

State of New Mexico  
Oil Conservation Division

Incident ID	NAB 1915139341
District RP	2RP-5463
Facility ID	fAB 1915134627
Application ID	pAB 1915138523

## Closure

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

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

- A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- Description of remediation activities

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

Printed Name: Rob Kirk Title: General Manager, HSE and Compliance  
 Signature:  Date: 05/29/2020  
 email: rob.kirk@solarismidstream.com Telephone: 432-203-9020

**OCD Only**

Received by: OCD Date: 5/29/2020

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: 8/19/2020  
 Printed Name: Cory Smith Title: Environmental Specialist

# Closure of Release Investigation and Remedial Action Plan

## General Site Information:

Lobo 285 SWD (NMOCD Reference #: 2RP-5463)

## Site Contact:

Rob Kirk, Solaris Water Midstream  
907 Tradewinds Blvd, Ste. B, Midland, Texas 79706  
(432) 203-9020

## Depth to Ground Water

Less than 50 feet below grade surface

## Distance to Nearest Surface Water

Willow Lake (South-Eastern Eddy County), approximately 3.97 miles to the Northwest

## Driving Directions

From Hwy 62, South on HWY 285 24 mi, East on Lease Road 0.10 mi.,  
North 0.05 mi. to Pipe location

## Legal Description

Unit B Section 22, T25S, R28E, N.M.P.M., Eddy County, New Mexico

May 22, 2020

Terracon Project No. AR197256

## Prepared for:

Solaris Water Midstream LLC  
Midland, Texas

## Prepared by:

Terracon Consultants, Inc.  
Lubbock, Texas

Offices Nationwide  
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Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

May 22, 2020



Solaris Water Midstream LLC  
907 Tradewinds Blvd., Suite B  
Midland, Texas 79706

Attn: Mr. Rob Kirk  
P: 432-203-9020  
E: [rob.kirk@solarismidstream.com](mailto:rob.kirk@solarismidstream.com)

**RE: Closure of Release Investigation and Remedial Action Plan**  
Lobo 285 SWD Produced Water Release (2RP-5463)  
Unit A Section 22, T25S, R28E, N.M.P.M., Eddy County, New Mexico  
Terracon Project No. AR197256

Dear Mr. Kirk,

Terracon Consultants, Inc. (Terracon) is pleased to submit our Closure of Release Investigation and Remedial Action Plan (RAP) for the site referenced above. The Release Investigation and RAP were developed in accordance with the New Mexico Oil Conservation Division (NMOCD) regulations concerning corrective actions required for releases of crude oil and produced water. Based on the release investigation assessment, Terracon implemented the following actions to achieve protection of fresh water and the environment in accordance with NMOCD regulations. Terracon developed the Release Investigation and RAP in general accordance with our email correspondence dated July 24, 2019.

- Based on the magnitude of chloride concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 23 cubic yards (cy) of chloride impacted material were required to be excavated and disposed of at a permitted disposal facility under manifest.
- Following excavation to recommended Reclamation depths, vertical and horizontal excavation confirmation samples were collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD remediation action levels (RAL).
- Based on the release response actions (including excavation and disposition) taken corroborated with the confirmed vertical delineation, a remedial response was warranted within soils at depths greater than 4 ft. bgs, and was achieved utilizing granulated gypsum at the base of the excavation.



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**Release Investigation and Remedial Action Plan**

Lobo 285 SWD Release (2RP-5463) ■ Eddy County, New Mexico

May 22, 2020 ■ Terracon Project No. AR197256



Terracon appreciates this opportunity to provide environmental services to Solaris Water Midstream LLC (Solaris). Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

**Terracon Consultants, Inc.**

Joseph Guesnier  
Staff Scientist  
Lubbock

Erin Loyd, P.G. (TX)  
Principal  
Office Manager – Lubbock



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**Closure of Release Investigation and Remedial Action Plan  
Lobo 285 SWD Produced Water Release  
Unit B Section 22, Township 25 South, Range 28 East, N.M.P.M.  
Lea County, New Mexico  
NMOCD Reference No. 2RP-5463  
Terracon Project No. AR197256  
May 22, 2020**

## **1.0 SITE DESCRIPTION**

The Site is comprised of an approximate 1-acre tract of land within the Unit B Section 22, Township 25 South, Range 28 East, N.M.P.M., Eddy County, New Mexico (hereinafter, the site). The site consists primarily of undeveloped range land except for a pipeline utilized to transfer produced water to a saltwater disposal (SWD) facility operated by Solaris Water Midstream (Solaris) to the West. A Topographic Map illustrating the site location is included as Figure 1 and a Chloride Concentration Map is included as Figure 2, in Appendix A.

## **2.0 SCOPE OF SERVICES**

Terracon's scope of services was to investigate the magnitude and extent of the documented release and develop a Remedial Action Plan (RAP) in accordance with the New Mexico Oil Conservation Division (NMOCD) requirements that detail site closure activities to be completed. This RAP addresses the May 18, 2019 release of approximately 20 barrels (bbls) of produced water from a malfunctioning joint on a polyethylene line at the riser of a Solaris flowback line.

(Section 3.0 continued on next page)

**Release Investigation and Remedial Action Plan**

Lobo 285 SWD Release (2RP-5463) ■ Eddy County, New Mexico

May 22, 2020 ■ Terracon Project No. AR197256

**3.0 INTRODUCTION AND NOTIFICATION**

The following table provides detailed information regarding the May 18, 2019 produced water release at the Lobo 285 SWD Flowback Line Site in Eddy County, New Mexico:

Required Information	Site and Release information	
Responsible party	The facility is operated by Solaris Water Midstream	
Local contact	Contact: Mr. Rob Kirk	P: (469) 978-5620 E: <a href="mailto:rob.kirk@solarismidstream.com">rob.kirk@solarismidstream.com</a>
NMOCD Notification	Notice of the release was provided to the NMOCD District 2 Artesia Office by Rob Kirk (Solaris) on May 23, 2019.	
Facility description	The facility is comprised of a flowback line associated with the Lobo 285 SWD and surrounding impacted soils which are located in Eddy County, New Mexico. More specifically, the Site is an approximate 1-acre area comprised of undeveloped range land utilized as a pipeline right-of-way located within the Unit B Section 22, Township 25 South, Range 28 East, N.M.P.M., approximately 7.2 miles south of Malaga, New Mexico.	
Time of incident	May 5, 2019, discovered at 7:00 a.m.	
Discharge event	Release of produced water originating from a malfunctioning joint on a pipeline riser of a Solaris transfer flowback line. The release origin occurred west of the facility pad, under development at the time of the release. The release area, near the origin of the release, was limited to an approximately 700sq. ft. area; however, a portion of the release traveled along the surface for approximately 20 ft. to the north. The width of the release being approximately 15 ft. The release margins are illustrated on Figure 2 of Appendix A.	
Type of discharge	The documented fluids release occurred at the surface and appears to be superficial to depth.	
Quantity of spilled material	Total Fluids: 20 bbls	Produced Water: 20 bbls
	Total Fluids Recovered: 18 bbls	Produced Water: 18 bbls
Site characteristics	Relatively flat with drainage following the native ground surface; very gently sloping to the north.	
Immediate corrective actions	The flow was cut off and the line was replaced, and free-standing liquid material was cleaned-up.	

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Lobo 285 SWD Release (2RP-5463) ■ Eddy County, New Mexico  
May 22, 2020 ■ Terracon Project No. AR197256



## **4.0 INITIAL RESPONSE ACTIONS**

### **4.1 Source Elimination**

Initial source elimination was accomplished by the Solaris foreman shutting in the leaking line and replacing the failed pipe connection.

### **4.2 Containment and Site Stabilization**

Solaris utilized a vacuum truck and cleaned up free standing liquid, proximate to the release origin to prevent further horizontal migration of the release. The area impacted is approximately 15 ft. by 30 ft. totaling an area of approximately 450 sq. ft.

## **5.0 GENERAL SITE CHARACTERISTICS**

### **5.1 Depth to Groundwater**

A water well record search of the New Mexico Office of the State Engineer (NMOSE) Potable Water Well (POD) Geographic Information System (GIS) data portal identified one registered well (C-01522) null groundwater depth within 0.5 miles of the site. One registered well (C-01453) was identified within 1.5 miles of the site with a stated depth of 40 ft. below grade surface (bgs). NMOSE registered wells within 2.5 miles of the site have an average depth to groundwater of 55 feet bgs, with a maximum reported depth of 90 feet bgs. Based on the review of NMOSE available documentation, the depth to groundwater at the site is anticipated to be less than 50 feet bgs.

### **5.2 Distance to Nearest Potable Water Well**

Based on review of the NMOSE database, registered potable water wells were present within 0.5 miles of the site. The one registered well (C-01522) demonstrates null groundwater depth data, at 0.45 miles of the site

### **5.3 Distance to Nearest Surface Water**

Willow Lake (South-Eastern Eddy County), is approximately 3.97 miles to the northwest of the site.

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**5.4 Soil / Waste Characteristics**

Soils at the site are mapped as Reagan loam, 0 to 3 percent slopes. This soil is a loam layer from 0 to 8 inches, a loam layer 6 to 60 inches and cemented material greater than 80 inches. The formation is categorized with a low runoff, with a natural drainage class of well drained.

**5.5 Groundwater Quality**

Groundwater quality is unknown at the site. The one well registered with the NMSEO website within 0.5 miles of the site is null on groundwater data.

**6.0 REGULATORY FRAMEWORK AND RESPONSE ACTION LEVELS**

Oil and gas exploration and production facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). The NMOCD has issued the *Closure Criteria for Soils Impacted by a Release, June 21, 2018* and *Restoration, Reclamation, and Re-vegetation (19.15.29.13) NMAC – D (Reclamation of areas no longer in use)* as guidance documents for the remediation and reclamation of sites impacted by releases from oil and gas exploration and production activities. Sections 6.1 and 6.2 below detail applicability of these guidance documents to the site-specific characteristics associated with the Lobo 285 SWD release.

**6.1 Reclamation Levels (Surface to 4 ft. bgs)**

The below Reclamation Limits for chlorides, TPH (GRO+DRO+MRO), BTEX (includes benzene, toluene, ethylbenzene and xylenes), and benzene are defined within New Mexico Administration Code (NMAC) *Restoration, Reclamation, and Re-vegetation (19.15.29.13) New Mexico Administration Code (NMAC) – D (Reclamation of areas no longer in use)* for soils extending to 4 ft. bgs.:

Constituent	Remediation Limits
Chloride	600 mg/kg
TPH (GRO+DRO+MRO)	100 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

**6.2 Remediation Levels (Deeper than 4 ft. bgs)**

The *Closure Criteria for Soils Impacted by a Release* guidance document provides direction for initial response actions, site assessment, sampling procedures and provides closure criteria

**Release Investigation and Remedial Action Plan**

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<b>Table 1</b>			
<b>Closure Criteria for Soils Impacted by a Release</b>			
<b>Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/L TDS</b>	<b>Constituent</b>	<b>Method*</b>	<b>Limit**</b>
<b>≤50 feet</b>	Chloride***	EPA 300.0 or SM4500 CI B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
<b>51 feet – 100 feet</b>	Chloride***	EPA 300.0 or SM4500 CI B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
<b>&gt;100 feet</b>	Chloride***	EPA 300.0 or SM4500 CI B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	TPH (GRO+DRO)	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

based on the depth to groundwater, distance to private and domestic water sources, and the distance to the nearest surface water body as follows:

\*Or other methods approved by the division

\*\*Numerical limits or natural background level, whichever is greater

**Release Investigation and Remedial Action Plan**

Lobo 285 SWD Release (2RP-5463) ■ Eddy County, New Mexico

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*\*\*\*This applies to releases of produced water or other fluids, which may contain chloride*

Based on the site-specific characteristics, the applicable NMOCD remediation levels for Total BTEX, chloride, and TPH within soils deeper than 4 ft bgs, are the most conservative values and are equivalent to those levels defined within the Reclamation Zone (surface to 4 ft. bgs).

## 7.0 SOIL SAMPLING PROCEDURES

Soil sampling procedures are detailed as follows:

### 7.1 Soil Sampling Procedures for Laboratory Analysis

#### Soil Sampling Procedures

Soil sampling for laboratory analysis was conducted according to NMOCD-approved industry standards or other NMOCD-approved procedures. Accepted NMOCD soil sampling procedures and laboratory analytical methods are as follows:

- Collected samples in clean, air-tight glass jars supplied by the laboratory which will conduct the analysis or from a reliable laboratory equipment supplier.
- Label the samples with a unique code for each sample.
- Cool and store samples with cold packs or on ice.
- Promptly ship sample to the lab for analysis following chain of custody procedures.
- All samples must be analyzed within the holding times for the laboratory analytical method specified by EPA.

#### Analytical Methods

All soil samples must be analyzed using EPA methods, or by other NMOCD-approved methods and must be analyzed within the holding time specified by the method. Below are laboratory analytical methods the selected laboratory will use for analysis of soil samples analyzed for petroleum related constituents.

- Chloride – EPA Method 300.0
- Total Petroleum Hydrocarbons – TPH (GRO+DRO+MRO) – EPA Method 8015M
- Benzene, toluene, ethylbenzene and total xylenes (BTEX) – EPA Method 8021B
- Benzene – EPA Method 8021B

## 8.0 RELEASE INVESTIGATION DATA EVALUATION

During Terracon's August 21, 2019 release investigation activities, a total of 10 soil samples were collected and analyzed for BTEX, chloride, and/or TPH.

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**8.1 Release Margins Data Evaluation****8.1.1 Reclamation Assessment Data Evaluation**

Benzene, Total BTEX, and Total TPH constituents were not detected above applicable laboratory SDLs in the four soil samples analyzed within Reclamation Assessment target depths, as summarized in Table 1.

Chloride was detected above applicable laboratory SDLs in each of the eight soil samples analyzed within the Reclamation Assessment target depths. The chloride concentrations ranged from 23.6 mg/kg in soil sample HA-2 (3.5 to 4 ft bgs) to 8,820 mg/kg in soil sample HA-1 (surface to 0.5 ft bgs). Of the eight soil samples analyzed, three soil samples exhibited chloride concentrations above the applicable NMOCD Reclamation Assessment Limit of 600 mg/kg, as summarized in Table 1.

**8.1.2 Remediation Assessment Data Evaluation**

At each of the soil boring locations, a soil sample was collected and analyzed a soil sample from the 4.5 to 5 ft. bgs interval for the presence of chlorides. The samples were not analyzed for the presence of BTEX or TPH due to the constituents' lack of presence in shallower intervals.

The detected chloride concentrations ranged in concentrations from 52.1 mg/kg in soil sample HA-2 (4.5 to 5 ft. bgs) to 664 mg/kg in soil sample HA-1 (4.5 to 5 ft. bgs). The detected chloride concentration in soil sample HA-1 (4.5 to 5 ft. bgs) did exceed the applicable NMOCD Remediation Action Limit of 600 mg/kg, as summarized in Table 1.

It should be noted that soil borings were terminated due auger refusal upon encountering a cemented caliche layer at approximately 5 ft. bgs across the assessed area.

**8.2 Release Investigation Data Summary**

Based on the review of the above release investigation analytical results, the presence of petroleum hydrocarbon constituents (BTEX/TPH) were not detected at concentrations above applicable NMOCD Reclamation and/or Remediation Action Limits.

Of the 10 soil samples analyzed, four soil samples exhibited chloride concentrations above the applicable NMOCD Reclamation Action Limit of 600 mg/kg. One of the soil samples analyzed for chlorides exceeded the NMOCD Remediation Action Limit for samples collected deeper than 4 ft. bgs.

**Release Investigation and Remedial Action Plan**

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**8.3 Confirmation Data Evaluation**

During Terracon's confirmation sampling on December 3, 2019, January 10, 2020 and February 27, 2020, soil samples were collected from the base and side walls of the open excavation and from the base of the excavation post initial reclamation activities, and during the second and third confirmation sampling events interior samples were collected from the base and the side walls of the excavation. Confirmation composite samples were collected every 200 linear ft, resulting in six total soil samples were collected from the site and analyzed for BTEX, chloride, and/or TPH.

**8.3.1 Confirmation Assessment Data Evaluation**

Benzene and Total BTEX were not detected above the applicable laboratory SDL in the confirmation soil samples. Benzene concentration did not exceed the applicable NMOCD RAL for benzene of 10 mg/kg, and Total BTEX concentration did not exceed the applicable NMOCD RAL for Total BTEX of 50 mg/kg, as summarized in Table 2.

Chloride was detected above the applicable laboratory SDL in each of the six confirmation soil samples. The chloride concentrations ranged from 15.6 mg/kg in soil sample CS-1.1 (1.5 ft bgs to 2.0 ft bgs) to 2,480 mg/kg in soil sample CS-1 (surface to 0.5 ft bgs). Chloride concentrations exceeded the applicable NMOCD RAL of 600 mg/kg for chloride in four of the six confirmation soil samples, with the exceptions being both of the samples collected during the sampling event on February 27, 2020, as summarized in Table 2.

Total TPH was detected above the applicable laboratory SDL in four of the six confirmation soil samples. The Total TPH concentrations ranged from 0.299 mg/kg in soil sample Floor-1 (3.5 ft bgs to 4.0 ft bgs) to 66.02 mg/kg in soil sample CS-1 (surface to 0.5 ft bgs). It should be noted that TPH was not detected during the initial release investigation, these detections were during the December 3, 2019 sampling event and did not exceed the NMOCD RAL of 100 mg/kg for Total TPH, as summarized in Table 2.

**8.3.2 Confirmation Assessment Data Summary**

Based on the review of analytical results, the presence of petroleum hydrocarbon constituents (BTEX/TPH) were not detected at concentrations above applicable NMOCD Reclamation and/or Remediation Action Limits.

Of the six soil samples analyzed, four soil samples exhibited chloride concentrations above the applicable NMOCD RAL of 600 mg/kg. All samples exhibiting concentrations above the NMOCD RAL were exclusive to the initial confirmation sampling events on December 3, 2019, and January 10, 2020. All subsequent confirmation samples were below the NMOCD RAL.

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**9.0 SOIL RECLAMATION AND REMEDIATION**

Impacted soil was remediated, reclaimed and managed in accordance with the means and methods described below which were intended to protect fresh waters, public health and the environment from exposure to the above constituents of concern.

**9.1 Reclamation Response Objectives**

Based on the magnitude of chloride concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 23 cy of chloride impacted material was hydro excavated and disposed of at a permitted disposal facility under manifest.

**9.2 Remediation Response Actions**

Following hydro excavation to recommended Reclamation depths, vertical and horizontal delineation samples were collected from the base and walls of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD RALs.

Based on the anticipated depth to groundwater and the confirmed vertical delineation, it is anticipated that a remedial response was warranted within the soils at depths greater than 4 ft. bgs. The remediation at depth was achieved through the treatment of chloride affected soils with granulated gypsum at the base of the excavation.

**9.3 Soil Management**

The selected method of soil management is removal and disposal at a NMOCD-approved facility. Hydro excavated soils were transported by truck (20 cubic yard capacity) and disposed of at the R360 Disposal Facility located in Halfway, New Mexico, with landfill approvals.

**10.0 TERMINATION OF REMEDIAL ACTIONS, FINAL CLOSURE AND REPORTING****10.1 Termination of Reclamation and Remedial Actions**

Reclamation and remedial actions at the site were terminated when the confirmation samples indicated that the above objectives had been completed within the reclamation and remedial depth designations. The intent of the reclamation and remedial approaches are to achieve compliance with NMOCD regulatory objectives in ensuring that any remaining contaminants will not pose a threat to present or foreseeable beneficial use of fresh water, the public health and the environment.

## Release Investigation and Remedial Action Plan

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### 10.2 Final Closure

Upon termination of remedial actions (Sections 6 and 9), the area of the release was closed by backfilling the excavated area, contouring to surrounding area topography and reseeding the area with approved-native vegetative seed.

### 10.3 Final Report

Upon completion of remedial activities, a final report summarizing actions taken to mitigate environmental damage related to the release has been provided to NMOCD for approval.

## **APPENDIX A – FIGURES AND TABLES**

Figure 1 – Topographic Map

Figure 2 – Site Map

Figure 3 – Chloride Concentration Map

Figure 4 – Chloride Confirmation Concentration Map

Figure 4 – NMOE POD Location Map

Table 1 – Soil Sample Analytical Results

## **APPENDIX A – FIGURES AND TABLES**

Figure 1 – Topographic Map

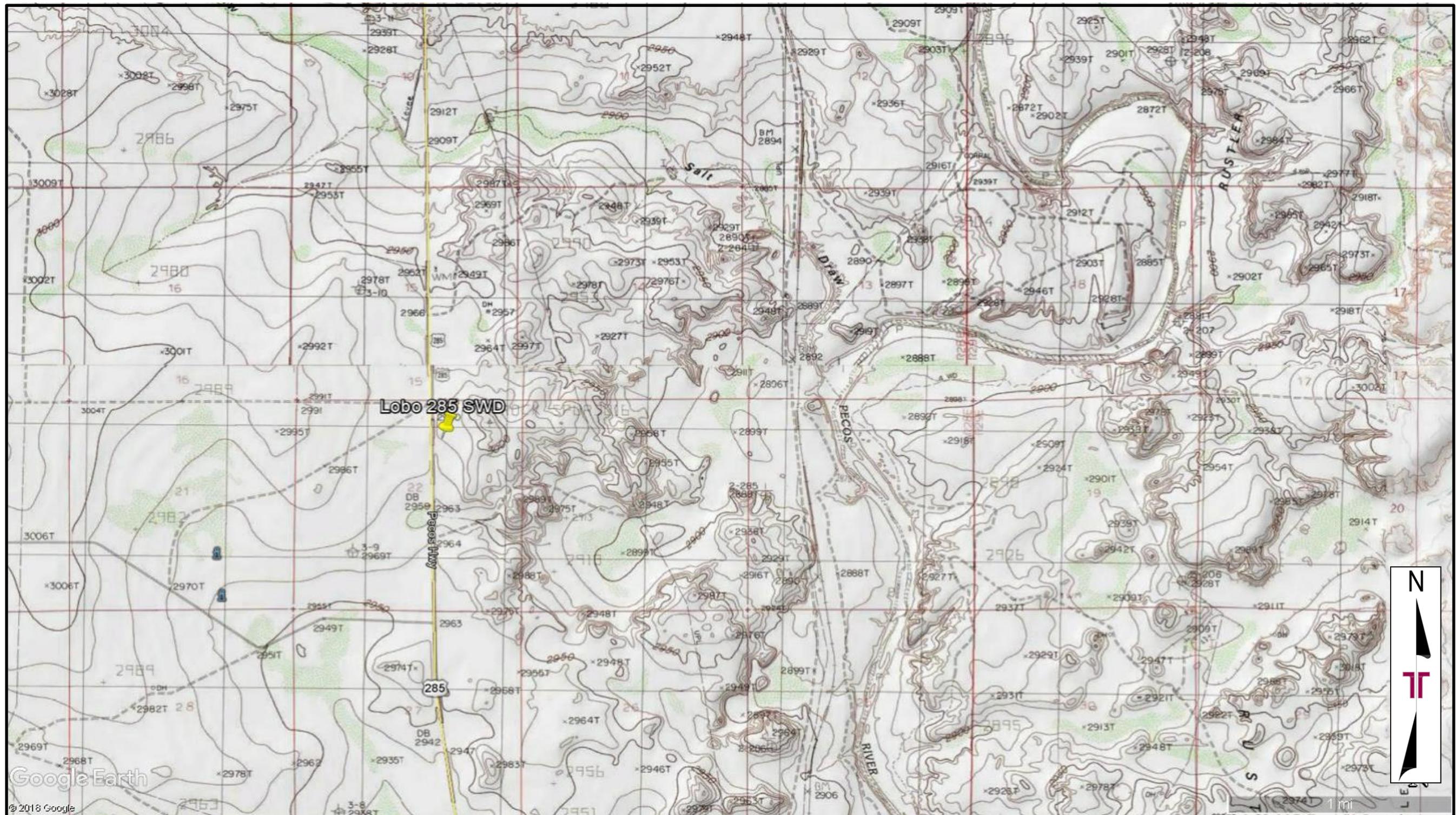
Figure 2 – Site Map

Figure 3 – Chloride Concentration Map

Figure 4 – Chloride Confirmation Concentration Map

Figure 5 – NMOE POD Location Map

Table 1 – Soil Sample Analytical Results

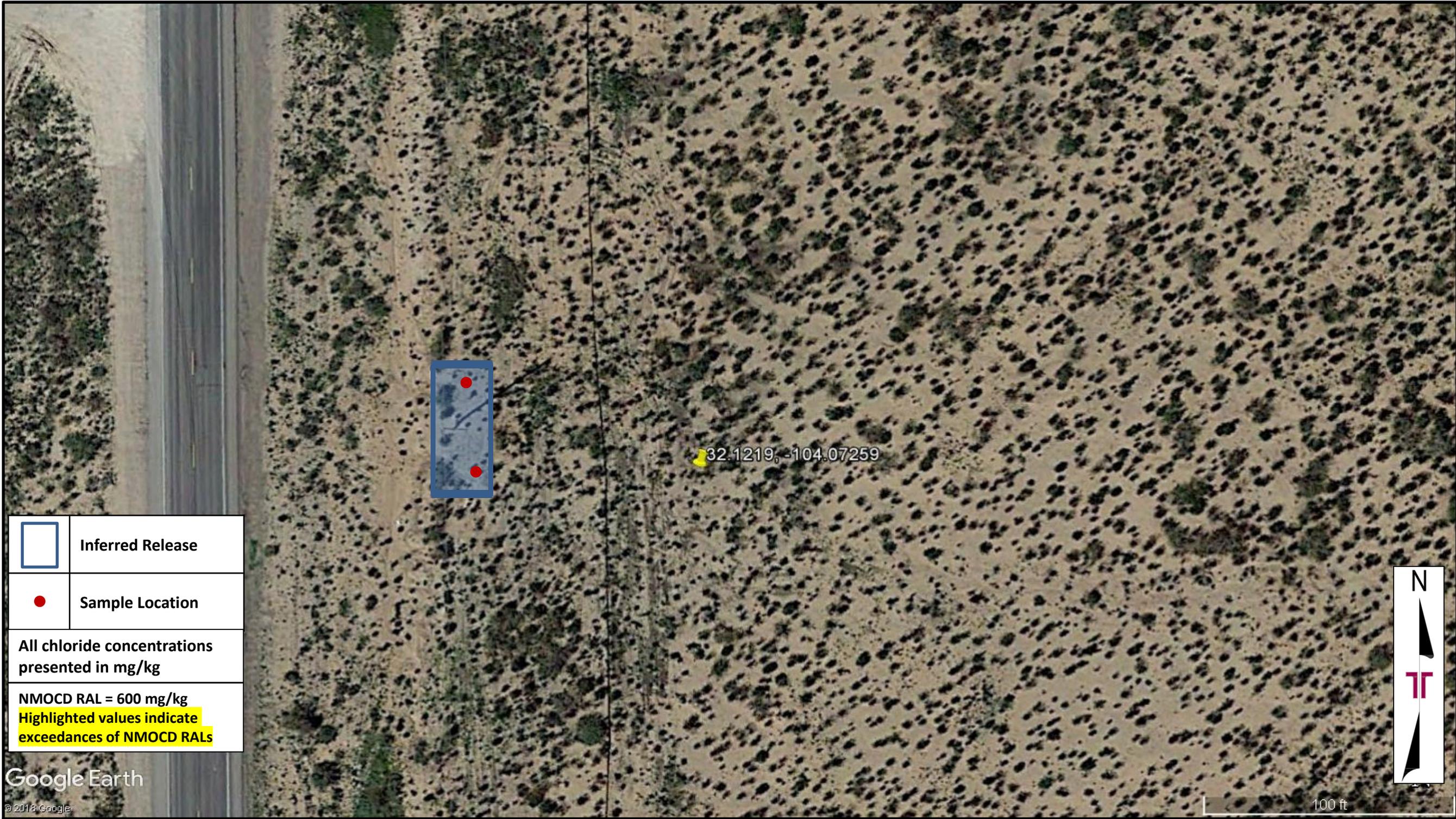


Project No.	AR197256
Scale:	As Shown
Source:	Google Earth
Image Date:	2/21/2019

**Terracon**  
 Consulting Engineers & Scientists

5827 50<sup>th</sup> St. Suite 1      Lubbock, Texas 79424  
 PH. (806) 300-0104      FAX. (806) 797 0947

Figure 1 – Topo Map  
 Lobo 285 SWD  
 32.12190°, -104.07259°  
 Eddy County, New Mexico



	Inferred Release
	Sample Location
All chloride concentrations presented in mg/kg	
NMOCD RAL = 600 mg/kg Highlighted values indicate exceedances of NMOCD RALs	

Google Earth

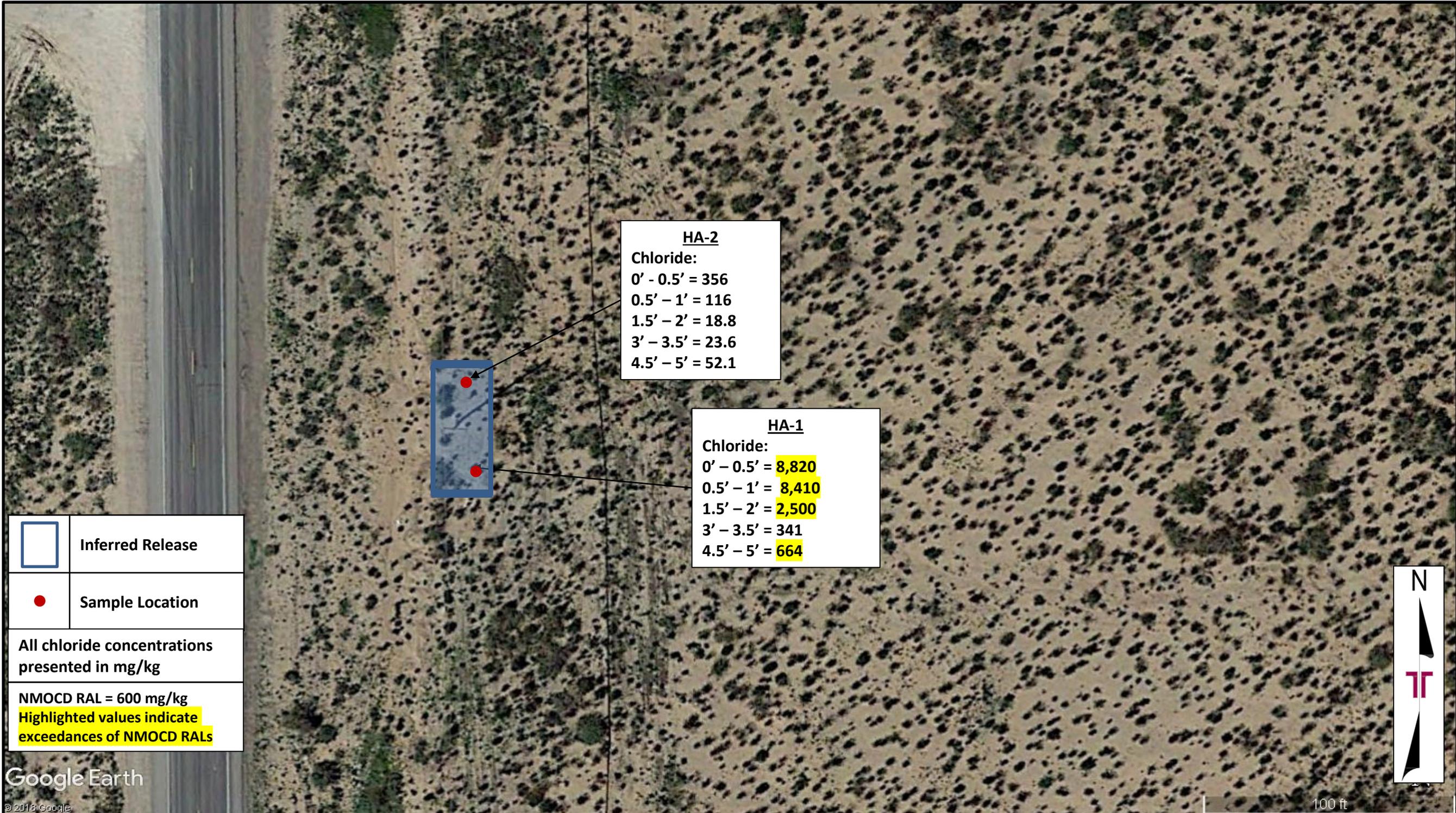
© 2018 Google

Project No.	AR197256
Scale:	As Shown
Source:	Google Earth
Image Date:	2/21/2019

**Terracon**  
 Consulting Engineers & Scientists

5827 50<sup>th</sup> St. Suite 1 Lubbock, Texas 79424  
 PH. (806) 300-0104 FAX. (806) 797 0947

Figure 2 – Site Map  
 Lobo 285 SWD  
 32.12190°, -104.07259°  
 Eddy County, New Mexico

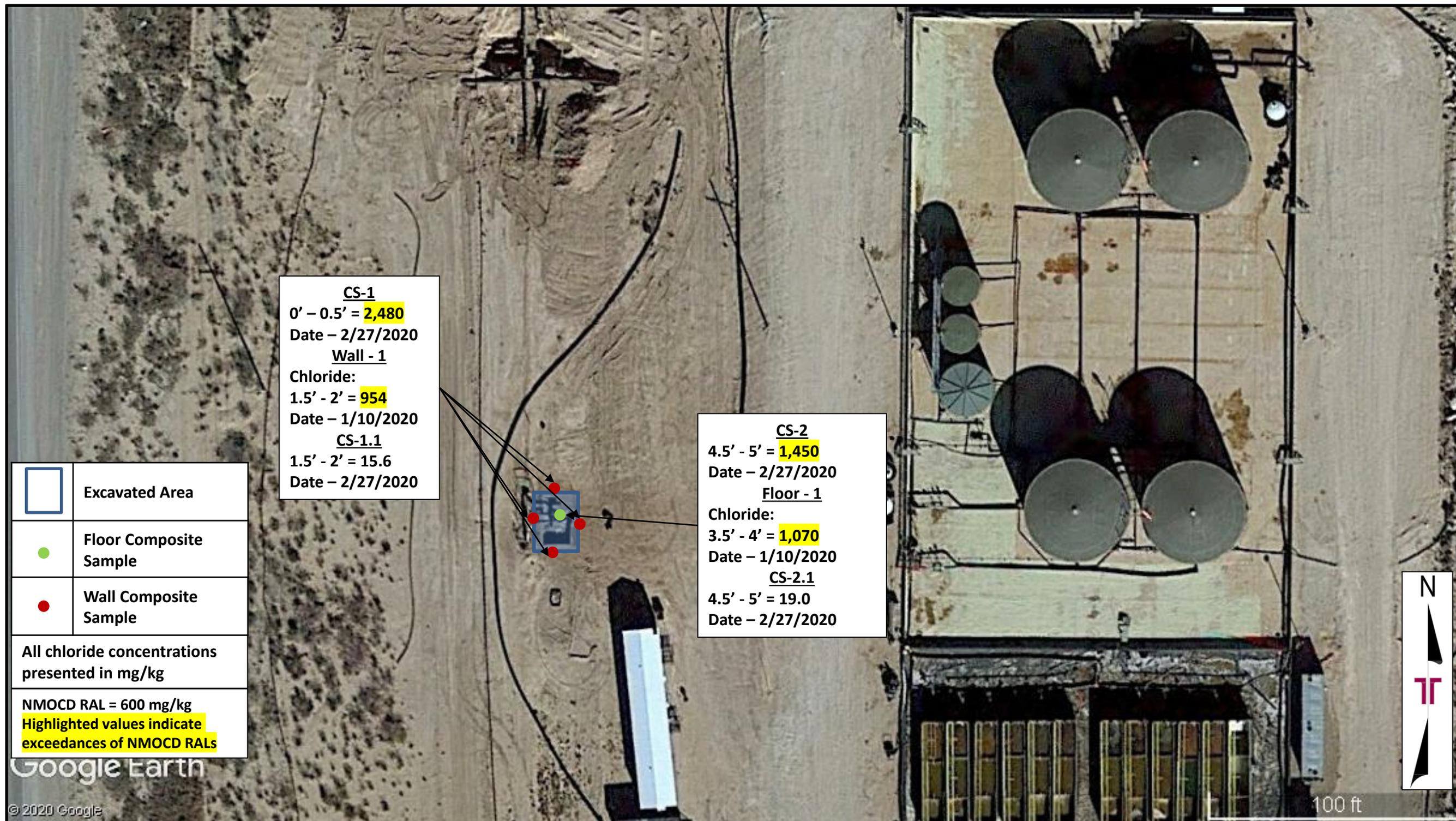


Project No.	AR197256
Scale:	As Shown
Source:	Google Earth
Image Date:	2/21/2019

**Terracon**  
 Consulting Engineers & Scientists

5827 50<sup>th</sup> St. Suite 1 Lubbock, Texas 79424  
 PH. (806) 300-0104 FAX. (806) 797 0947

**Figure 3 – Chloride Concentration Map**  
 Lobo 285 SWD  
 32.12190°, -104.07259°  
 Eddy County, New Mexico



Project No.	AR197256
Scale:	As Shown
Source:	Google Earth
Image Date:	2/21/2019

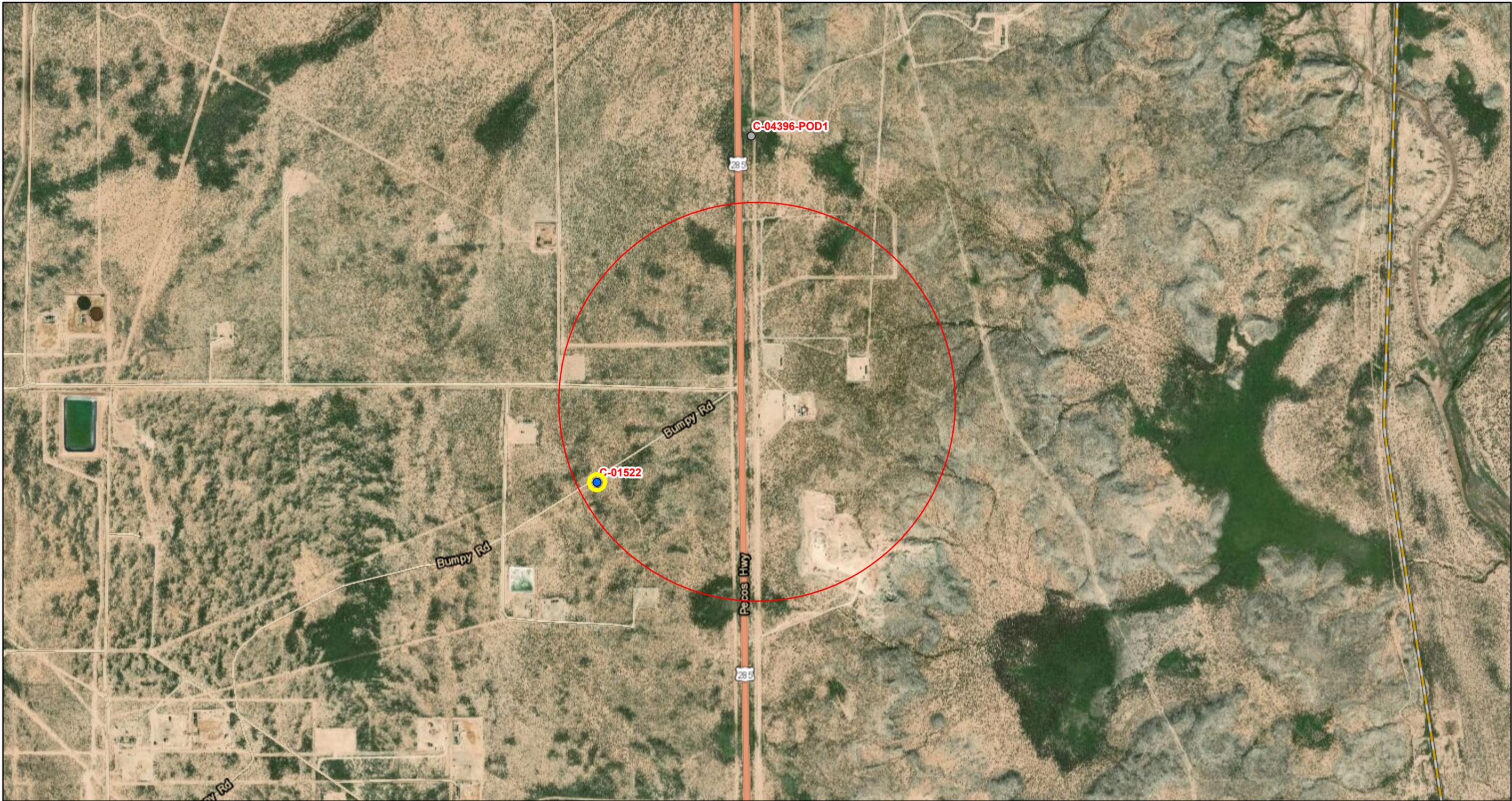
**Terracon**  
 Consulting Engineers & Scientists

5827 50<sup>th</sup> St. Suite 1 Lubbock, Texas 79424  
 PH. (806) 300-0104 FAX. (806) 797 0947

Figure 4 – Chloride Confirmation Concentration Map

Lobo 285 SWD  
 32.12190°, -104.07259°  
 Eddy County, New Mexico

# Figure 5 - NMOSE POD Location Map



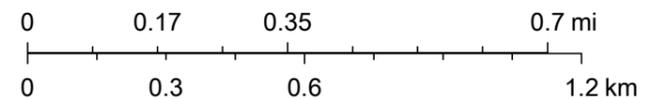
5/19/2020 3:55:05 PM

OSE District Boundary

GIS WATERS PODs

● Active

1:18,056



Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and

## **APPENDIX B – PHOTOGRAPHIC LOG**

Lobo 285 SWD (2RP-5463) ■ Eddy County, New Mexico  
May 19, 2020 ■ Terracon Project No. AR197256



**PHOTO 1:** View of site, facing north. 7/25/2019 / **TIME:** 1:11PM / **GPS:** 32.1217 -1104.0726



**PHOTO 2:** View of site, facing northwest. 8/21/2019 / **TIME:** 1:07PM / **GPS:** 32.1218 -1104.0725

Lobo 285 SWD (2RP-5463) ■ Eddy County, New Mexico  
May 19, 2020 ■ Terracon Project No. AR197256



**PHOTO 3:** View of HA-1, facing west. 8/21/2019 / **TIME:** 1:21PM / **GPS:** 32.1218 -1104.0725



**PHOTO 4:** View of site and HA-2, facing south. 8/21/2019 / **TIME:** 1:36PM / **GPS:** 32.1221 -1104.0725

Lobo 285 SWD (2RP-5463) ■ Eddy County, New Mexico  
May 19, 2020 ■ Terracon Project No. AR197256



**PHOTO 5:** View of remediation, facing west. 11/22/2019 / TIME: 1:11PM / GPS: 32.1217 -1104.0726



**PHOTO 6:** View of remediation, facing south. 11/22/2019 / TIME: 1:07PM / GPS: 32.1218 -1104.0725

Lobo 285 SWD (2RP-5463) ■ Eddy County, New Mexico  
May 19, 2020 ■ Terracon Project No. AR197256



**PHOTO 7:** View of base of excavation, facing south. 11/22/2019 / **TIME:** 1:21PM / **GPS:** 32.1218 -1104.0725



**PHOTO 8:** View of excavation, facing west. 11/22/2019 / **TIME:** 1:36PM / **GPS:** 32.1221 -1104.0725

## **APPENDIX C – ANALYTICAL REPORT AND CHAIN OF CUSTODY**



# Certificate of Analysis Summary 634997



Terracon-Lubbock, Lubbock, TX

Project Name: Lobo 285 SWD

**Project Id:** AR197256  
**Contact:** Joseph Guesnier  
**Project Location:**

**Date Received in Lab:** Fri Aug-23-19 01:50 pm  
**Report Date:** 30-AUG-19  
**Project Manager:** Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	634997-001	634997-002	634997-003	634997-004	634997-005	634997-006
	<i>Field Id:</i>	HA-1 (0-0.5)	HA-1 (0.5-1)	HA-1 (1.5-2)	HA-1 (3.5-4)	HA-1 (4.5-5)	HA-2 (0-0.5)
	<i>Depth:</i>	0-0.5	0.5-1	1.5-2	3.5-4	4.5-5	0-0.5
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Aug-21-19 12:50	Aug-21-19 12:55	Aug-21-19 13:00	Aug-21-19 13:05	Aug-21-19 13:10	Aug-21-19 13:15
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-26-19 14:50	Aug-26-19 14:50				Aug-26-19 14:50
	<i>Analyzed:</i>	Aug-26-19 22:28	Aug-27-19 00:05				Aug-27-19 00:29
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Benzene		<0.00794 0.0176	<0.00879 0.0195				<0.00843 0.0187
Toluene		<0.00411 0.0176	<0.00455 0.0195				<0.00437 0.0187
Ethylbenzene		<0.00541 0.0176	<0.00599 0.0195				<0.00575 0.0187
m,p-Xylenes		<0.00599 0.0351	<0.00663 0.0389				<0.00636 0.0373
o-Xylene		<0.00599 0.0176	<0.00663 0.0195				<0.00636 0.0187
Total Xylenes		<0.00599 0.0176	<0.00663 0.0195				<0.00636 0.0187
Total BTEX		<0.00411 0.0176	<0.00455 0.0195				<0.00437 0.0187
<b>Chloride by EPA 300 SUB: T104704215-19-29</b>	<i>Extracted:</i>	Aug-27-19 11:35	Aug-26-19 14:18				
	<i>Analyzed:</i>	Aug-27-19 11:51	Aug-26-19 18:29	Aug-26-19 18:41	Aug-26-19 19:19	Aug-26-19 19:31	Aug-26-19 19:44
	<i>Units/RL:</i>	mg/kg RL					
Chloride		8820 200	8410 99.4	2500 99.2	341 9.98	664 10.0	356 10.0
<b>TPH By SW8015 Mod SUB: T104704215-19-29</b>	<i>Extracted:</i>	Aug-28-19 12:27	Aug-28-19 12:30				Aug-28-19 12:33
	<i>Analyzed:</i>	Aug-30-19 00:17	Aug-30-19 00:36				Aug-30-19 00:17
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Gasoline Range Hydrocarbons (GRO)		11.8 J 50.0	12.8 J 50.0				<10.0 50.0
Diesel Range Organics (DRO)		<10.0 50.0	<10.0 50.0				17.4 J 50.0
Motor Oil Range Hydrocarbons (MRO)		<10.0 50.0	<10.0 50.0				<10.0 50.0
Total TPH		11.8 J 50.0	12.8 J 50.0				17.4 J 50.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 634997



Terracon-Lubbock, Lubbock, TX

Project Name: Lobo 285 SWD

**Project Id:** AR197256  
**Contact:** Joseph Guesnier  
**Project Location:**

**Date Received in Lab:** Fri Aug-23-19 01:50 pm  
**Report Date:** 30-AUG-19  
**Project Manager:** Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	634997-007	634997-008	634997-009	634997-010		
	<i>Field Id:</i>	HA-2 (0.5-1)	HA-2 (1.5-2)	HA-2 (3.5-4)	HA-2 (4.5-5)		
	<i>Depth:</i>	0.5-1	1.5-2	3.5-4	4.5-5		
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Aug-21-19 13:20	Aug-21-19 13:25	Aug-21-19 13:30	Aug-21-19 13:35		
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-26-19 14:50					
	<i>Analyzed:</i>	Aug-27-19 00:53					
	<i>Units/RL:</i>	mg/kg RL					
Benzene		<0.00823 0.0182					
Toluene		<0.00426 0.0182					
Ethylbenzene		<0.00561 0.0182					
m,p-Xylenes		<0.00621 0.0364					
o-Xylene		<0.00621 0.0182					
Total Xylenes		<0.00621 0.0182					
Total BTEX		<0.00426 0.0182					
<b>Chloride by EPA 300 SUB: T104704215-19-29</b>	<i>Extracted:</i>	Aug-26-19 14:18	Aug-26-19 14:18	Aug-26-19 14:18	Aug-26-19 14:18		
	<i>Analyzed:</i>	Aug-26-19 19:56	Aug-26-19 20:09	Aug-26-19 20:21	Aug-26-19 20:34		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		116 9.96	18.8 9.98	23.6 9.96	52.1 9.94		
<b>TPH By SW8015 Mod SUB: T104704215-19-29</b>	<i>Extracted:</i>	Aug-28-19 12:36					
	<i>Analyzed:</i>	Aug-29-19 10:34					
	<i>Units/RL:</i>	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		12.4 J 50.0					
Diesel Range Organics (DRO)		<10.0 50.0					
Motor Oil Range Hydrocarbons (MRO)		<10.0 50.0					
Total TPH		12.4 J 50.0					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

*Jessica Kramer*

Jessica Kramer  
Project Assistant

# Analytical Report 634997

## for Terracon-Lubbock

**Project Manager: Joseph Guesnier**

**Lobo 285 SWD**

**AR197256**

**30-AUG-19**

Collected By: Client



**6701 Aberdeen, Suite 9 Lubbock, TX 79424**

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)  
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



30-AUG-19

Project Manager: **Joseph Guesnier**

**Terracon-Lubbock**

5827 50th st, Suite 1

Lubbock, TX 79424

Reference: XENCO Report No(s): **634997**

**Lobo 285 SWD**

Project Address:

**Joseph Guesnier:**

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) 634997. 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. 634997 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,

**Jessica Kramer**

Project Assistant

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

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



# Sample Cross Reference 634997

## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
HA-1 (0-0.5)	S	08-21-19 12:50	0 - 0.5	634997-001
HA-1 (0.5-1)	S	08-21-19 12:55	0.5 - 1	634997-002
HA-1 (1.5-2)	S	08-21-19 13:00	1.5 - 2	634997-003
HA-1 (3.5-4)	S	08-21-19 13:05	3.5 - 4	634997-004
HA-1 (4.5-5)	S	08-21-19 13:10	4.5 - 5	634997-005
HA-2 (0-0.5)	S	08-21-19 13:15	0 - 0.5	634997-006
HA-2 (0.5-1)	S	08-21-19 13:20	0.5 - 1	634997-007
HA-2 (1.5-2)	S	08-21-19 13:25	1.5 - 2	634997-008
HA-2 (3.5-4)	S	08-21-19 13:30	3.5 - 4	634997-009
HA-2 (4.5-5)	S	08-21-19 13:35	4.5 - 5	634997-010



## CASE NARRATIVE

*Client Name: Terracon-Lubbock*

*Project Name: Lobo 285 SWD*

Project ID: AR197256  
Work Order Number(s): 634997

Report Date: 30-AUG-19  
Date Received: 08/23/2019

---

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

**Sample receipt non conformances and comments:**

None

---

**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3099746 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



# Certificate of Analytical Results 634997

## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: <b>HA-1 (0-0.5)</b>	Matrix: Soil	Date Received: 08.23.19 13.50
Lab Sample Id: 634997-001	Date Collected: 08.21.19 12.50	Sample Depth: 0 - 0.5
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: JYM		% Moisture:
Analyst: JYM	Date Prep: 08.27.19 11.35	Basis: Wet Weight
Seq Number: 3099804		SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>8820</b>	200	7.07	mg/kg	08.27.19 11.51		20

Analytical Method: TPH By SW8015 Mod		Prep Method: SW8015P
Tech: ISU		% Moisture:
Analyst: DRU	Date Prep: 08.28.19 12.27	Basis: Wet Weight
Seq Number: 3100243		SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
<b>Gasoline Range Hydrocarbons (GRO)</b>	PHC610	<b>11.8</b>	50.0	10.0	mg/kg	08.30.19 00.17	J	1
Diesel Range Organics (DRO)	C10C28DRO	<10.0	50.0	10.0	mg/kg	08.30.19 00.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<10.0	50.0	10.0	mg/kg	08.30.19 00.17	U	1
<b>Total TPH</b>	PHC635	<b>11.8</b>	50.0	10.0	mg/kg	08.30.19 00.17	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	08.30.19 00.17	
o-Terphenyl	84-15-1	109	%	70-135	08.30.19 00.17	



## Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: HA-1 (0-0.5)

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-001

Date Collected: 08.21.19 12.50

Sample Depth: 0 - 0.5

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 08.26.19 14.50

Basis: Wet Weight

Seq Number: 3099746

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00794	0.0176	0.00794	mg/kg	08.26.19 22.28	U	1
Toluene	108-88-3	<0.00411	0.0176	0.00411	mg/kg	08.26.19 22.28	U	1
Ethylbenzene	100-41-4	<0.00541	0.0176	0.00541	mg/kg	08.26.19 22.28	U	1
m,p-Xylenes	179601-23-1	<0.00599	0.0351	0.00599	mg/kg	08.26.19 22.28	U	1
o-Xylene	95-47-6	<0.00599	0.0176	0.00599	mg/kg	08.26.19 22.28	U	1
Total Xylenes	1330-20-7	<0.00599	0.0176	0.00599	mg/kg	08.26.19 22.28	U	1
Total BTEX		<0.00411	0.0176	0.00411	mg/kg	08.26.19 22.28	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>		
4-Bromofluorobenzene	460-00-4	104	%	68-120	08.26.19 22.28			
a,a,a-Trifluorotoluene	98-08-8	110	%	71-121	08.26.19 22.28			



## Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: HA-1 (0.5-1)

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-002

Date Collected: 08.21.19 12.55

Sample Depth: 0.5 - 1

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8410	99.4	3.52	mg/kg	08.26.19 18.29		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: ISU

% Moisture:

Analyst: DRU

Date Prep: 08.28.19 12.30

Basis: Wet Weight

Seq Number: 3100243

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	12.8	50.0	10.0	mg/kg	08.30.19 00.36	J	1
Diesel Range Organics (DRO)	C10C28DRO	<10.0	50.0	10.0	mg/kg	08.30.19 00.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<10.0	50.0	10.0	mg/kg	08.30.19 00.36	U	1
Total TPH	PHC635	12.8	50.0	10.0	mg/kg	08.30.19 00.36	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	08.30.19 00.36	
o-Terphenyl	84-15-1	111	%	70-135	08.30.19 00.36	



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-1 (0.5-1)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-002

Date Collected: 08.21.19 12.55

Sample Depth: 0.5 - 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 08.26.19 14.50

Basis: Wet Weight

Seq Number: 3099746

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00879	0.0195	0.00879	mg/kg	08.27.19 00.05	U	1
Toluene	108-88-3	<0.00455	0.0195	0.00455	mg/kg	08.27.19 00.05	U	1
Ethylbenzene	100-41-4	<0.00599	0.0195	0.00599	mg/kg	08.27.19 00.05	U	1
m,p-Xylenes	179601-23-1	<0.00663	0.0389	0.00663	mg/kg	08.27.19 00.05	U	1
o-Xylene	95-47-6	<0.00663	0.0195	0.00663	mg/kg	08.27.19 00.05	U	1
Total Xylenes	1330-20-7	<0.00663	0.0195	0.00663	mg/kg	08.27.19 00.05	U	1
Total BTEX		<0.00455	0.0195	0.00455	mg/kg	08.27.19 00.05	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>		
4-Bromofluorobenzene	460-00-4	100	%	68-120	08.27.19 00.05			
a,a,a-Trifluorotoluene	98-08-8	109	%	71-121	08.27.19 00.05			



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: <b>HA-1 (1.5-2)</b>	Matrix: Soil	Date Received: 08.23.19 13.50
Lab Sample Id: 634997-003	Date Collected: 08.21.19 13.00	Sample Depth: 1.5 - 2
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: JYM		% Moisture:
Analyst: JYM	Date Prep: 08.26.19 14.18	Basis: Wet Weight
Seq Number: 3099706		SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2500	99.2	3.51	mg/kg	08.26.19 18.41		10



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-1 (3.5-4)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-004

Date Collected: 08.21.19 13.05

Sample Depth: 3.5 - 4

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	341	9.98	0.353	mg/kg	08.26.19 19.19		1



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-1 (4.5-5)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-005

Date Collected: 08.21.19 13.10

Sample Depth: 4.5 - 5

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>664</b>	10.0	0.355	mg/kg	08.26.19 19.31		1



## Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: HA-2 (0-0.5)

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-006

Date Collected: 08.21.19 13.15

Sample Depth: 0 - 0.5

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	356	10.0	0.355	mg/kg	08.26.19 19.44		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: ISU

% Moisture:

Analyst: DRU

Date Prep: 08.28.19 12.33

Basis: Wet Weight

Seq Number: 3100243

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<10.0	50.0	10.0	mg/kg	08.30.19 00.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	17.4	50.0	10.0	mg/kg	08.30.19 00.17	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<10.0	50.0	10.0	mg/kg	08.30.19 00.17	U	1
Total TPH	PHC635	17.4	50.0	10.0	mg/kg	08.30.19 00.17	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	08.30.19 00.17	
o-Terphenyl	84-15-1	108	%	70-135	08.30.19 00.17	



## Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: HA-2 (0-0.5)

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-006

Date Collected: 08.21.19 13.15

Sample Depth: 0 - 0.5

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 08.26.19 14.50

Basis: Wet Weight

Seq Number: 3099746

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00843	0.0187	0.00843	mg/kg	08.27.19 00.29	U	1
Toluene	108-88-3	<0.00437	0.0187	0.00437	mg/kg	08.27.19 00.29	U	1
Ethylbenzene	100-41-4	<0.00575	0.0187	0.00575	mg/kg	08.27.19 00.29	U	1
m,p-Xylenes	179601-23-1	<0.00636	0.0373	0.00636	mg/kg	08.27.19 00.29	U	1
o-Xylene	95-47-6	<0.00636	0.0187	0.00636	mg/kg	08.27.19 00.29	U	1
Total Xylenes	1330-20-7	<0.00636	0.0187	0.00636	mg/kg	08.27.19 00.29	U	1
Total BTEX		<0.00437	0.0187	0.00437	mg/kg	08.27.19 00.29	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>		
4-Bromofluorobenzene	460-00-4	99	%	68-120	08.27.19 00.29			
a,a,a-Trifluorotoluene	98-08-8	111	%	71-121	08.27.19 00.29			



# Certificate of Analytical Results 634997

## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-2 (0.5-1)** Matrix: Soil Date Received: 08.23.19 13.50  
 Lab Sample Id: 634997-007 Date Collected: 08.21.19 13.20 Sample Depth: 0.5 - 1  
 Analytical Method: Chloride by EPA 300 Prep Method: E300P  
 Tech: JYM % Moisture:  
 Analyst: JYM Date Prep: 08.26.19 14.18 Basis: Wet Weight  
 Seq Number: 3099706 SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	116	9.96	0.353	mg/kg	08.26.19 19.56		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P  
 Tech: ISU % Moisture:  
 Analyst: DRU Date Prep: 08.28.19 12.36 Basis: Wet Weight  
 Seq Number: 3100243 SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	12.4	50.0	10.0	mg/kg	08.29.19 10.34	J	1
Diesel Range Organics (DRO)	C10C28DRO	<10.0	50.0	10.0	mg/kg	08.29.19 10.34	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<10.0	50.0	10.0	mg/kg	08.29.19 10.34	U	1
<b>Total TPH</b>	PHC635	<b>12.4</b>	50.0	10.0	mg/kg	08.29.19 10.34	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	08.29.19 10.34	
o-Terphenyl	84-15-1	105	%	70-135	08.29.19 10.34	



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-2 (0.5-1)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-007

Date Collected: 08.21.19 13.20

Sample Depth: 0.5 - 1

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MIT

% Moisture:

Analyst: MIT

Date Prep: 08.26.19 14.50

Basis: Wet Weight

Seq Number: 3099746

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00823	0.0182	0.00823	mg/kg	08.27.19 00.53	U	1
Toluene	108-88-3	<0.00426	0.0182	0.00426	mg/kg	08.27.19 00.53	U	1
Ethylbenzene	100-41-4	<0.00561	0.0182	0.00561	mg/kg	08.27.19 00.53	U	1
m,p-Xylenes	179601-23-1	<0.00621	0.0364	0.00621	mg/kg	08.27.19 00.53	U	1
o-Xylene	95-47-6	<0.00621	0.0182	0.00621	mg/kg	08.27.19 00.53	U	1
Total Xylenes	1330-20-7	<0.00621	0.0182	0.00621	mg/kg	08.27.19 00.53	U	1
Total BTEX		<0.00426	0.0182	0.00426	mg/kg	08.27.19 00.53	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>		
4-Bromofluorobenzene	460-00-4	98	%	68-120	08.27.19 00.53			
a,a,a-Trifluorotoluene	98-08-8	109	%	71-121	08.27.19 00.53			



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-2 (1.5-2)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-008

Date Collected: 08.21.19 13.25

Sample Depth: 1.5 - 2

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>18.8</b>	9.98	0.353	mg/kg	08.26.19 20.09		1



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-2 (3.5-4)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-009

Date Collected: 08.21.19 13.30

Sample Depth: 3.5 - 4

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	23.6	9.96	0.353	mg/kg	08.26.19 20.21		1



# Certificate of Analytical Results 634997



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: **HA-2 (4.5-5)**

Matrix: Soil

Date Received: 08.23.19 13.50

Lab Sample Id: 634997-010

Date Collected: 08.21.19 13.35

Sample Depth: 4.5 - 5

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: JYM

% Moisture:

Analyst: JYM

Date Prep: 08.26.19 14.18

Basis: Wet Weight

Seq Number: 3099706

SUB: T104704215-19-29

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	52.1	9.94	0.352	mg/kg	08.26.19 20.34		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      **SQL** Method Quantitation Limit      **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample      **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample      **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate      **MS** Matrix Spike      **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



**Terracon-Lubbock**  
Lobo 285 SWD

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099706

MB Sample Id: 7684992-1-BLK

Matrix: Solid

LCS Sample Id: 7684992-1-BKS

Prep Method: E300P

Date Prep: 08.26.19

LCSD Sample Id: 7684992-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.354	100	103	103	103	103	80-120	0	20	mg/kg	08.26.19 14:31	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099804

MB Sample Id: 7685056-1-BLK

Matrix: Solid

LCS Sample Id: 7685056-1-BKS

Prep Method: E300P

Date Prep: 08.27.19

LCSD Sample Id: 7685056-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.354	100	105	105	105	105	80-120	0	20	mg/kg	08.27.19 11:26	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099706

Parent Sample Id: 634855-001

Matrix: Soil

MS Sample Id: 634855-001 S

Prep Method: E300P

Date Prep: 08.26.19

MSD Sample Id: 634855-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	43.0	99.6	144	101	144	101	80-120	0	20	mg/kg	08.26.19 15:08	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099706

Parent Sample Id: 634855-002

Matrix: Soil

MS Sample Id: 634855-002 S

Prep Method: E300P

Date Prep: 08.26.19

MSD Sample Id: 634855-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	36.2	100	137	101	136	100	80-120	1	20	mg/kg	08.26.19 15:46	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099804

Parent Sample Id: 634997-001

Matrix: Soil

MS Sample Id: 634997-001 S

Prep Method: E300P

Date Prep: 08.27.19

MSD Sample Id: 634997-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8820	1990	11100	115	11200	119	80-120	1	20	mg/kg	08.27.19 12:04	

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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



## Terracon-Lubbock

Lobo 285 SWD

**Analytical Method: Chloride by EPA 300**

Seq Number: 3099804

Parent Sample Id: 635075-001

Matrix: Soil

MS Sample Id: 635075-001 S

Prep Method: E300P

Date Prep: 08.27.19

MSD Sample Id: 635075-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15700	1990	17700	101	17700	100	80-120	0	20	mg/kg	08.27.19 12:41	

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3100243

MB Sample Id: 7685154-1-BLK

Matrix: Solid

LCS Sample Id: 7685154-1-BKS

Prep Method: SW8015P

Date Prep: 08.28.19

LCSD Sample Id: 7685154-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<10.0	1000	918	92	1050	105	70-135	13	35	mg/kg	08.28.19 15:50	
Diesel Range Organics (DRO)	<10.0	1000	851	85	987	99	70-135	15	35	mg/kg	08.28.19 15:50	

**Surrogate**

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	93		100		104		70-135	%	08.28.19 15:50
o-Terphenyl	100		93		104		70-135	%	08.28.19 15:50

**Analytical Method: BTEX by EPA 8021B**

Seq Number: 3099746

MB Sample Id: 7685055-1-BLK

Matrix: Solid

LCS Sample Id: 7685055-1-BKS

Prep Method: SW5030B

Date Prep: 08.26.19

LCSD Sample Id: 7685055-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00904	2.00	1.87	94	1.88	94	55-120	1	20	mg/kg	08.26.19 20:27	
Toluene	<0.00468	2.00	1.83	92	1.86	93	77-120	2	20	mg/kg	08.26.19 20:27	
Ethylbenzene	<0.00616	2.00	1.95	98	1.96	98	77-120	1	20	mg/kg	08.26.19 20:27	
m,p-Xylenes	<0.00682	4.00	3.84	96	3.85	96	78-120	0	20	mg/kg	08.26.19 20:27	
o-Xylene	<0.00682	2.00	1.97	99	1.97	99	78-120	0	20	mg/kg	08.26.19 20:27	

**Surrogate**

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		94		92		68-120	%	08.26.19 20:27
a,a,a-Trifluorotoluene	101		103		101		71-121	%	08.26.19 20:27

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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



**Terracon-Lubbock**

Lobo 285 SWD

**Analytical Method: BTEX by EPA 8021B**

Seq Number: 3099746

Parent Sample Id: 634997-001

Matrix: Soil

MS Sample Id: 634997-001 S

Prep Method: SW5030B

Date Prep: 08.26.19

MSD Sample Id: 634997-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00787	1.74	1.69	97	1.67	93	54-120	1	25	mg/kg	08.26.19 22:52	
Toluene	<0.00408	1.74	1.64	94	1.62	90	57-120	1	25	mg/kg	08.26.19 22:52	
Ethylbenzene	<0.00537	1.74	1.71	98	1.67	93	58-131	2	25	mg/kg	08.26.19 22:52	
m,p-Xylenes	<0.00594	3.48	3.36	97	3.30	92	62-124	2	25	mg/kg	08.26.19 22:52	
o-Xylene	<0.00594	1.74	1.66	95	1.66	92	62-124	0	25	mg/kg	08.26.19 22:52	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		94		68-120	%	08.26.19 22:52
a,a,a-Trifluorotoluene	111		111		71-121	%	08.26.19 22:52

MS/MSD Percent Recovery  
 Relative Percent Difference  
 LCS/LCSD Recovery  
 Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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CHAIN OF CUSTODY RECORD

<p><b>Terracon</b></p> <p>Office Location: Lubbock</p> <p>Project Manager: Joseph Guesnier</p> <p>Sampler's Name: Joseph Guesnier</p>		<p>Laboratory: Xenco 6701 Aberdeen Lubbock, Texas 79424</p> <p>Phone: _____ Contact: Joseph Guesnier (806-544-9276) SRS #: _____</p> <p>Sampler's Signature: _____</p>		<p>LAB USE ONLY</p> <p>DUE DATE: _____</p> <p>TEMP OF COOLER WHEN RECEIVED (°C): -2.8 / -2.7 / 12.4</p> <p>Page ____ of ____</p>													
<p>ANALYSIS REQUESTED</p> <p>TPH Extended 8015</p> <p>Chloride (EPA Method 300)</p>		<p>Hold</p> <p>BTEX (EPA Method 8021B)</p>		<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Client: Spur</p> <p>e-mail results to: john.fergerson@terracon.com, jrguesnier@terracon.com</p>													
<p>Project Number: AR197256</p> <p>Project Name: Lobo 285 SWD</p>		<p>TRRP Laboratory Review Checklist</p> <p>48-Hour Rush <input type="checkbox"/> 24-Hour Rush <input type="checkbox"/> Normal <input checked="" type="checkbox"/></p> <p>Date: 8-23-19 Time: 13:50 Received by (Signature): Holly Taylor</p> <p>Date: 8/23/19 Time: 13:50 Received by (Signature): Holly Taylor</p> <p>Date: _____ Time: _____ Received by (Signature): _____</p> <p>Date: _____ Time: _____ Received by (Signature): _____</p>															
<p>Matrix</p>		<p>Time</p>		<p>Comp</p>		<p>Grab</p>		<p>Identifying Marks of Sample(s)</p>		<p>Start Depth</p>		<p>End Depth</p>		<p>No. Type of Containers</p>		<p>Lab Sample ID</p>	
S	8/21/2019	12:50	X	X	HA-1 (0-0.5)	0'	0.5'	2 Oz Glass	4 Oz Glass	5035 Kit	40 ml VOA	X	X	X	X	1	
S	8/21/2019	12:55	X	X	HA-1 (0.5-1)	0.5'	1'	X	X	X	X	X	X	X	X	2	
S	8/21/2019	13:00	X	X	HA-1 (1.5-2)	1.5'	2'	X	X	X	X	X	X	X	X	3	
S	8/21/2019	13:05	X	X	HA-1 (3.5-4)	3.5'	4'	X	X	X	X	X	X	X	X	4	
S	8/21/2019	13:10	X	X	HA-1 (4.5-5)	4.5'	5'	X	X	X	X	X	X	X	X	5	
S	8/21/2019	13:15	X	X	HA-2 (0-0.5)	0'	0.5'	X	X	X	X	X	X	X	X	6	
S	8/21/2019	13:20	X	X	HA-2 (0.5-1)	0.5'	1'	X	X	X	X	X	X	X	X	7	
S	8/21/2019	13:25	X	X	HA-2 (1.5-2)	1.5'	2'	X	X	X	X	X	X	X	X	8	
S	8/21/2019	13:30	X	X	HA-2 (3.5-4)	3.5'	4'	X	X	X	X	X	X	X	X	9	
S	8/21/2019	13:35	X	X	HA-2 (4.5-5)	4.5'	5'	X	X	X	X	X	X	X	X	10	

Matrix: W-Wastewater, VOA - 40ml bail, W-Water, A/G - Amber Glass IL, S-Soil, 250 ml = glass wide mouth, L-Liquid, A-Air Bag, P/O - Plastic or other, C-Charcoal tube, SL-Sludge

Lubbock Office ■ 5827 50th Street, Suite 1 ■ Lubbock, Texas 79424 ■ 806-300-0140

Responsive ■ Resourceful ■ Reliable

## Inter-Office Shipment

IOS Number : **46858**

Date/Time: 08.23.2019 15:48

Created by: Brenda Ward

Please send report to: Jessica Kramer

Lab# From: **Lubbock**

Delivery Priority:

Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Lab# To: **Houston**

Air Bill No.: 776069084823

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
634997-001	S	HA-1 (0-0.5)	08.21.2019 12:50	SW8015MOD_NM	TPH By SW8015 Mod	08.29.2019	09.04.2019	JKR	PHCC10C28 PHCC28C3:	
634997-001	S	HA-1 (0-0.5)	08.21.2019 12:50	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-002	S	HA-1 (0.5-1)	08.21.2019 12:55	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-002	S	HA-1 (0.5-1)	08.21.2019 12:55	SW8015MOD_NM	TPH By SW8015 Mod	08.29.2019	09.04.2019	JKR	PHCC10C28 PHCC28C3:	
634997-003	S	HA-1 (1.5-2)	08.21.2019 13:00	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-004	S	HA-1 (3.5-4)	08.21.2019 13:05	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-005	S	HA-1 (4.5-5)	08.21.2019 13:10	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-006	S	HA-2 (0-0.5)	08.21.2019 13:15	SW8015MOD_NM	TPH By SW8015 Mod	08.29.2019	09.04.2019	JKR	PHCC10C28 PHCC28C3:	
634997-006	S	HA-2 (0-0.5)	08.21.2019 13:15	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-007	S	HA-2 (0.5-1)	08.21.2019 13:20	SW8015MOD_NM	TPH By SW8015 Mod	08.29.2019	09.04.2019	JKR	PHCC10C28 PHCC28C3:	
634997-007	S	HA-2 (0.5-1)	08.21.2019 13:20	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-008	S	HA-2 (1.5-2)	08.21.2019 13:25	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-009	S	HA-2 (3.5-4)	08.21.2019 13:30	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	
634997-010	S	HA-2 (4.5-5)	08.21.2019 13:35	E300_CL	Chloride by EPA 300	08.29.2019	02.17.2020	JKR	CL	

## Inter Office Shipment or Sample Comments:

Relinquished By:



Brenda Ward

Date Relinquished: 08.23.2019

Received By:



Ashly Kowalski

Date Received: 08.24.2019 09:30

Cooler Temperature: 4.1



Inter Office Report- Sample Receipt Checklist

Sent To: Houston

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : HOU-068

IOS #: 46858

Sent By: Brenda Ward

Date Sent: 08.23.2019 03.48 PM

Received By: Ashly Kowalski

Date Received: 08.24.2019 09.30 AM

Sample Receipt Checklist

Comments

- #1 \*Temperature of cooler(s)? 4.1
#2 \*Shipping container in good condition? Yes
#3 \*Samples received with appropriate temperature? Yes
#4 \*Custody Seals intact on shipping container/ cooler? N/A
#5 \*Custody Seals Signed and dated for Containers/coolers N/A
#6 \*IOS present? Yes
#7 Any missing/extra samples? Yes Missing 4 oz glass container for sample 001
#8 IOS agrees with sample label(s)/matrix? Yes
#9 Sample matrix/ properties agree with IOS? Yes
#10 Samples in proper container/ bottle? Yes
#11 Samples properly preserved? Yes
#12 Sample container(s) intact? Yes
#13 Sufficient sample amount for indicated test(s)? Yes
#14 All samples received within hold time? Yes

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

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

[Signature]

Ashly Kowalski

Date: 08.24.2019



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon-Lubbock

Date/ Time Received: 08/23/2019 01:50:00 PM

Work Order #: 634997

Acceptable Temperature Range: 0 - 6 degC  
Air and Metal samples Acceptable Range: Ambient  
Temperature Measuring device used : IR-4

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	-2.7
#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)?	Yes
#18 Water VOC samples have zero headspace?	Yes

TPH & CL sent to Stafford

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

Analyst:

PH Device/Lot#:

Checklist completed by: Brenda Ward  
Brenda Ward

Date: 08/23/2019

Checklist reviewed by: Jessica Kramer  
Jessica Kramer

Date: 08/26/2019



# Certificate of Analysis Summary 654391



Terracon-Lubbock, Lubbock, TX

Project Name: Lobo 285 SWD

**Project Id:** AR197256  
**Contact:** Joseph Guesnier  
**Project Location:**

**Date Received in Lab:** Mon Mar-02-20 04:10 pm  
**Report Date:** 25-MAR-20  
**Project Manager:** Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	654391-001	654391-002				
	<i>Field Id:</i>	CS-1.1 (1.5-2)	CS-2.1 (4-4.5)				
	<i>Depth:</i>	1.5-2 ft	4.5-5 ft				
	<i>Matrix:</i>	SOIL	SOIL				
	<i>Sampled:</i>	Feb-27-20 12:00	Feb-27-20 12:00				
<b>BTEX by SW 8260C SUB: T104704215-19-30</b>	<i>Extracted:</i>	Mar-04-20 07:50	Mar-04-20 07:50				
	<i>Analyzed:</i>	Mar-04-20 12:49	Mar-04-20 13:08				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Benzene		<0.000206 0.000994	<0.000207 0.00100				
Toluene		<0.000994 0.00497	<0.00100 0.00501				
Ethylbenzene		<0.000334 0.000994	<0.000336 0.00100				
m,p-Xylenes		<0.000434 0.00199	<0.000438 0.00200				
o-Xylene		<0.000979 0.000994	<0.000987 0.00100				
Total Xylenes		<0.000434 0.000994	<0.000438 0.00100				
Total BTEX		<0.000206 0.000994	<0.000207 0.00100				
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Mar-04-20 08:30	Mar-04-20 08:30				
	<i>Analyzed:</i>	Mar-04-20 13:01	Mar-04-20 13:08				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Chloride		15.6 J 25.0	19.0 J 25.0				
<b>DRO-ORO By SW8015B</b>	<i>Extracted:</i>	Mar-03-20 15:30	Mar-03-20 15:30				
	<i>Analyzed:</i>	Mar-04-20 15:54	Mar-04-20 16:31				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Diesel Range Organics (DRO)		<7.44 24.9	<7.53 25.2				
Oil Range Hydrocarbons (ORO)		<7.44 24.9	<7.53 25.2				
<b>TPH GRO by EPA 8015 Mod.</b>	<i>Extracted:</i>	Mar-03-20 14:30	Mar-03-20 14:30				
	<i>Analyzed:</i>	Mar-04-20 13:52	Mar-04-20 14:16				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
TPH-GRO		<0.267 3.94	<0.255 3.76				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.9%

Jessica Kramer  
Project Manager

# Analytical Report 654391

## for Terracon-Lubbock

**Project Manager: Joseph Guesnier**

**Lobo 285 SWD**

**AR197256**

**25-MAR-20**

Collected By: Client



**6701 Aberdeen, Suite 9 Lubbock, TX 79424**

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)  
Xenco-Carlsbad (LELAP): Louisiana (05092)  
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



25-MAR-20

Project Manager: **Joseph Guesnier**  
**Terracon-Lubbock**  
5827 50th st, Suite 1  
Lubbock, TX 79424

Reference: XENCO Report No(s): **654391**  
**Lobo 285 SWD**  
Project Address:

**Joseph Guesnier:**

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) 654391. 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. 654391 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,

**Jessica Kramer**  
Project Manager

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

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



# Sample Cross Reference 654391



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
CS-1.1 (1.5-2)	S	02-27-20 12:00	1.5 - 2 ft	654391-001
CS-2.1 (4-4.5)	S	02-27-20 12:00	4.5 - 5 ft	654391-002

**CASE NARRATIVE***Client Name: Terracon-Lubbock**Project Name: Lobo 285 SWD*Project ID: AR197256  
Work Order Number(s): 654391Report Date: 25-MAR-20  
Date Received: 03/02/2020

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

**Sample receipt non conformances and comments:**

V1.001 - Revision (client email) Corrected sample depth to be 4.5-5' JK 03/25/20

**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3118554 TPH GRO by EPA 8015 Mod.

Surrogate 4-Bromofluorobenzene recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7698099-1-BKS,654170-001 S.

Batch: LBA-3118634 DRO-ORO By SW8015B

Surrogate Tricosane recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 654390-001 S,654391-001.

Matrix Spike RPD outside Quality Control Limits, Control Spike RPD within limits; therefore the data was accepted.



## Certificate of Analytical Results 654391



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: CS-1.1 (1.5-2) Matrix: Soil Date Received: 03.02.20 16.10  
 Lab Sample Id: 654391-001 Date Collected: 02.27.20 12.00 Sample Depth: 1.5 - 2 ft  
 Analytical Method: Chloride by EPA 300 Prep Method: E300P  
 Tech: RNL % Moisture:  
 Analyst: RNL Date Prep: 03.04.20 08.30 Basis: Wet Weight  
 Seq Number: 3118502

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.6	25.0	0.572	mg/kg	03.04.20 13.01	J	1

Analytical Method: DRO-ORO By SW8015B Prep Method: SW8015P  
 Tech: MIT % Moisture:  
 Analyst: MIT Date Prep: 03.03.20 15.30 Basis: Wet Weight  
 Seq Number: 3118634

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Diesel Range Organics (DRO)	C10C28DRO	<7.44	24.9	7.44	mg/kg	03.04.20 15.54	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<7.44	24.9	7.44	mg/kg	03.04.20 15.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Tricosane	638-67-5	59	%	65-144	03.04.20 15.54	**
n-Triacontane	638-68-6	89	%	46-152	03.04.20 15.54	

Analytical Method: BTEX by SW 8260C Prep Method: SW5035A  
 Tech: SAD % Moisture:  
 Analyst: SAD Date Prep: 03.04.20 07.50 Basis: Wet Weight  
 Seq Number: 3118517 SUB: T104704215-19-30

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000206	0.000994	0.000206	mg/kg	03.04.20 12.49	U	1
Toluene	108-88-3	<0.000994	0.00497	0.000994	mg/kg	03.04.20 12.49	U	1
Ethylbenzene	100-41-4	<0.000334	0.000994	0.000334	mg/kg	03.04.20 12.49	U	1
m,p-Xylenes	179601-23-1	<0.000434	0.00199	0.000434	mg/kg	03.04.20 12.49	U	1
o-Xylene	95-47-6	<0.000979	0.000994	0.000979	mg/kg	03.04.20 12.49	U	1
Total Xylenes	1330-20-7	<0.000434	0.000994	0.000434	mg/kg	03.04.20 12.49	U	1
Total BTEX		<0.000206	0.000994	0.000206	mg/kg	03.04.20 12.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	102	%	53-142	03.04.20 12.49	
1,2-Dichloroethane-D4	17060-07-0	105	%	53-150	03.04.20 12.49	
Toluene-D8	2037-26-5	102	%	70-130	03.04.20 12.49	



# Certificate of Analytical Results 654391

## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: <b>CS-1.1 (1.5-2)</b>	Matrix: Soil	Date Received: 03.02.20 16.10
Lab Sample Id: 654391-001	Date Collected: 02.27.20 12.00	Sample Depth: 1.5 - 2 ft
Analytical Method: TPH GRO by EPA 8015 Mod.		Prep Method: SW5030B
Tech: JGR		% Moisture:
Analyst: MIT	Date Prep: 03.03.20 14.30	Basis: Wet Weight
Seq Number: 3118554		

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
TPH-GRO	8006-61-9	<0.267	3.94	0.267	mg/kg	03.04.20 13.52	U	1
<b>Surrogate</b>	<b>Cas Number</b>		<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4		113	%	76-123	03.04.20 13.52		
a,a,a-Trifluorotoluene	98-08-8		105	%	69-120	03.04.20 13.52		



## Certificate of Analytical Results 654391



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: CS-2.1 (4-4.5) Matrix: Soil Date Received: 03.02.20 16.10  
 Lab Sample Id: 654391-002 Date Collected: 02.27.20 12.00 Sample Depth: 4.5 - 5 ft  
 Analytical Method: Chloride by EPA 300 Prep Method: E300P  
 Tech: RNL % Moisture:  
 Analyst: RNL Date Prep: 03.04.20 08.30 Basis: Wet Weight  
 Seq Number: 3118502

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	19.0	25.0	0.572	mg/kg	03.04.20 13.08	J	1

Analytical Method: DRO-ORO By SW8015B Prep Method: SW8015P  
 Tech: MIT % Moisture:  
 Analyst: MIT Date Prep: 03.03.20 15.30 Basis: Wet Weight  
 Seq Number: 3118634

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Diesel Range Organics (DRO)	C10C28DRO	<7.53	25.2	7.53	mg/kg	03.04.20 16.31	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<7.53	25.2	7.53	mg/kg	03.04.20 16.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Tricosane	638-67-5	70	%	65-144	03.04.20 16.31	
n-Triacontane	638-68-6	101	%	46-152	03.04.20 16.31	

Analytical Method: BTEX by SW 8260C Prep Method: SW5035A  
 Tech: SAD % Moisture:  
 Analyst: SAD Date Prep: 03.04.20 07.50 Basis: Wet Weight  
 Seq Number: 3118517 SUB: T104704215-19-30

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000207	0.00100	0.000207	mg/kg	03.04.20 13.08	U	1
Toluene	108-88-3	<0.00100	0.00501	0.00100	mg/kg	03.04.20 13.08	U	1
Ethylbenzene	100-41-4	<0.000336	0.00100	0.000336	mg/kg	03.04.20 13.08	U	1
m,p-Xylenes	179601-23-1	<0.000438	0.00200	0.000438	mg/kg	03.04.20 13.08	U	1
o-Xylene	95-47-6	<0.000987	0.00100	0.000987	mg/kg	03.04.20 13.08	U	1
Total Xylenes	1330-20-7	<0.000438	0.00100	0.000438	mg/kg	03.04.20 13.08	U	1
Total BTEX		<0.000207	0.00100	0.000207	mg/kg	03.04.20 13.08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	105	%	53-142	03.04.20 13.08	
1,2-Dichloroethane-D4	17060-07-0	111	%	53-150	03.04.20 13.08	
Toluene-D8	2037-26-5	102	%	70-130	03.04.20 13.08	



# Certificate of Analytical Results 654391



## Terracon-Lubbock, Lubbock, TX

Lobo 285 SWD

Sample Id: <b>CS-2.1 (4-4.5)</b>	Matrix: Soil	Date Received: 03.02.20 16.10
Lab Sample Id: 654391-002	Date Collected: 02.27.20 12.00	Sample Depth: 4.5 - 5 ft
Analytical Method: TPH GRO by EPA 8015 Mod.		Prep Method: SW5030B
Tech: JGR		% Moisture:
Analyst: MIT	Date Prep: 03.03.20 14.30	Basis: Wet Weight
Seq Number: 3118554		

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
TPH-GRO	8006-61-9	<0.255	3.76	0.255	mg/kg	03.04.20 14.16	U	1
<b>Surrogate</b>	<b>Cas Number</b>		<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4		112	%	76-123	03.04.20 14.16		
a,a,a-Trifluorotoluene	98-08-8		104	%	69-120	03.04.20 14.16		



## 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      **SQL** Method Quantitation Limit      **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample      **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample      **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate      **MS** Matrix Spike      **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



**Terracon-Lubbock**

Lobo 285 SWD

**Analytical Method: Chloride by EPA 300**

Seq Number: 3118502

MB Sample Id: 7698057-1-BLK

Matrix: Solid

LCS Sample Id: 7698057-1-BKS

Prep Method: E300P

Date Prep: 03.04.20

LCSD Sample Id: 7698057-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.572	250	253	101	253	101	90-110	0	20	mg/kg	03.04.20 10:15	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3118502

Parent Sample Id: 654203-001

Matrix: Soil

MS Sample Id: 654203-001 S

Prep Method: E300P

Date Prep: 03.04.20

MSD Sample Id: 654203-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.09	250	273	107	278	109	80-120	2	20	mg/kg	03.04.20 11:10	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3118502

Parent Sample Id: 654203-011

Matrix: Soil

MS Sample Id: 654203-011 S

Prep Method: E300P

Date Prep: 03.04.20

MSD Sample Id: 654203-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2.10	250	249	99	250	99	80-120	0	20	mg/kg	03.04.20 12:40	

**Analytical Method: DRO-ORO By SW8015B**

Seq Number: 3118634

MB Sample Id: 7698022-1-BLK

Matrix: Solid

LCS Sample Id: 7698022-1-BKS

Prep Method: SW8015P

Date Prep: 03.03.20

LCSD Sample Id: 7698022-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Diesel Range Organics (DRO)	<7.48	100	93.0	93	85.1	85	63-139	9	20	mg/kg	03.04.20 09:37	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
Tricosane	68		72		70		65-144	%	03.04.20 09:37
n-Triacontane	98		103		101		46-152	%	03.04.20 09:37

**Analytical Method: DRO-ORO By SW8015B**

Seq Number: 3118634

MB Sample Id: 7698022-1-BLK

Matrix: Solid

Prep Method: SW8015P

Date Prep: 03.03.20

Parameter	MB Result	Units	Analysis Date	Flag
Oil Range Hydrocarbons (ORO)	<7.48	mg/kg	03.04.20 12:46	

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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



## Terracon-Lubbock

Lobo 285 SWD

Analytical Method: DRO-ORO By SW8015B

Seq Number: 3118634

Parent Sample Id: 654390-001

Matrix: Soil

MS Sample Id: 654390-001 S

Prep Method: SW8015P

Date Prep: 03.03.20

MSD Sample Id: 654390-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Diesel Range Organics (DRO)	<7.46	99.7	65.3	65	122	122	63-139	61	20	mg/kg	03.04.20 14:04	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
Tricosane	59	**	78		65-144	%	03.04.20 14:04
n-Triacontane	88		109		46-152	%	03.04.20 14:04

Analytical Method: BTEX by SW 8260C

Seq Number: 3118517

MB Sample Id: 7698070-1-BLK

Matrix: Solid

LCS Sample Id: 7698070-1-BKS

Prep Method: SW5035A

Date Prep: 03.04.20

LCSD Sample Id: 7698070-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000207	0.0500	0.0455	91	0.0497	99	62-132	9	25	mg/kg	03.04.20 09:55	
Toluene	<0.00100	0.0500	0.0478	96	0.0528	106	66-124	10	25	mg/kg	03.04.20 09:55	
Ethylbenzene	<0.000336	0.0500	0.0497	99	0.0547	109	71-134	10	25	mg/kg	03.04.20 09:55	
m,p-Xylenes	<0.000437	0.100	0.0988	99	0.110	110	69-128	11	25	mg/kg	03.04.20 09:55	
o-Xylene	<0.000985	0.0500	0.0515	103	0.0578	116	72-131	12	25	mg/kg	03.04.20 09:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	98		98		100		53-142	%	03.04.20 09:55
1,2-Dichloroethane-D4	104		99		102		53-150	%	03.04.20 09:55
Toluene-D8	104		108		110		70-130	%	03.04.20 09:55

Analytical Method: BTEX by SW 8260C

Seq Number: 3118517

Parent Sample Id: 653880-002

Matrix: Soil

MS Sample Id: 653880-002 S

Prep Method: SW5035A

Date Prep: 03.04.20

MSD Sample Id: 653880-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000206	0.0498	0.0234	47	0.0405	81	62-132	54	25	mg/kg	03.04.20 10:58	XF
Toluene	<0.000996	0.0498	0.0222	45	0.0397	79	66-124	57	25	mg/kg	03.04.20 10:58	XF
Ethylbenzene	<0.000334	0.0498	0.0207	42	0.0389	77	71-134	61	25	mg/kg	03.04.20 10:58	XF
m,p-Xylenes	<0.000435	0.0996	0.0409	41	0.0779	77	69-128	62	25	mg/kg	03.04.20 10:58	XF
o-Xylene	<0.000981	0.0498	0.0212	43	0.0413	82	72-131	64	25	mg/kg	03.04.20 10:58	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	102		108		53-142	%	03.04.20 10:58
1,2-Dichloroethane-D4	107		108		53-150	%	03.04.20 10:58
Toluene-D8	107		108		70-130	%	03.04.20 10:58

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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



**Terracon-Lubbock**

Lobo 285 SWD

**Analytical Method:** TPH GRO by EPA 8015 Mod.

Seq Number: 3118554

MB Sample Id: 7698099-1-BLK

Matrix: Solid

LCS Sample Id: 7698099-1-BKS

Prep Method: SW5030B

Date Prep: 03.03.20

LCSD Sample Id: 7698099-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD	Limit	Units	Analysis Date	Flag
TPH-GRO	<0.271	20.0	18.4	92	19.2	96	35-129	4	20		mg/kg	03.03.20 21:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		143	**	122		76-123	%	03.03.20 21:05
a,a,a-Trifluorotoluene	99		104		84		69-120	%	03.03.20 21:05

**Analytical Method:** TPH GRO by EPA 8015 Mod.

Seq Number: 3118554

Parent Sample Id: 654170-001

Matrix: Soil

MS Sample Id: 654170-001 S

Prep Method: SW5030B

Date Prep: 03.03.20

MSD Sample Id: 654170-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD	Limit	Units	Analysis Date	Flag
TPH-GRO	<0.239	17.7	16.8	95	20.9	105	35-129	22	20		mg/kg	03.04.20 00:20	F

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	138	**	119		76-123	%	03.04.20 00:20
a,a,a-Trifluorotoluene	106		79		69-120	%	03.04.20 00:20

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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



### Inter-Office Shipment

**IOS Number : 59377**

Date/Time: 03.03.2020

Created by: Brenda Ward

Please send report to: Jessica Kramer

Lab# From: **Lubbock**

Delivery Priority:

Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424

Lab# To: **Houston**

Air Bill No.: 777923417550

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
654391-001	S	CS-1.1 (1.5-2)	02.27.2020 12:00	SW8260CBTEX	BTEX by SW 8260C	<b>03.04.2020</b>	03.12.2020	JKR	BZ BZME EBZ XYLENE	
654391-002	S	CS-2.1 (4-4.5)	02.27.2020 12:00	SW8260CBTEX	BTEX by SW 8260C	<b>03.04.2020</b>	03.12.2020	JKR	BZ BZME EBZ XYLENE	

**Inter Office Shipment or Sample Comments:**

Relinquished By:   
 Brenda Ward

Date Relinquished: 03.03.2020

Received By:   
 Jose Londono

Date Received: 03.04.2020

Cooler Temperature: 2.4



## Inter Office Report- Sample Receipt Checklist

Sent To: Houston

Acceptable Temperature Range: 0 - 6 degC  
Air and Metal samples Acceptable Range: Ambient  
Temperature Measuring device used : HOU-068

IOS #: 59377

Sent By: Brenda Ward

Date Sent: 03.03.2020 01.47 PM

Received By: Jose Londono

Date Received: 03.04.2020 09.15 AM

### Sample Receipt Checklist

### Comments

- #1 \*Temperature of cooler(s)? 2.4
- #2 \*Shipping container in good condition? Yes
- #3 \*Samples received with appropriate temperature? Yes
- #4 \*Custody Seals intact on shipping container/ cooler? Yes
- #5 \*Custody Seals Signed and dated for Containers/coolers Yes
- #6 \*IOS present? Yes
- #7 Any missing/extra samples? No
- #8 IOS agrees with sample label(s)/matrix? Yes
- #9 Sample matrix/ properties agree with IOS? Yes
- #10 Samples in proper container/ bottle? Yes
- #11 Samples properly preserved? Yes
- #12 Sample container(s) intact? Yes
- #13 Sufficient sample amount for indicated test(s)? Yes
- #14 All samples received within hold time? Yes

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

NonConformance:

Corrective Action Taken:

### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

Joni F. Londono  
Jose Londono

Date: 03.04.2020

# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

**Client:** Terracon-Lubbock

**Date/ Time Received:** 03.02.2020 04.10.00 PM

**Work Order #:** 654391

**Acceptable Temperature Range:** 0 - 6 degC  
**Air and Metal samples Acceptable Range:** Ambient  
**Temperature Measuring device used :** IR-4

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	-7.5	
#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)?	Yes	BTEX sent to Stafford
#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:** Brenda Ward Date: 03.03.2020  
 Brenda Ward

**Checklist reviewed by:** Jessica Kramer Date: 03.04.2020  
 Jessica Kramer

## **APPENDIX D – TERRACON STANDARD OF CARE, LIMITATION, AND RELIANCE**

### **Standard of Care**

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, Solaris Water Midstream, as reflected in our proposal (PA4197040).

### **Additional Scope Limitations**

Development of this RAP is based upon information provided by the Client and Terracon's remediation and construction services line. Such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those by information provided by the Client. The data, interpretations, findings, and our recommendations are based solely upon reformation executed within the scope of these services.

### **Reliance**

This report has been prepared for the exclusive use of Solaris Water Midstream, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Solaris Water Midstream and Terracon. Any unauthorized distribution or reuse is at Solaris Water Midstream sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal and Solaris Water Midstream and Terracon's Master Services Agreement. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to Solaris Water Midstream and all relying parties unless otherwise agreed in writing.