449-8800)
Lakeland, Florida (863-646-8526)
Tampa, Florida (813-620-2000)
www.xenco.com

Xenco Quote # Q_14208 Xenco Job # 526002

Client / Reporting Information

Company Name / Branch: Arcadis - Houston
Company Address: 10205 Westheimer Rd., Suite 800 Hlouston TX 77042
Email: brett.krehbiel@arcadis.com Phone No:
Project Contact: Brett Krehbiel
Samplers's Name

Project Information

Project Name/Number: HES Transfer
Project Location: VG WLL-118-0
Invoice To:
PO Number:

Analytical Information

Matrix Codes

S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
W = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Chlorides	Field Comments
1	VGWLL-118-007	2'	10/6/22	1434	S	1								X	X	West wall
2	VGWLL-118-008	2'	10/6/22	1436	S	1								X	X	South wall
3																
4																
5																
6																
7																
8																
9																
10																

JSL

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [x] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [x] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Jerry S. Longwell	10/6/22 1603	Esperanza Gonzalez	2 Esperanza Gonzalez	10-6-22 4:04	2
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp. 2.1 / Thermo. Corr. Factor

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 10/06/2017 04:04:00 PM

Work Order #: 565002

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)?	2.1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water 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: 10/10/2017
Jessica Kramer

Checklist reviewed by: Kelsey Brooks Date: 10/10/2017
Kelsey Brooks

Certificate of Analysis Summary 565799

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:
Contact: Brett Krehbiel
Project Location: VGWU-118

Date Received in Lab: Tue Oct-17-17 06:05 pm
Report Date: 19-OCT-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	565799-001		565799-002		565799-003		565799-004		565799-005		565799-006	
	Field Id:	VGWU-118-009		VGWU-118-010		VGWU-118-011		VGWU-118-012		VGWU-118-013		VGWU-118-014	
	Depth:	2- ft		2- ft		2- ft		2- ft		2- ft		2- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-17-17 11:41		Oct-17-17 11:43		Oct-17-17 11:46		Oct-17-17 11:48		Oct-17-17 11:49		Oct-17-17 11:52	
Chloride by EPA 300	***Extracted:***	Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20	
	Analyzed:	Oct-18-17 12:25		Oct-18-17 12:33		Oct-18-17 12:41		Oct-18-17 13:04		Oct-18-17 13:11		Oct-18-17 13:34	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2150	24.7	13.9	4.92	861	5.00	1530	25.0	12.3	4.92	11.1	4.91

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 565799

Arcadis - Houston, Houston, TX

Project Name: HES Transfer

Project Id:

Contact: Brett Krehbiel

Project Location: VGWU-118

Date Received in Lab: Tue Oct-17-17 06:05 pm

Report Date: 19-OCT-17

Project Manager: Kelsey Brooks

Analysis Requested												
	Lab Id:	565799-007		565799-008		565799-009		565799-010		565799-011		
	Field Id:	VGWU-118-015		VGWU-118-016		VGWU-118-017		VGWU-118-018		VGWU-118-019		
	Depth:	2- ft		2- ft		2- ft		2- ft		2- ft		
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		
	Sampled:	Oct-17-17 11:53		Oct-17-17 11:56		Oct-17-17 11:57		Oct-17-17 11:38		Oct-17-17 11:39		
Chloride by EPA 300	***Extracted:***	Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		Oct-18-17 10:20		
	Analyzed:	Oct-18-17 13:42		Oct-18-17 13:50		Oct-18-17 13:57		Oct-18-17 14:05		Oct-18-17 14:13		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Chloride		7.07	4.95	39.5	4.92	14.4	4.90	28.5	4.90	<4.96	4.96	

Kelsey Brooks
Project Manager

Analytical Report 565799

for

Arcadis - Houston

Project Manager: Brett Krehbiel

HES Transfer

19-OCT-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

19-OCT-17

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

Reference: XENCO Report No(s): **565799**
HES Transfer
Project Address: VGWU-118

Brett Krehbiel:

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) 565799. 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. 565799 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 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWU-118-009	S	10-17-17 11:41	2 ft	565799-001
VGWU-118-010	S	10-17-17 11:43	2 ft	565799-002
VGWU-118-011	S	10-17-17 11:46	2 ft	565799-003
VGWU-118-012	S	10-17-17 11:48	2 ft	565799-004
VGWU-118-013	S	10-17-17 11:49	2 ft	565799-005
VGWU-118-014	S	10-17-17 11:52	2 ft	565799-006
VGWU-118-015	S	10-17-17 11:53	2 ft	565799-007
VGWU-118-016	S	10-17-17 11:56	2 ft	565799-008
VGWU-118-017	S	10-17-17 11:57	2 ft	565799-009
VGWU-118-018	S	10-17-17 11:38	2 ft	565799-010
VGWU-118-019	S	10-17-17 11:39	2 ft	565799-011

CASE NARRATIVE

Client Name: Arcadis - Houston

Project Name: HES Transfer

Project ID:
Work Order Number(s): *565799*

Report Date: *19-OCT-17*
Date Received: *10/17/2017*

Sample receipt non conformances and comments:

VGWU-118-008 Placed on hold Per Melisa Darrow's e-mail 10/09/17-- KB

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3030835 Chloride by EPA 300

Lab Sample ID 565799-003 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: 565799-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011.

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

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-009**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-001	Date Collected:	10.17.17 11.41	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**2150**	24.7	mg/kg	10.18.17 12.25		5

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-010**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-002	Date Collected:	10.17.17 11.43	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**13.9**	4.92	mg/kg	10.18.17 12.33		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-011**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-003	Date Collected:	10.17.17 11.46	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**861**	5.00	mg/kg	10.18.17 12.41		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-012**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-004	Date Collected:	10.17.17 11.48	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1530**	25.0	mg/kg	10.18.17 13.04		5

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-013**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-005	Date Collected:	10.17.17 11.49	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**12.3**	4.92	mg/kg	10.18.17 13.11		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-014**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-006	Date Collected:	10.17.17 11.52	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**11.1**	4.91	mg/kg	10.18.17 13.34		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-015**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-007	Date Collected:	10.17.17 11.53	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7.07**	4.95	mg/kg	10.18.17 13.42		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-016**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-008	Date Collected:	10.17.17 11.56	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**39.5**	4.92	mg/kg	10.18.17 13.50		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-017**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-009	Date Collected:	10.17.17 11.57	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**14.4**	4.90	mg/kg	10.18.17 13.57		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-018**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-010	Date Collected:	10.17.17 11.38	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**28.5**	4.90	mg/kg	10.18.17 14.05		1

Certificate of Analytical Results 565799

Arcadis - Houston, Houston, TX

HES Transfer

Sample Id:	**VGWU-118-019**	Matrix:	Soil	Date Received:	10.17.17 18.05
Lab Sample Id:	565799-011	Date Collected:	10.17.17 11.39	Sample Depth:	2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	10.18.17 10.20	Basis:	Wet Weight
Seq Number:	3030835				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	10.18.17 14.13	U	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

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9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 565799

Arcadis - Houston

HES Transfer

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030835 Matrix: Solid Date Prep: 10.18.17
MB Sample Id: 7632811-1-BLK LCS Sample Id: 7632811-1-BKS LCSD Sample Id: 7632811-1-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	237	95	238	95	90-110	0	20	mg/kg	10.18.17 09:36	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030835 Matrix: Soil Date Prep: 10.18.17
Parent Sample Id: 565762-002 MS Sample Id: 565762-002 S MSD Sample Id: 565762-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	885	249	1100	86	1110	90	90-110	1	20	mg/kg	10.18.17 11:01	X

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3030835 Matrix: Soil Date Prep: 10.18.17
Parent Sample Id: 565799-003 MS Sample Id: 565799-003 S MSD Sample Id: 565799-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	861	250	1070	84	1060	80	90-110	1	20	mg/kg	10.18.17 12:48	X

CHAIN OF CUSTODY

Page 1 Of 1

XENCO LABORATORIES

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Odessa, Texas (432-563-1800)
Norcross, Georgia (770-449-8800)
Lakeland, Florida (863-646-8526)
Tampa, Florida (813-620-2000)
www.xenco.com

Xenco Quote # Q_14208 Xenco Job # 565799

Client / Reporting Information

Company Name / Branch: Arcadis - Houston
Company Address: 10205 Westheimer Rd., Suite 800 Houston TX 77042
Email: brett.krehbiel@arcadis.com Phone No:
Project Contact: Brett Krehbiel
Samplers's Name Todd Thetford

Project Information

Project Name/Number: HES Transfer
Project Location: VGWU-11E
Invoice To:
PO Number:

Analytical Information

Matrix Codes

S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
W = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Chlorides	Field Comments
1	VGWU-11E-009	2	10.17.17	1141	S	1									X	
2	VGWU-11E-010	2	"	1143	S	1									X	
3	VGWU-11E-011	2		1146	S	1									X	
4	VGWU-11E-012	2		1148	S	1									X	
5	VGWU-11E-013	2		1149	S	1									X	
6	VGWU-11E-014	2		1152	S	1									X	
7	VGWU-11E-015	2		1153	S	1									X	
8	VGWU-11E-016	2		1156	S	1									X	
9	VGWU-11E-017	2		1157	S	1									X	
10	VGWU-11E-018	2		1138	S	1									X	
	VGWU-11E-019	2	10.17.17	1139	S	1									X	

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [x] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Temp: 4.8 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.6

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		10-17-17 1805	1	2		2
3	Relinquished by:	Date Time: 18:05	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp. / Thermo. Corr. Factor

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless previously negotiated under a fully executed client contract.

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis - Houston

Date/ Time Received: 10/17/2017 06:05:00 PM

Work Order #: 565799

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)?	4.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water 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: Shawnee Smith Date: 10/18/2017
Shawnee Smith

Checklist reviewed by: Kelsey Brooks Date: 10/18/2017
Kelsey Brooks

Certificate of Analysis Summary 570197

ARCADIS, Midland, TX

Project Name: HES

Project Id:
Contact: Brett Krehbiel
Project Location: Buckeye NM

Date Received in Lab: Mon Dec-04-17 04:00 pm
Report Date: 05-DEC-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	570197-001		570197-008		570197-009		570197-010					
	Field Id:	VGWu-118-020		VGWu-118-027		VGWu-118-028		VGWu-118-029					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Dec-04-17 09:07		Dec-04-17 11:51		Dec-04-17 11:58		Dec-04-17 13:09					
Chloride by EPA 300	***Extracted:***	Dec-05-17 16:00		Dec-05-17 16:00		Dec-05-17 16:00		Dec-05-17 16:00					
	Analyzed:	Dec-05-17 16:19		Dec-05-17 16:25		Dec-05-17 16:31		Dec-05-17 16:36					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		38.5	4.96	9.15	4.96	18.1	4.97	615	4.96				

Mike Kimmel
Client Services Manager

Analytical Report 570197

for

ARCADIS

Project Manager: Brett Krehbiel

HES

05-DEC-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

05-DEC-17

Project Manager: **Brett Krehbiel**
ARCADIS
1004 N. Big Spring St.
Midland, TX 79701

Reference: XENCO Report No(s): **570197**
HES
Project Address: Buckeye NM

Brett Krehbiel:

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) 570197. 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. 570197 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,

Mike Kimmel
Client Services Manager

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Sample Cross Reference 570197

ARCADIS, Midland, TX

HES

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
VGWu-118-020	S	12-04-17 09:07		570197-001
VGWu-118-027	S	12-04-17 11:51		570197-008
VGWu-118-028	S	12-04-17 11:58		570197-009
VGWu-118-029	S	12-04-17 13:09		570197-010
VGWu-118-021	S	12-04-17 09:13		Not Analyzed
VGWu-118-022	S	12-04-17 10:02		Not Analyzed
VGWu-118-023	S	12-04-17 10:12		Not Analyzed
VGWu-118-024	S	12-04-17 10:34		Not Analyzed
VGWu-118-025	S	12-04-17 11:12		Not Analyzed
VGWu-118-026	S	12-04-17 11:35		Not Analyzed

CASE NARRATIVE

Client Name: ARCADIS

Project Name: HES

Project ID:
Work Order Number(s): *570197*

Report Date: *05-DEC-17*
Date Received: *12/04/2017*

Sample receipt non conformances and comments:

12/05/17: Per Brett only run samples 020,027,028,and 029.

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-020**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-001	Date Collected:	12.04.17 09.07		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**38.5**	4.96	mg/kg	12.05.17 16.19		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-027**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-008	Date Collected:	12.04.17 11.51		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9.15**	4.96	mg/kg	12.05.17 16.25		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-028**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-009	Date Collected:	12.04.17 11.58		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**18.1**	4.97	mg/kg	12.05.17 16.31		1

Certificate of Analytical Results 570197

ARCADIS, Midland, TX

HES

Sample Id:	**VGWu-118-029**	Matrix:	Soil	Date Received:	12.04.17 16.00
Lab Sample Id:	570197-010	Date Collected:	12.04.17 13.09		
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MNV			% Moisture:	
Analyst:	MNV	Date Prep:	12.05.17 16.00	Basis:	Wet Weight
Seq Number:	3035034				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**615**	4.96	mg/kg	12.05.17 16.36		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

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4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 570197

ARCADIS

HES

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Solid Date Prep: 12.05.17

MB Sample Id: 7635433-1-BLK LCS Sample Id: 7635433-1-BKS LCSD Sample Id: 7635433-1-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	254	102	249	100	90-110	2	20	mg/kg	12.05.17 14:02	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Soil Date Prep: 12.05.17

Parent Sample Id: 569375-044 MS Sample Id: 569375-044 S MSD Sample Id: 569375-044 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	623	247	847	91	852	93	90-110	1	20	mg/kg	12.05.17 14:20	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P

Seq Number: 3035034 Matrix: Soil Date Prep: 12.05.17

Parent Sample Id: 569375-046 MS Sample Id: 569375-046 S MSD Sample Id: 569375-046 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	967	246	1140	70	1130	66	90-110	1	20	mg/kg	12.05.17 15:43	X

ARCADIS

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order # 570197

Send Results to:

Contact & Company Name: Brett Krehbiel/ARCADIS
Telephone: 432-312-7686
Address: 1004 N. Big Spring St STE 300
Fax: 432-687-5401
City: Midland State: TX Zip: 7970[illegible]
E-mail Address: Brett.Krehbiel@arcadis.com
Project Name/Location (City, State): HES Buckeye, NM
Project #:
Sampler's Printed Name: Jerry Schonguard
Sampler's Signature: [signature]

Preservative: —
Filtered (✓): —
# of Containers:
Container Information: 6/7

PARAMETER ANALYSIS & METHOD

Sample ID	Date	Time	Comp	Grab	Matrix	Cl							REMARKS
V6WU-118-020	12/4/17	0907		X	S	✓							
V6WU-118-021	12/4/17	0913		X	S	✓							
V6WU-118-022	12/4/17	1002		X	S	✓							
V6WU-118-023	12/4/17	1012		X	S	✓							
V6WU-118-024	12/4/17	1034		X	S	✓							
V6WU-118-025	12/5/17	1112		X	S	✓							
V6WU-118-026	12/5/17	1133		X	S	✓							
V6WU-118-027	12/5/17	1151		X	S	✓							
V6WU-118-028	12/5/17	1158		X	S	✓							
V6WU-118-029	12/5/17	1309		X	S	✓							

OBL

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: ____

Temp: 1.6°C IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.4°C

Special Instructions/Comments: 2 Coolers

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Xenco
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements: 24 STD
Shipping Tracking #:
Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name	Jerry Schonguard	Steve Rutler	Steve Rutler	B. [illegible]
Signature	[signature]	[signature]	[signature]	[signature]
Firm/Courier	ARCADIS	Mail Services	FedEx Mail Ser.	Xenco
Date/Time	12/4/17 1552	12-4-17 1554	12-4-17 Noon	12-5-17 15:15

20730026 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: ARCADIS

Date/ Time Received: 12/04/2017 04:00:00 PM

Work Order #: 570197

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)?	1.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water 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: Shawnee Smith Date: 12/05/2017

Shawnee Smith

Checklist reviewed by: Mike Kimmel Date: 12/05/2017

Mike Kimmel

VGWU 118 / 1RP-3260

Photo 1. View of hydro excavation activities.

Photo 2. View of excavation area.

VGWU 118 / 1RP-3260

Photo 3. Additional view of excavation activities.

Photo. 4 Continued excavation activities.

VGWU 118 / 1RP-3260

Photo 5. View of liner installation.

Photo 6. View of excavation backfill activities.

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

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

CONDITIONS

Action 163814

CONDITIONS

Operator: MorningStar Operating LLC 400 W 7th St Fort Worth, TX 76102	OGRID: 330132
	Action Number: 163814
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
jnobui	upload closure report	12/5/2022