District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Subsequent Report ☐ Final Report

Name of Company **Hilcorp Energy Company**	Contact **Lindsay Dumas**
Address **1111 Travis St. Houston, TX 77002**	Telephone No. **(281)794-9159**
Facility Name: **Chacon Federal 2**	Facility Type: Gas

Surface Owner Private	Mineral Owner Federal	API No.**3003921580**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	**33**	**24N**	**03W**	**1650'**	**North**	**800**	**West**	**Rio Arriba**

Latitude 36.2696075 Longitude -107.1682205

NATURE OF RELEASE

Type of Release **Oil & Produced Water**	Volume of Release **10 bbls/ 10 bbls**	Volume Recovered **0 bbls**
Source of Release Production Tank	Date and Hour of Occurrence **1/18/18 1:30PM**	Date and Hour of Discovery **1/18/18 1:30PM**
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

If a Watercourse was Impacted, Describe Fully.*
N/A

NMOCD
JUN 01 2018
DISTRICT III

Describe Cause of Problem and Remedial Action Taken.*
The release as a result of corrosion on the bottom of the production tank. There was no standing product to recover.

Describe Area Affected and Cleanup Action Taken.*
Please see attached remediation plan

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

Signature: Lindsay Dumas	OIL CONSERVATION DIVISION
Printed Name: **Lindsay Dumas**	Approved by Environmental Specialist:
Title: **Environmental Specialist**	Approval Date: 6/7/18 Expiration Date:
E-mail Address: **Ldumas@hilcorp.com**	Conditions of Approval: Attached AN Emailed. Attached ☒
Date: 4/27/2018 Phone: **(281)794-9159**	

* Attach Additional Sheets If Necessary

#NCS1803748358

55

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Thursday, June 7, 2018 9:27 AM
To: 'Lindsay Dumas'
Cc: Fields, Vanessa, EMNRD
Subject: RE: Chacon Federal 2 Confirmation Sampling Results

Lindsay,

OCD has received HEC subsequent report /work plan for the release at the Chacon Federal #2 on June 1, 2018. After review the OCD has approved the work plan with the following conditions of approval.

- OCD has approved HEC request for temporary Bioremediation piles. HEC will follow the proposed work plan and sample bioremediation pile no later than June 12, 2018. All piles that do not pass the closure standard will be required to be disposed of at a division approved facility. The OCD will not grant any extensions for bioremediation piles.
- OCD site rank is a 10, therefore the closure standard is 1,000 mg/kg TPH, 50 mg/kg BTEX and 10 mg/kg Benzene.
- HEC will collect 1 representative, 5 point composite sample for each 100y3 of bioremediation soil piles.
- HEC will contain all bioremediation piles within an earthen berm.
- HEC will sample the vadose zone after the completion of bioremediation.
- HEC will schedule all confirmation sampling with OCD District III.

If you have any additional questions please give me a call.

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

From: Smith, Cory, EMNRD
Sent: Tuesday, May 15, 2018 7:25 AM
To: 'Lindsay Dumas' <ldumas@hilcorp.com>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Subject: RE: Chacon Federal 2 Confirmation Sampling Results

Lindsay,

Ok, just wanted to let you know OCD has not received a hardcopy for approval of the Biopile remediation. From the email you sent on 4/27/18. HEC can continue to remediate the walls and stock pile the soil to conserve space and later put them into a biopiles for better remediation that way HEC remove the source and can back fill as soon as possible. Also as a reminder much like the other remediation if the biopiles fail HEC will be required to remove all of the impacted soils. Please send in the remediation plan so I can approve it and put the bio pile conditions of approval on it which should have been done prior to starting remediation.

Based on the attached final delineation report, Hilcorp plans to excavate approximately 490 cy of soil, confirmation sampling of excavation walls will occur and NMOCD will receive 48 hour notification to witness.

Hilcorp plans to remediate the onsite using bioremediation piles. The release was 10 bbl of produced water and 10 bbls of light end condensate, the soil is not supersaturated. Bioremediation piles are the best path forward for this particular location. Groundwater is >100ft, there is no issue of contaminating the vadose zone. The piles will not be lined, but will be bermed. The bioremediation piles will be turned weekly and sampled 6 weeks from 4/30/18. Approximately 450 lbs of 40-0-0 fertilizer (SDS attached) will be mixed with the bioremediation pile.

On 6/11/2018 1 – 5pt composite sample per 100 cubic yards will be collected from the bioremediation piles. The soil samples will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by Method 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300.

Once laboratory analyses confirm nominal detection limits, the bioremediation pile will be used to backfill the current excavation. The surface below the piles will then be sampled. The soil samples will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by Method 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300.

Lindsay Dumas

From: Juanita Farrell
Sent: Tuesday, April 10, 2018 12:21 PM
To: Lindsay Dumas
Subject: FW: Chacon Federal 2 - Spill remediation update

From: Juanita Farrell
Sent: Monday, April 9, 2018 7:33 PM
To: cody@freedomoutfittersllc.com
Subject: Re: Chacon Federal 2 - Spill remediation update

Good news. Thank you.

Sent from my iPhone

On Apr 9, 2018, at 4:53 PM, "cody@freedomoutfittersllc.com" <cody@freedomoutfittersllc.com> wrote:

> I believe the below is the answer you were looking for today. let me know if you need anything else. thanks
>
> **Freedom Outfitters**
> **Cody Hazen - Owner/Guide**
> **P.O. Box 6**
> **Roy, NM 87743**
> **575-643-5601**
> **cody@freedomoutfittersllc.com**
>
> --------- Original Message ---------
> Subject: Re: Chacon Federal 2 - Spill remediation update
> From: "Bobby Patton"
> Date: 4/9/18 12:27 pm
> To: "cody@freedomoutfittersllc.com" <cody@freedomoutfittersllc.com>
>
> Approved
>
> > On Apr 9, 2018, at 9:49 AM, cody@freedomoutfittersllc.com wrote:
> >
> > Please read below emails. Thanks
> >
> > **Freedom Outfitters**
> > **Cody Hazen - Owner/Guide**
> > **P.O. Box 6**
> > **Roy, NM 87743**

575-643-5601
cody@freedomoutfittersllc.com

--------- Original Message ---------
Subject: RE: Chacon Federal 2 - Spill remediation update
From: "Juanita Farrell" <jfarrell@hilcorp.com>
Date: 4/9/18 8:30 am
To: "'cody@freedomoutfittersllc.com'"
<cody@freedomoutfittersllc.com>

Good morning Cody:

We will need to provide the NMOCD (New Mexico Oil and Gas Conservation Division) proof of landowner approval before we can start the remediation project.

Can you provide approval or should I contact someone else? Any question, feel free to call me at 505 486-9446.

Thank you.

Juanita Farrell

Land Representative – San Juan East

Hilcorp San Juan, L.P.

P.O. Box 4700

Farmington, NM 87499

jfarrell@hilcorp.com

505-324-5140 Office

505-486-9446 Cell

From: cody@freedomoutfittersllc.com
[mailto:cody@freedomoutfittersllc.com]
Sent: Wednesday, April 4, 2018 3:50 PM

To: Juanita Farrell <jfarrell@hilcorp.com>
Subject: RE: Chacon Federal 2 - Spill remediation update

thank you i will forward on to the office

Freedom Outfitters

Cody Hazen - Owner/Guide

P.O. Box 6

Roy, NM 87743

575-643-5601

cody@freedomoutfittersllc.com

--------- Original Message ---------

Subject: Chacon Federal 2 - Spill remediation update
From: "Juanita Farrell" <jfarrell@hilcorp.com>
Date: 4/4/18 7:42 am
To: "Cody Hazen (cody@freedomoutfittersllc.com)" <cody@freedomoutfittersllc.com>

Good morning Cody:

I reported a release to you back in January on the Chacon Federal 2 (NW Sec 33, T24N R3W, 36.268728, -107.168177). Today I want to provide an update on the remediation project:

Chacon Federal #2 - Area 9

(NW Sec 33, T24N R3W, 36.268728, -107.168177)

Release date: 1/18/18

Corroded production tank – 20 bbl release (10 bbl PW/ 10 bbl Condensate)

Status: A third party environmental contractor delineated full horizontal and vertical extent of the release. NMOCD is allowing Hilcorp to biopile the excavated soil on site to remediate instead of hauling the soil to disposal. They have also granted Hilcorp a 90 day extension to begin the excavation. This will allow for warmer weather to remediate the soil quicker.

Hilcorp has chosen to remediate by biopile on location. We do not plan to use any space off pad. To treat the impacted soil we will incorporate either 350 lbs of calcium nitrate fertilizer or 450 lbs of 13-13-13 fertilizer depending on availability. The biopiles will be turned weekly to maximize volatilization and biodegradation rates. Once soils have been remediated the excavation will be backfilled.

I anticipate an estimate start time of 4/16/18. If you have any questions regarding our plans, please feel free to call me.

Juanita Farrell

Land Representative – San Juan East

Hilcorp San Juan, L.P.

P.O. Box 4700

Farmington, NM 87499

jfarrell@hilcorp.com

505-324-5140 Office

505-486-9446 Cell

TIMBERWOLF ENVIRONMENTAL

1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
979.324.2139
www.teamtimberwolf.com

February 27, 2018

Ms. Lindsay Dumas
Hilcorp Energy Company
9A Road 5793
Farmington, New Mexico 87401

Re: Site Assessment and Remedial Action Plan
Chacon Federal 2 Release
Chacon Dakota Field, Rio Arriba County, New Mexico
Timberwolf Project Number: HEC-180004

Dear Ms. Dumas:

At the request of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document the collection and analysis of soil samples following a liquid condensate and produced water release from the Chacon Federal 2 (Site). The Site is located in the Chacon Dakota Field, approximately 7.3 miles southwest of Lindrith, Rio Arriba County, New Mexico (Figures 1 – 3).

Due to a tank failure, an estimated 10 barrels (bbls) of produced water and 10 bbls of oil were released. Released fluids were contained by the facility's berm. Majority of released fluids evaporated or were absorbed by underlying soil.

Regulatory Criteria

The New Mexico Oil Conservation Division (NMOCD) established remediation action levels for soils impacted by oilfield products or wastes, which are documented in the *Guidelines for Remediation of Leaks and Releases*. The closure criteria utilize a ranking system that scores the potential to contaminate based upon a site's distance to water resources. The ranking system is summarized in Table 1 below.

Table 1. NMOCD Ranking System

Category	Distance to Resource (Feet)	Score
Depth to groundwater	< 50	20
	50 to 99	10
	> 100	0
Water wellhead protection	< 200	20
	> 200	0
Surface water protection	< 200	20
	200 to 1,000	10
	> 1,000	0

NMOCD – New Mexico Oil Conservation Division

Sites receive a score from each category. The three (3) scores are summed to reach a total ranking score that correspond to site-specific remedial action levels.

Based on prior drilling activities in this portion of the San Juan Basin, the upper groundwater-bearing unit is expected to be greater than 100 feet below ground surface (ft bgs), which results in a score of zero (0). No perennial surface water bodies were identified within 1,000 ft of the Site. However, an intermittent stream is situated 100 ft southwest of the Site, which results in a score of ten (10). No water wellheads are located within 200 ft of the Site, which results in a score of zero (0). Therefore, the total ranking score at the Site is zero (10). Based on the NMOCD criteria, the site-specific remedial action levels are presented in Table 2.

Table 2. NMOCD Remediation Action Levels by Total Ranking Score

Constituent	Total Ranking Score		
	> 19	10-19	0-9
	Corresponding Remediation Action Level (mg/kg)		
Benzene	10	**10**	10
Total BTEX	50	**50**	50
TPH	100	**1,000**	5,000
Chlorides	250	**500**	1,000

BTEX – benzene, toluene, ethylbenzene and xylenes
TPH – total petroleum hydrocarbons
mg/kg – milligrams per kilogram
Bold – scores utilized for the Site
NMOCD – New Mexico Oil and Conservation Division

Collection and Analysis of Soil Samples

On 1/24/18, Timberwolf personnel collected soil samples from one boring (i.e., SB1) using a handauger. The total depth of the boring was 9 ft bgs. Soils were logged and screened with a photoionization detector (PID). Three (3) samples were submitted for laboratory analysis.

On 01/29/18, Timberwolf contracted with Geomat Inc. of Farmington, New Mexico for drilling services. Timberwolf collected samples from five (5) borings (i.e., SB1 – SB5) using a hollow stem auger drilling rig. Total depths of each boring ranged from 25 to 30 ft bgs. Soil borings were logged and screened with a PID; soil boring logs describing soil morphology are attached. PID readings are recorded on soil boring logs.

Soils encountered at the Site consisted primarily of clay, underlain by sand. Sample locations are shown in Figure 4. The location and purpose of each boring are presented in Table 3 below.

Table 3. Location and Purpose of Soil Borings
Chacon Federal 2 Release

Soil Boring	Location – Purpose
SB1	Collected from the body of the release to evaluate the degree and vertical extent of impacted soil
SB2, SB3, SB4, and SB5	Collected from the perimeter of the release area, for horizontal delineation

Soil samples were placed in laboratory-provided sample containers, stored on ice, and transported by courier under proper chain-of-custody protocol to Hall Environmental Analysis Laboratories in Albuquerque, New Mexico. The laboratory report and chain-of-custody documents are attached; laboratory methods are documented in the laboratory report. Analytical results are summarized in Table 4.

Table 4. Analytical Results of Soil Samples
Chacon Federal 2 Release

Sample ID	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
	B	T	E	X					
SB1 3.0-3.5'	10	120	17	160	307	5,800	760	410	6,970
SB1 5.0-5.5'	33	290	37	350	710	13,000	1,000	370	14,370
SB1 8.5-9.0'	8	110	17	150	285	5,300	620	210	6,130
SB1 20'	110	750	69	700	1,629	17,000	2,400	710	20,110
SB1 23'	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.9	< 49	< 49
SB1 26'	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.8	< 9.5	< 47	< 47
SB2 23'	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.4	< 47	< 47
SB3 23'	< 0.023	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.6	< 48	< 48
SB4 23'	< 0.024	< 0.048	< 0.048	< 0.097	< 0.097	< 4.8	< 9.3	< 46	< 46
SB5 23'	< 0.024	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.9	< 50	< 50
Regulatory Criteria	**10**	--	--	--	**50**	--	--	--	**1,000**

mg/kg – milligrams per kilogram
BTEX – benzene, toluene, ethylbenzene, and xylenes
GRO – gasoline range organics
DRO – diesel range organics
MRO – motor oil range organics
TPH – total petroleum hydrocarbon (TPH = GRO+DRO+MRO)
-- - no applicable regulatory criteria

Findings and Conclusions

Analytical results of soil samples revealed:

- Benzene exceeded the NMOCD remedial action level in two (2) samples (i.e., SB1 5.0-5.5' and SB1 20')
- Total BTEX and TPH exceeded the NMOCD remedial action level in four (4) samples (i.e., SB1 3.0-3.5', SB1 5.0-5.5', SB1 8.5-9.0, and SB1 20')
- Vertical delineation was achieved; SB1 23' and SB1 26' were below NMOCD remedial action level for all constituents
- Horizontal delineation was achieved; SB2 23', SB3 23', SB4 23', and SB5 23' were below NMOCD remediation action level. Furthermore, all PID readings from borings SB2 – SB5 were below 1.0 ppm.
- Based on the delineation effort, the volume of impacted soil is estimated at 490 cubic yards (yds^3)

Remedial Options and Cost Estimates

To bring Site soils into regulatory compliance, the following remedial options and associated cost estimates are presented for consideration. Note: Cost presented does not include travel or per diem.

Table 5. Evaluation of Remedial Options

On-Site Treatment				
Item	**Unit Cost**	**Unit**	**Quantity**	**Cost**
Biopile – Estimated Timeframe = 6 – 8 weeks				
Excavation and Backfill	$ 1,500.00	Day	2	$ 3,000.00
Fertilizer	$ 20.00	40 lb Bag	4	$ 80.00
Oversight	$ 1,200.00	Day	2	$ 2,400.00
Biopile mixing	$ 1,250.00	Per Event	3	$ 3,750.00
Confirmation Sampling	$ 2,000.00	Day	1	$ 2,000.00
Closure Report	$ 1,500.00	Per Report	1	$ 1,500.00
			Biopile Total	**$ 12,730.00**
Soil Shredding – Estimated Timeframe = 1 week				
Excavation and Backfill	$ 1,500.00	Day	2	$ 3,000.00
Soil Shredding	$ 68.00	Per Yard	562	$ 38,216.00
Oversight	$ 1,200.00	Day	2	$ 2,400.00
Confirmation Sampling	$ 2,000.00	Day	1	$ 2,000.00
Closure Report	$ 1,500.00	Per Report	1	$ 1,500.00
			Soil Shredding Total	**$ 47,116.00**
Second Treatment (if needed)	$ 25.00	Per Yard	562	$ 14,050.00
			Soil Shredding with contingency (for second treatment)	**$ 61,166.00**
Soil Aeration – Estimated Timeframe = 1 week				
Excavation and Backfill	$ 1,500.00	Day	2	$ 3,000.00
Roadmixer, Mobilization, & Operator	$ 2,900.00	Day	2	$ 5,800.00
Loader, Mobilization, & Operator	$ 1,300.00	Day	2	$ 2,600.00
Oversight	$ 1,200.00	Day	3	$ 3,600.00
Confirmation Sampling	$ 2,000	Day	1	$ 2,000.00
Closure Report	$ 1,500.00	Per Report	1	$ 1,500.00
			Soil Aeration Total	**$ 18,500.00**
Off-Site Disposal				
Item	**Unit Cost**	**Unit**	**Quantity**	**Cost**
Dig and Haul – Estimated Timeframe = 3 days				
Excavation, Loading, Backfilling	$ 1,500.00	Day	3	$ 4,500.00
Trucking	$ 95.00	Hour	141	$ 13,395.00
Oversight	$ 1,200.00	Day	3	$ 3,600.00
Disposal	$ 20.00	Yard	562	$ 11,240.00
Backfill Material	$ 6.40	Ton	787	$ 5,036.80
Closure Report	$ 1,500.00	Per Report	1	$ 1,500.00
			Dig and Haul Total	**$ 39,271.80**

The biopile and soil aeration options are the most cost effective remedial techniques; soil shredding, soil aeration, and dig and haul options provide the quickest remedies for the Site. Additionally, the soil aeration remedial technique will require a treatment cell at least 0.35 acres in size. A proposed treatment cell is shown in Figure 5. The procedure for soil aeration in attached

Timberwolf appreciates the opportunity to work for you and Hilcorp. If you have any questions regarding this report, please contact us at (979) 324-2139.

Sincerely,
Timberwolf Environmental, LLC

Clay Morris (for)
Project Scientist

Jim Foster
President

Attachments: Figures
Soil Boring Logs
Procedure for Soil Aeration
Laboratory Report and Chain-of-Custody Documents

Figures

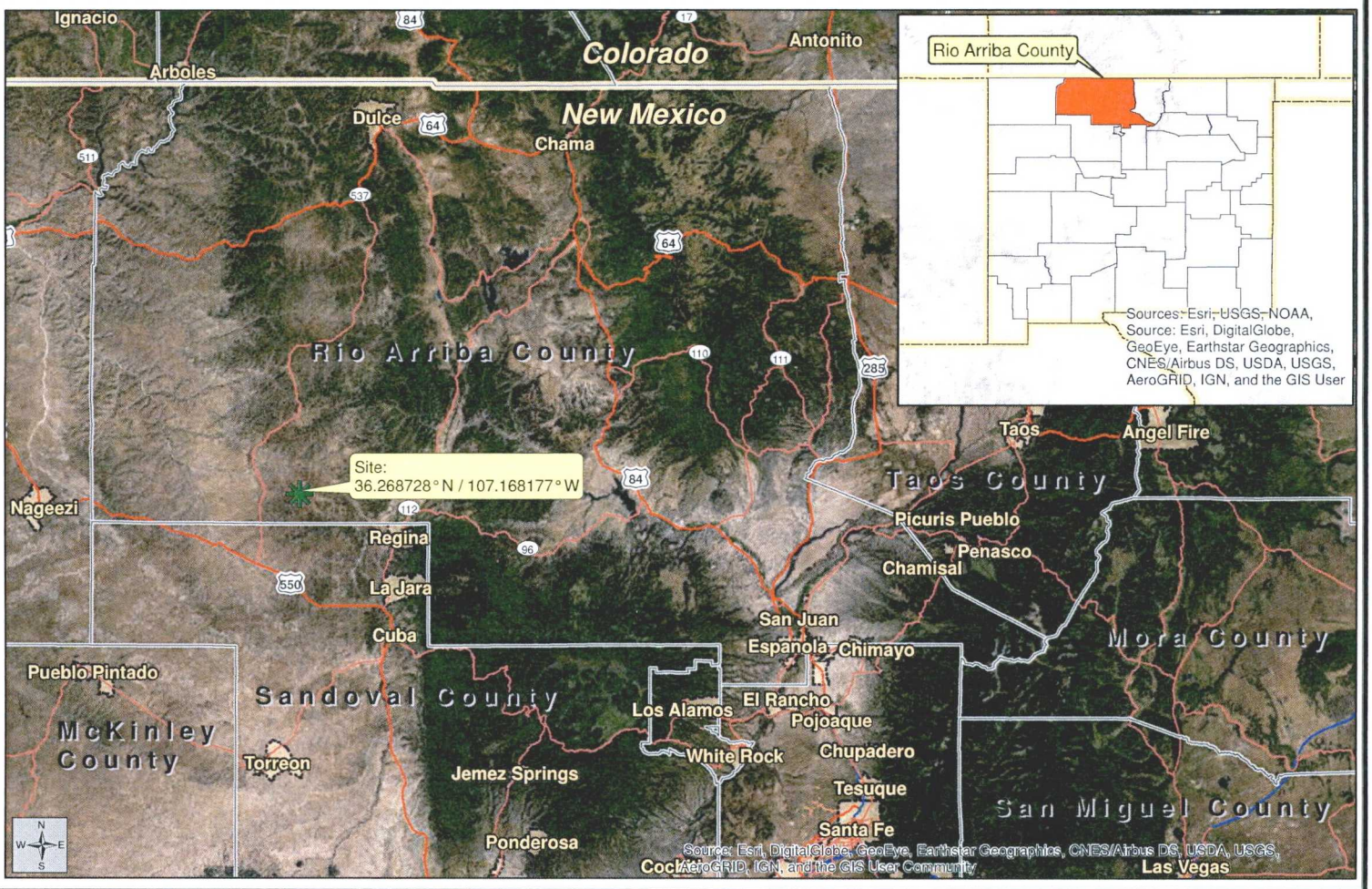

Figure 1 Site Location Map	Site Assessment and Remedial Action Plan	Sample Dates: 01/24/18 and 01/29/18
TIMBERWOLF ENVIRONMENTAL Created By: Kevin Cole January 30, 2018 TE Project No.: HEC-180004	1:1,250,000 0 20 40 60 80 100 120 Miles Chacon Federal 2 Release Hilcorp Energy Company Rio Arriba County, New Mexico Datum: NAD83 Imagery Source: ESRI Vector Source: ESRI and TE	Site

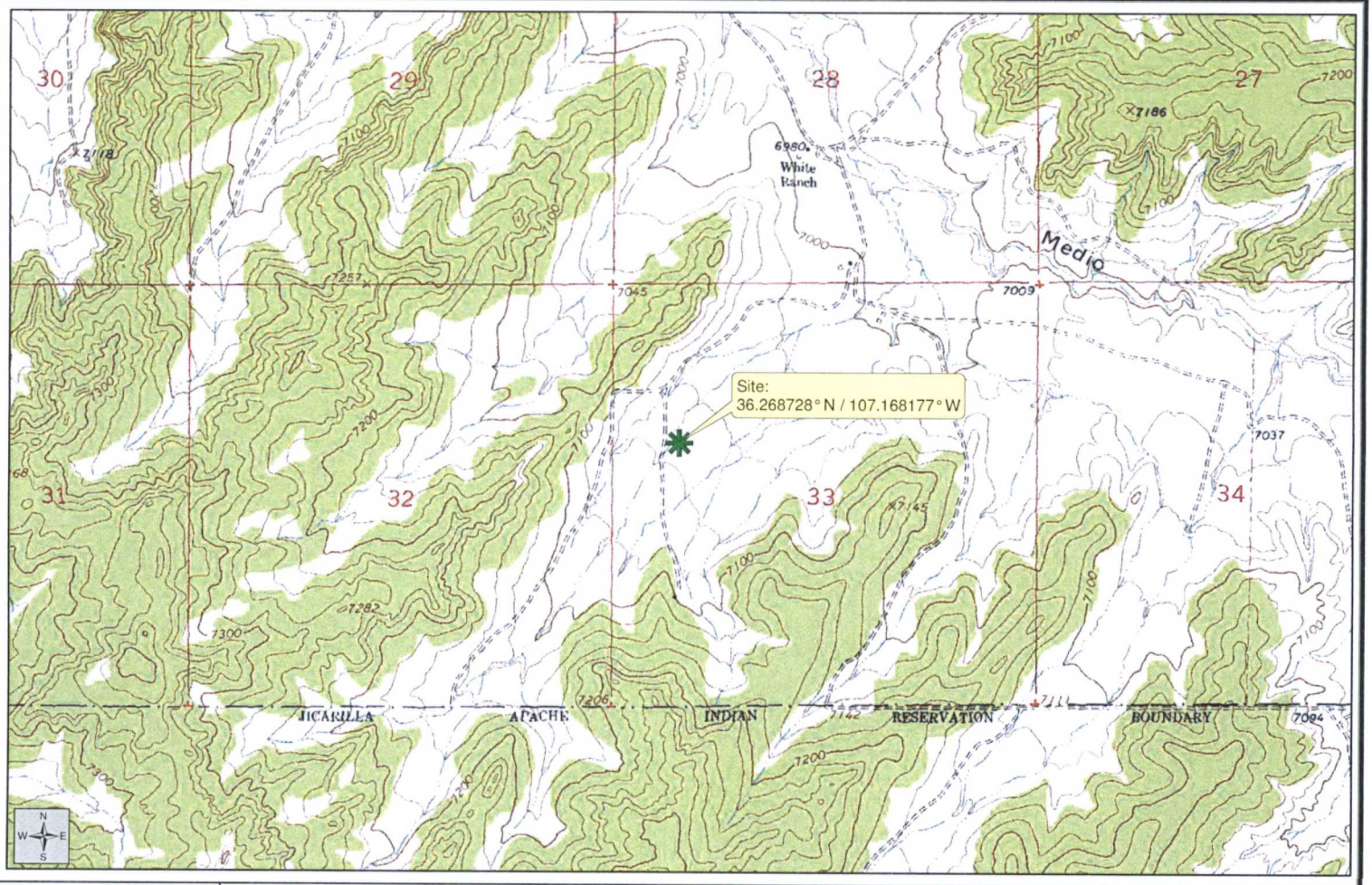

Figure 2 Topographic Map	Site Assessment and Remedial Action Plan	Sample Dates: 01/24/18 and 01/29/18
TIMBERWOLF ENVIRONMENTAL	1:24,000 0 0.5 1 1.5 2 Miles Chacon Federal 2 Release Hilcorp Energy Company Rio Arriba County, New Mexico	* Site

Created By:
Kevin Cole
January 30, 2018
TE Project No.: HEC-180004

Datum: NAD83
Imagery Source: USGS
Quad: Billy Rice Canyon
Vector Source: TE

Figure 3 Aerial Map	**Soil Assessment and Remedial Action Plan**	**Sample Dates:** **01/24/18 and 01/29/18**
TIMBERWOLF ENVIRONMENTAL	1:6,000 0 500 1,000 1,500 2,000 2,500 3,000 Feet Created By: Kevin Cole January 30, 2018 TE Project No.: HEC-180004 **Chacon Federal 2 Release** **Hilcorp Energy Company** **Rio Arriba County, New Mexico** Datum: NAD83 Imagery Source: ESRI Vector Source: TE	Site

Sample ID	Sample Date	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Total TPH (mg/kg)
		B	T	E	X					
SB1 3.0-3.5'	01/25/18	10	120	17	160	307	5,800	760	410	6,970
SB1 5.0-5.5'	01/25/18	33	290	37	350	710	13,000	1,000	370	14,370
SB1 8.5-9.0'	01/25/18	8	110	17	150	285	5,300	620	210	6,130
SB1 20'	01/25/18	110	750	69	700	1,629	17,000	2,400	710	20,110
SB1 23'	01/25/18	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.9	< 49	< 49
SB2 23'	01/25/18	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.4	< 47	< 47
SB3 23'	01/25/18	< 0.023	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.6	< 48	< 48
SB4 23'	01/25/18	< 0.024	< 0.048	< 0.048	< 0.097	< 0.097	< 4.8	< 9.3	< 46	< 46
SB5 23'	01/25/18	< 0.024	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.9	< 50	< 50
Regulatory Criteria *		10	--	--	--	50	--	--	--	5,000

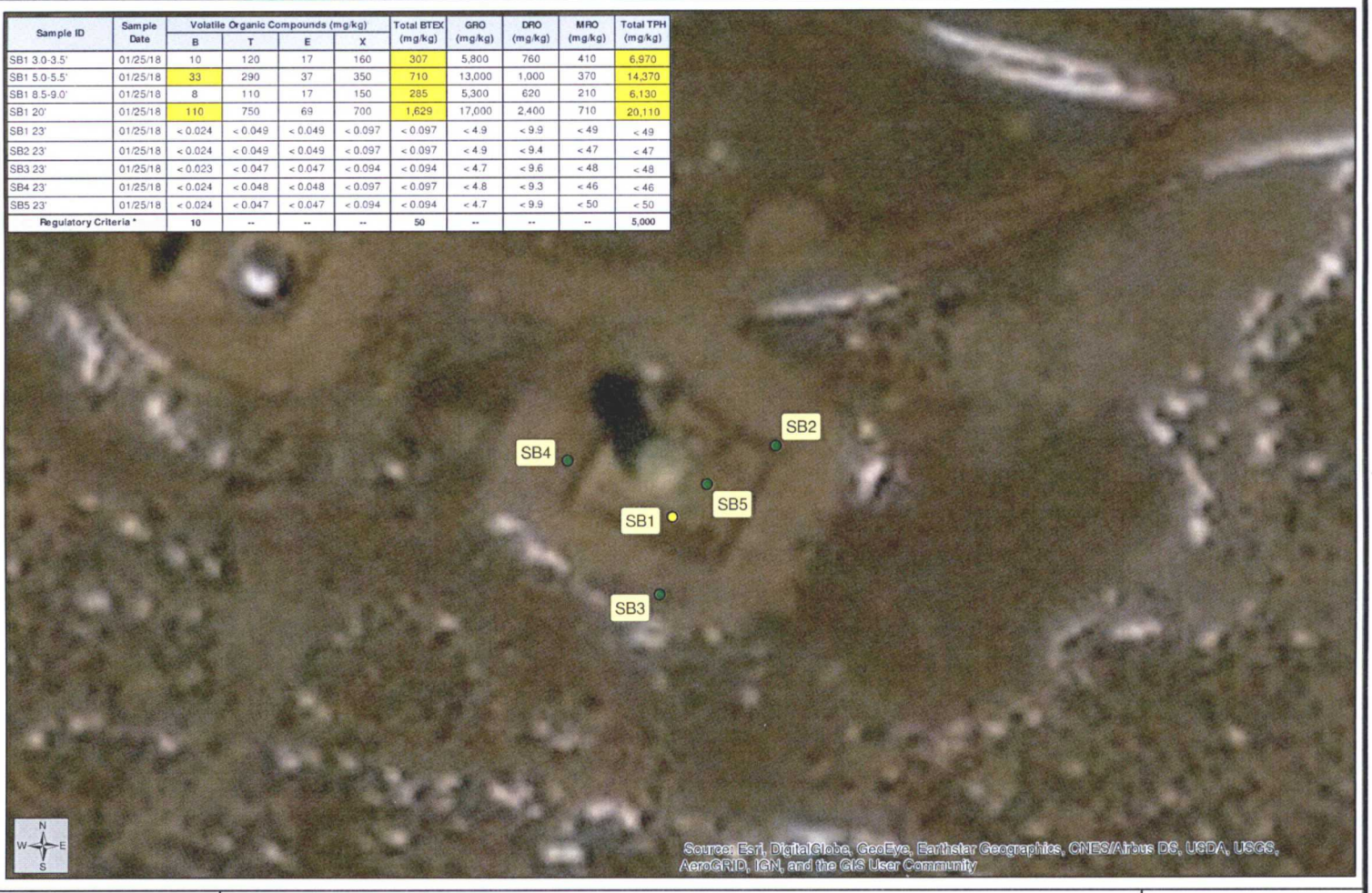

Figure 4
Sample Location Map

Soil Assessment and Remedial Action Plan

Sample Dates:
01/24/18 and 01/29/18

1:500
0 50 100 150 200 250 Feet

TIMBERWOLF ENVIRONMENTAL

Created By:
Kevin Cole
January 30, 2018
TE Project No.: HEC-180004

Chacon Federal 2 Release
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

- Soil Sample (clean)
- Soil Sample (elevated)

Figure 5 Proposed Treament Areas	**Soil Assessment and Remedial Action Plan**	**Sample Dates:** **01/24/18 and 01/29/18**
TIMBERWOLF ENVIRONMENTAL	1:1,500 0 100 200 300 400 500 600 700 800 Feet Created By: Kevin Cole January 30, 2018 TE Project No.: HEC-180004 **Chacon Federal 2 Release** **Hilcorp Energy Company** **Rio Arriba County, New Mexico** Datum: NAD83 Imagery Source: ESRI Vector Source: TE	Proposed Treament Areas

Soil Boring Log

SOIL BORING LOG

SB-1

TIMBERWOLF ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 01/29/18
Project Name: Chacon Federal 2 Release	Logged By: Jim Foster
Site Location: Rio Arriba County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180004	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.26871, -107.16821	Total Depth (ft): 30'
Ground Surface Elevation (ft, msl): 7071'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
	CL			SILTY CLAY	
	CL			CLAY; highly plastic	
	CL			SILTY CLAY	
5	SM			MEDIUM SAND	
10					
15	SC	352		CLAYEY SAND	
	CL			SILTY CLAY	
	MH			SILT	
	CL	382		CLAYEY SILT	
20	SM	40.1		SAND	
	CL			CLAY	
25	SM	16.2		SAND	
	CL			SILTY CLAY	
		2.1			
30					
35					
40					
45					

Notes:
Well Completion: none, groundwater not encountered

CL - inorganic clays of low plasticity, gravelly, sandy, and silty clays
MH - Inorganinc silts, micaceous or diatomaceous silty soils, elastic silts
SM - Silty sands, sand silt mixtures
SC - Clayey sands, sand and clay mixtures

SOIL BORING LOG

SB-2

TIMBERWOLF ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 01/29/18
Project Name: Chacon Federal 2 Release	Logged By: Jim Foster
Site Location: Rio Arriba County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180004	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.26875, -107.16808	Total Depth (ft): 25'
Ground Surface Elevation (ft, msl): 7070'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
	CL			CLAY	
	SM			MEDIUM TO COARSE SAND	
5		0.45			
10		0.45			
15					
	CL	0.4		CLAYEY SILT	
20	SM	0.25		SAND	
	MH			SILT	
	CL	0.35		SILTY CLAY	
	SM	0.5		SAND	
25					
30					
35					
40					
45					

Notes:
Well Completion: none, groundwater not encountered

CL - inorganic clays of low plasticity, gravelly, sandy, and silty clays
MH - Inorganinc silts, micaceous or diatomaceous silty soils, elastic silts
SM - Silty sands, sand silt mixtures

SOIL BORING LOG

SB-3

TIMBERWOLF ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 01/29/18
Project Name: Chacon Federal 2 Release	Logged By: Jim Foster
Site Location: Rio Arriba County, NM	Drilled By: Geomat of Famington, NM
Project Number: HEC-180004	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.26865, -107.16821	Total Depth (ft): 25'
Ground Surface Elevation (ft, msl): 7071'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
	MH			SILTY CLAY	
	SM			MEDIUM SAND	
5		0.95			
				-silt @ 8.5	
		0.8			
10					
15		0.5			
		0.8			
	MH			SILTY CLAY	
20	SM			FINE SAND	
	MH			SILT	
	CL	0.45		SILTY CLAY	
	SM			FINE SAND	
25	CL			SILTY CLAY	
30					
35					
40					
45					

Notes:
Well Completion: none, groundwater not encountered

CL - inorganic clays of low plasticity, gravelly, sandy, and silty clays
MH - Inorganinc silts, micaceous or diatomaceous silty soils, elastic silts
SM - Silty sands, sand silt mixtures

SOIL BORING LOG

SB-4

TIMBERWOLF ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 01/29/18
Project Name: Chacon Federal 2 Release	Logged By: Jim Foster
Site Location: Rio Arriba County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180004	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.26875, -107.16821	Total Depth (ft): 25
Ground Surface Elevation (ft, msl): 7070'	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
	CL			CLAY w/ gravel inclusions	
	CL			SILTY CLAY	
5	SM	0.55		SAND	
10		0.55			
15		0.55			
20	MH	0.65		SILT	
	CL	0.35		SILTY CLAY	
25					
30					
35					
40					
45					

Notes:
Well Completion: none, groundwater not encountered

CL - inorganic clays of low plasticity, gravelly, sandy, and silty clays
MH - Inorganinc silts, micaceous or diatomaceous silty soils, elastic silts
SM - Silty sands, sand silt mixtures

SOIL BORING LOG

SB-5

TIMBERWOLF ENVIRONMENTAL

Client: Hilcorp Energy Company	Completion Date: 01/29/18
Project Name: Chacon Federal 2 Release	Logged By: Jim Foster
Site Location: Rio Arriba County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180004	Drilling Method & Boring Diameter: 3" Hollow Stem Auger
Boring Coordinates: 36.26875, -107.16815	Total Depth (ft):25
Ground Surface Elevation (ft, msl): 7071	First Water Encountered (ft): N/A

Depth (feet)	USCS	PID Reading (ppm)	Soil Sample	Soil Description	Well Completion
	CL			CLAY	
	SM			SAND	
5		0.2			
10		0.65			
15		0.45			
	SM			CLAYEY SAND	
	CL			SILTY CLAY	
20	SM	0.2		SAND	
	CL			SILTY CLAY	
	SM	0.45		MEDIUM SAND	
25					
30					
35					
40					
45					

Notes:
Well Completion: none, groundwater not encountered

CL - inorganic clays of low plasticity, gravelly, sandy, and silty clays
SM - Silty sands, sand silt mixtures

Procedure for Soil Aeration

Procedure for Treating Condensate Impacted Soil via Soil Aeration

Overview

This procedure is a cost-effective means of treating moderate to large volumes of soil impacted by high gravity crude oil (i.e. condensate). This method of soil aeration relies on vigorous soil tilling to volatilize light-end petroleum hydrocarbons from the soil. Cost for this remedial method typically range from $ 20.00 to $ 40.00 per cubic yard (yd^3).

Requirements

The following is required:

- Road mixer
- Backhoe (or excavator and loader for deeper and/or larger excavations)
- Enough acreage to spread impacted soil a maximum depth of 10 – 12 inches
- Warm days (> 70° F), the warmer the better
- PID meter
- Well-defined area of impact

Considerations

- Clayey soil will require more tilling than sandy soil. Clay soils will likely require multiple treatments depending on the degree of impact to soil. To minimize mobilization cost, schedule work so that soil can be treated on Friday and Monday. Certain soil amendments should be considered to expedite the degradation/desorption process when treating clay
- With the exception of caliche, effective only in non-consolidated media
- This method is highly dependent on favorable weather:
    - Temperatures greater than 90° F typically require less tilling
    - May not be an effective technique on cold, wet, or high humidity days
- While this method can be used on crude oil, it is less effective due to lower volatilization rates. When treating heavier crude (i.e. API Gravity < 32) multiple treatments may be required to reach remedial targets. If these cases, consider soil amendments to promote biodegradation

Procedure

1.0 Prepare an on-site treatment cell of sufficient size to accommodate the impacted soil, with earthen berms (approximately 2.0 ft high) constructed at the perimeter of the treatment cell

2.0 Excavate impacted soil

3.0 Spread impacted soil over treatment cell; maximum depth of 12 inches

4.0 Continuously till soil using the road mixer

5.0 Periodically (each hour, or every other hour) monitor progress by screening soil with PID

6.0 Once PID readings are below 100 ppm, collect representative samples for laboratory analysis

7.0 Once laboratory analysis confirm remedial targets have been, backfill.

TIMBERWOLF ENVIRONMENTAL

Laboratory Report and Chain-of-Custody Documents

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

February 06, 2018

Jim Foster

Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: Chacon Federal 2 OrderNo.: 1801D95

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 10 sample(s) on 1/31/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1801D95**
Date Reported: **2/6/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-001 **Matrix:** SOIL

Client Sample ID: SB1 20'
Collection Date: 1/29/2018 10:28:00 AM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	2400	98		mg/Kg	10	2/5/2018 5:46:50 PM
Motor Oil Range Organics (MRO)	710	490		mg/Kg	10	2/5/2018 5:46:50 PM
Surr: DNOP	0	70-130	S	%Rec	10	2/5/2018 5:46:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	17000	470		mg/Kg	100	2/1/2018 9:51:01 PM
Surr: BFB	234	15-316		%Rec	100	2/1/2018 9:51:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	110	2.3		mg/Kg	100	2/1/2018 9:51:01 PM
Toluene	750	47		mg/Kg	1000	2/2/2018 11:38:10 AM
Ethylbenzene	69	4.7		mg/Kg	100	2/1/2018 9:51:01 PM
Xylenes, Total	700	9.4		mg/Kg	100	2/1/2018 9:51:01 PM
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	100	2/1/2018 9:51:01 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-002 **Matrix:** SOIL

Client Sample ID: SB1 23'
Collection Date: 1/29/2018 10:43:00 AM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	2/5/2018 6:14:21 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/5/2018 6:14:21 PM
Surr: DNOP	88.0	70-130		%Rec	1	2/5/2018 6:14:21 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/2/2018 12:01:31 PM
Surr: BFB	97.0	15-316		%Rec	1	2/2/2018 12:01:31 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	2/2/2018 12:01:31 PM
Toluene	ND	0.049		mg/Kg	1	2/2/2018 12:01:31 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/2/2018 12:01:31 PM
Xylenes, Total	ND	0.097		mg/Kg	1	2/2/2018 12:01:31 PM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	2/2/2018 12:01:31 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-007 **Matrix:** SOIL

Client Sample ID: SB2 23'
Collection Date: 1/29/2018 11:40:00 AM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	2/5/2018 6:42:13 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/5/2018 6:42:13 PM
Surr: DNOP	85.0	70-130		%Rec	1	2/5/2018 6:42:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/2/2018 1:44:08 AM
Surr: BFB	91.8	15-316		%Rec	1	2/2/2018 1:44:08 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	2/2/2018 1:44:08 AM
Toluene	ND	0.049		mg/Kg	1	2/2/2018 1:44:08 AM
Ethylbenzene	ND	0.049		mg/Kg	1	2/2/2018 1:44:08 AM
Xylenes, Total	ND	0.097		mg/Kg	1	2/2/2018 1:44:08 AM
Surr: 4-Bromofluorobenzene	97.1	80-120		%Rec	1	2/2/2018 1:44:08 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-008 **Matrix:** SOIL

Client Sample ID: SB3 23'
Collection Date: 1/29/2018 12:40:00 PM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/5/2018 7:09:48 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/5/2018 7:09:48 PM
Surr: DNOP	89.0	70-130		%Rec	1	2/5/2018 7:09:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/2/2018 2:07:24 AM
Surr: BFB	90.1	15-316		%Rec	1	2/2/2018 2:07:24 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	2/2/2018 2:07:24 AM
Toluene	ND	0.047		mg/Kg	1	2/2/2018 2:07:24 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/2/2018 2:07:24 AM
Xylenes, Total	ND	0.094		mg/Kg	1	2/2/2018 2:07:24 AM
Surr: 4-Bromofluorobenzene	97.5	80-120		%Rec	1	2/2/2018 2:07:24 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-009 **Matrix:** SOIL

Client Sample ID: SB4 23'
Collection Date: 1/29/2018 1:15:00 PM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/5/2018 7:37:20 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/5/2018 7:37:20 PM
Surr: DNOP	82.8	70-130		%Rec	1	2/5/2018 7:37:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/2/2018 2:30:38 AM
Surr: BFB	91.3	15-316		%Rec	1	2/2/2018 2:30:38 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	2/2/2018 2:30:38 AM
Toluene	ND	0.048		mg/Kg	1	2/2/2018 2:30:38 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/2/2018 2:30:38 AM
Xylenes, Total	ND	0.097		mg/Kg	1	2/2/2018 2:30:38 AM
Surr: 4-Bromofluorobenzene	99.5	80-120		%Rec	1	2/2/2018 2:30:38 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Federal 2
Lab ID: 1801D95-010 **Matrix:** SOIL

Client Sample ID: SB5 23'
Collection Date: 1/29/2018 2:30:00 PM
Received Date: 1/31/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	2/5/2018 8:04:48 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/5/2018 8:04:48 PM
Surr: DNOP	81.9	70-130		%Rec	1	2/5/2018 8:04:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/2/2018 2:53:51 AM
Surr: BFB	90.4	15-316		%Rec	1	2/2/2018 2:53:51 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	2/2/2018 2:53:51 AM
Toluene	ND	0.047		mg/Kg	1	2/2/2018 2:53:51 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/2/2018 2:53:51 AM
Xylenes, Total	ND	0.094		mg/Kg	1	2/2/2018 2:53:51 AM
Surr: 4-Bromofluorobenzene	97.3	80-120		%Rec	1	2/2/2018 2:53:51 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D95**

06-Feb-18

Client: Timberwolf Environmental

Project: Chacon Federal 2

Sample ID **LCS-36308**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **36308**	RunNo: **48888**
Prep Date: **2/1/2018**	Analysis Date: **2/5/2018**	SeqNo: **1573758** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	41	10	50.00	0	82.1	70	130			
Surr: DNOP	4.3		5.000		85.3	70	130			

Sample ID **MB-36308**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **36308**	RunNo: **48888**
Prep Date: **2/1/2018**	Analysis Date: **2/5/2018**	SeqNo: **1573759** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		90.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D95**

06-Feb-18

Client: Timberwolf Environmental
Project: Chacon Federal 2

Sample ID	LCS-36284	SampType:	LCS		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	LCSS	Batch ID:	36284		RunNo:	48855				
Prep Date:	1/31/2018	Analysis Date:	2/1/2018		SeqNo:	1572275	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.4	75.9	131			
Surr: BFB	1100		1000		107	15	316			

Sample ID	MB-36284	SampType:	MBLK		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	PBS	Batch ID:	36284		RunNo:	48855				
Prep Date:	1/31/2018	Analysis Date:	2/1/2018		SeqNo:	1572276	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		89.6	15	316			

Sample ID	LCS-36301	SampType:	LCS		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	LCSS	Batch ID:	36301		RunNo:	48867				
Prep Date:	2/1/2018	Analysis Date:	2/2/2018		SeqNo:	1572842	Units:	%Rec		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		104	15	316			

Sample ID	MB-36301	SampType:	MBLK		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	PBS	Batch ID:	36301		RunNo:	48867				
Prep Date:	2/1/2018	Analysis Date:	2/2/2018		SeqNo:	1572843	Units:	%Rec		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	960		1000		95.8	15	316			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D95**

06-Feb-18

Client: Timberwolf Environmental

Project: Chacon Federal 2

Sample ID **LCS-36284**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **36284**	RunNo: **48855**
Prep Date: **1/31/2018**	Analysis Date: **2/1/2018**	SeqNo: **1572312** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	105	77.3	128			
Toluene	1.0	0.050	1.000	0	105	79.2	125			
Ethylbenzene	1.0	0.050	1.000	0	104	80.7	127			
Xylenes, Total	3.2	0.10	3.000	0	107	81.6	129			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID **MB-36284**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **36284**	RunNo: **48855**
Prep Date: **1/31/2018**	Analysis Date: **2/1/2018**	SeqNo: **1572313** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		94.7	80	120			

Sample ID **LCS-36301**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **36301**	RunNo: **48867**
Prep Date: **2/1/2018**	Analysis Date: **2/2/2018**	SeqNo: **1572861** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID **MB-36301**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **36301**	RunNo: **48867**
Prep Date: **2/1/2018**	Analysis Date: **2/2/2018**	SeqNo: **1572862** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: TIMBERWOLF ENVIRON Work Order Number: 1801D95 RcptNo: 1

Received By: **Anne Thorne** 1/31/2018 7:00:00 AM

Completed By: **Dennis Suazo** 1/31/2018 9:14:51 AM

Reviewed By: IMO 1/31/18

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks: labeled by SRC 01131118

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.1	Good	Not Present			

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

560501

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
Timberwolf Environmental	Jim Foster		278284
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
City / State / Zip Code	**Site Contact**	**Lab Contact**	
Project Name and Location (State) Chacon Federal 2	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: BTEX	8015 GRO	8015 DRO/300	Hold	Special Instructions/ Conditions of Receip
																	1801D95
SB1 20'	1/29/18	1028				✓							✓	✓	✓		- Dilute 1:100
SB1 23'	1/29/18	1043				✓							✓	✓	✓		002
SB1 25'	1/29/18	1050				✓										✓	003
SB1 26'	1/29/18	1058				✓										✓	004
SB1 30'	1/29/18	1055				✓										✓	005
SB2 10'	1/29/18	1130				✓										✓	006
SB2 23'	1/29/18	1140				✓							✓	✓	✓		007
SB3 23'	1/29/18	1240				✓							✓	✓	✓		008
SB4 23'	1/29/18	1315				✓							✓	✓	✓		009
SB5 23'	1/29/18	1430				✓							✓	✓	✓		010
															temp	1.0 °C	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	1/29/18	1830	1. Received By Martin Webb	1/30/18	1642
2. Relinquished By Martin Webb	1/30/18	1844	2. Received By	01/31/18	0700
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

February 01, 2018

Jim Foster

Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: Chacon Fed 2 OrderNo.: 1801D11

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 3 sample(s) on 1/27/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1801D11**
Date Reported: **2/1/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Fed 2
Lab ID: 1801D11-001 **Matrix:** SOIL

Client Sample ID: SB1 3.0-3.5'
Collection Date: 1/24/2018 9:50:00 AM
Received Date: 1/27/2018 10:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	760	18		mg/Kg	2	1/31/2018 5:45:23 PM
Motor Oil Range Organics (MRO)	410	91		mg/Kg	2	1/31/2018 5:45:23 PM
Surr: DNOP	85.1	70-130		%Rec	2	1/31/2018 5:45:23 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**
Benzene	10	1.2		mg/Kg	50	1/30/2018 10:30:54 PM
Toluene	120	2.3		mg/Kg	50	1/30/2018 10:30:54 PM
Ethylbenzene	17	2.3		mg/Kg	50	1/30/2018 10:30:54 PM
Xylenes, Total	160	4.6		mg/Kg	50	1/30/2018 10:30:54 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	50	1/30/2018 10:30:54 PM
Surr: Toluene-d8	99.3	70-130		%Rec	50	1/30/2018 10:30:54 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**
Gasoline Range Organics (GRO)	5800	230		mg/Kg	50	1/30/2018 10:30:54 PM
Surr: BFB	88.7	70-130		%Rec	50	1/30/2018 10:30:54 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Fed 2
Lab ID: 1801D11-002 **Matrix:** SOIL

Client Sample ID: SB1 5.0-5.5'
Collection Date: 1/24/2018 10:10:00 AM
Received Date: 1/27/2018 10:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	1000	19		mg/Kg	2	1/31/2018 6:13:07 PM
Motor Oil Range Organics (MRO)	370	97		mg/Kg	2	1/31/2018 6:13:07 PM
Surr: DNOP	85.0	70-130		%Rec	2	1/31/2018 6:13:07 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**
Benzene	33	2.4		mg/Kg	100	1/30/2018 10:53:49 PM
Toluene	290	4.8		mg/Kg	100	1/30/2018 10:53:49 PM
Ethylbenzene	37	4.8		mg/Kg	100	1/30/2018 10:53:49 PM
Xylenes, Total	350	9.6		mg/Kg	100	1/30/2018 10:53:49 PM
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	100	1/30/2018 10:53:49 PM
Surr: Toluene-d8	97.9	70-130		%Rec	100	1/30/2018 10:53:49 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**
Gasoline Range Organics (GRO)	13000	480		mg/Kg	100	1/30/2018 10:53:49 PM
Surr: BFB	90.8	70-130		%Rec	100	1/30/2018 10:53:49 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: Chacon Fed 2
Lab ID: 1801D11-003 **Matrix:** SOIL

Client Sample ID: SB1 8.5-9.0'
Collection Date: 1/24/2018 10:25:00 AM
Received Date: 1/27/2018 10:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	620	18		mg/Kg	2	1/31/2018 6:40:53 PM
Motor Oil Range Organics (MRO)	210	88		mg/Kg	2	1/31/2018 6:40:53 PM
Surr: DNOP	91.7	70-130		%Rec	2	1/31/2018 6:40:53 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**
Benzene	8.0	2.4		mg/Kg	100	1/30/2018 11:16:41 PM
Toluene	110	4.7		mg/Kg	100	1/30/2018 11:16:41 PM
Ethylbenzene	17	4.7		mg/Kg	100	1/30/2018 11:16:41 PM
Xylenes, Total	150	9.5		mg/Kg	100	1/30/2018 11:16:41 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	100	1/30/2018 11:16:41 PM
Surr: Toluene-d8	103	70-130		%Rec	100	1/30/2018 11:16:41 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**
Gasoline Range Organics (GRO)	5300	470		mg/Kg	100	1/30/2018 11:16:41 PM
Surr: BFB	96.7	70-130		%Rec	100	1/30/2018 11:16:41 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D11**

01-Feb-18

Client: Timberwolf Environmental

Project: Chacon Fed 2

Sample ID **LCS-36249**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **36249**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1569177** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.9	70	130			
Surr: DNOP	4.5		5.000		90.5	70	130			

Sample ID **MB-36249**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **36249**	RunNo: **48775**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1569178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.6	70	130			

Sample ID **LCS-36251**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **36251**	RunNo: **48777**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570269** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		89.9	70	130			

Sample ID **MB-36251**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **36251**	RunNo: **48777**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570271** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.7		10.00		87.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D11**

01-Feb-18

Client: Timberwolf Environmental

Project: Chacon Fed 2

Sample ID **lcs-36237**	SampType: **LCS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **36237**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570550** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	1.000	0	84.9	80	120			
Toluene	0.93	0.050	1.000	0	93.0	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.3	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.3	80	120			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.0	70	130			
Surr: Toluene-d8	0.47		0.5000		93.7	70	130			

Sample ID **lcs-36238**	SampType: **LCS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **36238**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570551** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.0	70	130			
Surr: Toluene-d8	0.49		0.5000		97.2	70	130			

Sample ID **mb-36237**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **36237**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570552** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.57		0.5000		113	70	130			
Surr: Toluene-d8	0.47		0.5000		93.6	70	130			

Sample ID **mb-36238**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **36238**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570553** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130			
Surr: Toluene-d8	0.47		0.5000		95.0	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1801D11**

01-Feb-18

Client: Timberwolf Environmental

Project: Chacon Fed 2

Sample ID **lcs-36237**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **36237**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570487** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	103	70	130			
Surr: BFB	480		500.0		95.2	70	130			

Sample ID **lcs-36238**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **36238**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570488** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		96.0	70	130			

Sample ID **mb-36237**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **36237**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/30/2018**	SeqNo: **1570489** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	540		500.0		108	70	130			

Sample ID **mb-36238**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **36238**	RunNo: **48804**
Prep Date: **1/29/2018**	Analysis Date: **1/31/2018**	SeqNo: **1570490** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	520		500.0		104	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: TIMBERWOLF ENVIRON Work Order Number: 1801D11 RcptNo: 1

Received By: **Erin Melendrez** 1/27/2018 10:05:00 AM

Completed By: **Dennis Suazo** 1/29/2018 9:59:00 AM

Reviewed By: ENM 1/29/18

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Dallas . Ft Worth

560501

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt 0.8+0.2(CF)= 1.0

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client: Timberwolf Environmental	Project Manager: Jim Foster jim@teamtimberwolf.com	Date:	Chain of Custody Number: 278284
Address: 1920 W. Villa Maria Ste 205	Telephone Number (Area Code)/Fax Number: 979-324-2139	Lab Number:	Page 1 of 1
City: Bryan / State: TX / Zip Code: 77807	Site Contact: / Lab Contact:		
Project Name and Location (State): Chacon Fed #2	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Analysis (Attach list if more space is needed): BTEX; 8015 GRO; 8015 DRO/ORO

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	BTEX	8015 GRO	8015 DRO/ORO	Special Instructions/Conditions of Receipt
																1801D11
SB1 3.0-3.5'	1/24/18	0950				✓							✓	✓	✓	001
SB1 5.0-5.5'	1/24/18	1010				✓							✓	✓	✓	002
SB1 8.5-9.0'	1/24/18	1025				✓							✓	✓	✓	003

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other______

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	1/25/18	1815	1. Received By: Christa Walters	1/24/18	1322
2. Relinquished By: Christa Walt	1/26/18	1832	2. Received By: [signature] courier	1/27/18	1005
3. Relinquished By:			3. Received By:		

Comments:

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Urea Fertilizer 46-0-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification

1.1. Identification

Product form : Mixture

Product name : Urea Fertilizer 46-0-0

Product code : M11020

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

JR Simplot Company
P.O. Box 70013
Boise, ID 83707
T 1-208-336-2110

1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Serious eye damage/eye irritation, Category 2B H320

Full text of H statements : see section 16

2.2. Label elements

GHS-US labelling

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H320 - Causes eye irritation

Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical attention

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
urea (57-13-6)	(CAS No) 57-13-6	100	Eye Irrit. 2B, H320

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service. Allow breathing of fresh air. Allow the victim to rest.

First-aid measures after skin contact	:	Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
First-aid measures after eye contact	:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse with water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion	:	Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	:	AFTER INHALATION OF DUST: Dry/sore throat. Coughing.
Symptoms/injuries after eye contact	:	Redness of the eye tissue. Causes eye irritation.
Symptoms/injuries after ingestion	:	Nausea. Vomiting. Cramps/uncontrolled muscular contractions.
Chronic symptoms	:	No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	EXTINGUISHING MEDIA FOR SURROUNDING FIRES: All extinguishing media allowed. Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	:	No unsuitable extinguishing media known. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	:	INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".
Reactivity	:	Decomposes slowly on exposure to water (moisture) and in moist air: release of corrosive gases/vapours (ammonia). On heating: release of toxic/corrosive/combustible gases/vapours (ammonia). On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Violent to explosive reaction with (some) halogens compounds: release of heat. Reacts with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions	:	Cool tanks/drums with water spray/remove them into safety. Dilute toxic gases with water spray. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes. In case of reactivity hazard: consider evacuation. Evacuate unnecessary personnel.
Measures in case of dust release	:	In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

Protective equipment	:	Equip cleanup crew with proper protection.
Emergency procedures	:	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.
Methods for cleaning up	:	Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling. On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Avoid raising dust. Use earthed equipment. Keep away from naked flames/heat. Observe normal hygiene standards. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	:	Keep only in the original container in a cool, well ventilated place away from : Keep container closed when not in use.
Incompatible products	:	Strong bases. Strong acids.
Incompatible materials	:	Sources of ignition. Direct sunlight.
Heat and ignition sources	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. halogens. water/moisture.
Storage area	:	Store in a dry area. Keep out of direct sunlight. Keep container in a well-ventilated place. Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: hermetical. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials	:	SUITABLE MATERIAL: stainless steel. synthetic material. glass. cardboard. wood. MATERIAL TO AVOID: carbon steel. copper. bronze.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

urea (57-13-6) (57-13-6)
Not applicable

8.2. Exposure controls

Personal protective equipment	:	Avoid all unnecessary exposure.
Materials for protective clothing	:	GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. chloroprene rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: neoprene. nitrile rubber. viton.
Hand protection	:	Gloves. Wear protective gloves.
Eye protection	:	Face shield. In case of dust production: protective goggles. Chemical goggles or safety glasses.
Skin and body protection	:	Protective clothing. In case of dust production: head/neck protection. In case of dust production: dustproof clothing.
Respiratory protection	:	Dust production: dust mask with filter type P1. Wear appropriate mask.
Other information	:	Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Crystalline solid. Crystalline powder. Little spheres. Grains.

Colour	:	White
Odour	:	Odourless In moist air: Ammonia odour
Odour threshold	:	No data available
pH	:	7.2 (10 %)
pH solution	:	10 %
Melting point	:	133 °C
Freezing point	:	No data available
Boiling point	:	Not applicable
Flash point	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Flammability (solid, gas)	:	No data available
Explosive limits	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Vapour pressure	:	< 0.01 hPa
Vapour pressure at 50 °C	:	< 0.01 hPa
Relative density	:	1.33
Relative vapour density at 20 °C	:	2.1
Density	:	1335 kg/m³
Molecular mass	:	60.07 g/mol
Solubility	:	Soluble in water. Soluble in ethanol. Soluble in acetic acid. Soluble in pyrimidine. Soluble in hydrogenchloride. Water: 100 g/100ml Ethanol: 10 g/100ml
Log Pow	:	< -1.73 (Experimental value; EU Method A.8: Partition Coefficient)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	> 133 °C
Viscosity	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	0.002 Pa.s (20 °C)

9.2. Other information

Saturation concentration	:	< 0.01 g/m³
VOC content	:	0 %
Other properties	:	Hygroscopic.

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes slowly on exposure to water (moisture) and in moist air: release of corrosive gases/vapours (ammonia). On heating: release of toxic/corrosive/combustible gases/vapours (ammonia). On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Violent to explosive reaction with (some) halogens compounds: release of heat. Reacts with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion.

10.2. Chemical stability

No additional information available

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Urea Fertilizer 46-0-0	
LD50 oral rat	8471 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Literature study; 14300 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 3200 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 21000 mg/kg (Rabbit; Literature study)
ATE US (oral)	8471.000 mg/kg bodyweight

urea (57-13-6) (57-13-6)	
LD50 oral rat	8471 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Literature study; 14300 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 3200 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 21000 mg/kg (Rabbit; Literature study)
ATE US (oral)	8471.000 mg/kg bodyweight

Skin corrosion/irritation : Not classified
pH: 7.2 (10 %)

Serious eye damage/irritation : Causes eye irritation.
pH: 7.2 (10 %)

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/injuries after inhalation : AFTER INHALATION OF DUST: Dry/sore throat. Coughing.

Symptoms/injuries after eye contact : Redness of the eye tissue. Causes eye irritation.

Symptoms/injuries after ingestion : Nausea. Vomiting. Cramps/uncontrolled muscular contractions.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/I.

Ecology - water : Ground water pollutant. Not harmful to fishes (LC50(96h) >1000 mg/l). Not harmful to invertebrates (Daphnia) (EC50 (48h) > 1000 mg/l). Not harmful to algae.

Urea Fertilizer 46-0-0	
LC50 fish 1	> 6810 mg/l (96 h; Leuciscus idus; Nominal concentration)
EC50 Daphnia 1	> 10000 mg/l (48 h; Daphnia magna; Nominal concentration)
LC50 fish 2	17500 mg/l (96 h; Poecilia reticulata)
EC50 Daphnia 2	> 10000 mg/l (24 h; Daphnia magna)
TLM fish 1	17500 ppm (96 h; Poecilia reticulata)
Threshold limit other aquatic organisms 1	120000 mg/l (16 h; Bacteria; Toxicity test)
Threshold limit other aquatic organisms 2	> 10000 mg/l (Pseudomonas putida)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda; Growth rate)
Threshold limit algae 2	47 mg/l (192 h; Microcystis aeruginosa; Growth rate)

urea (57-13-6) (57-13-6)	
LC50 fish 1	> 6810 mg/l (96 h; Leuciscus idus; Nominal concentration)
EC50 Daphnia 1	> 10000 mg/l (48 h; Daphnia magna; Nominal concentration)
LC50 fish 2	17500 mg/l (96 h; Poecilia reticulata)
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TLM fish 1	17500 ppm (96 h; Poecilia reticulata)
Threshold limit other aquatic organisms 1	120000 mg/l (16 h; Bacteria; Toxicity test)
Threshold limit other aquatic organisms 2	> 10000 mg/l (Pseudomonas putida)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda; Growth rate)
Threshold limit algae 2	47 mg/l (192 h; Microcystis aeruginosa; Growth rate)

12.2. Persistence and degradability

Urea Fertilizer 46-0-0	
Persistence and degradability	Inherently biodegradable. Hydrolysis in water. Not established.
ThOD	0.27 g O_2/g substance

urea (57-13-6) (57-13-6)	
Persistence and degradability	Inherently biodegradable. Hydrolysis in water. Not established.
ThOD	0.27 g O_2/g substance

12.3. Bioaccumulative potential

Urea Fertilizer 46-0-0	
BCF fish 1	1 (72 h; Brachydanio rerio; Fresh water)
BCF other aquatic organisms 1	11700 (Chlorella sp.)
Log Pow	< -1.73 (Experimental value; EU Method A.8: Partition Coefficient)
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.

urea (57-13-6) (57-13-6)	
BCF fish 1	1 (72 h; Brachydanio rerio; Fresh water)
BCF other aquatic organisms 1	11700 (Chlorella sp.)
Log Pow	< -1.73 (Experimental value; EU Method A.8: Partition Coefficient)
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Remove to an authorized dump (Class II). Do not discharge into drains or the environment. Dispose in a safe manner in accordance with local/national regulations.

Additional information : LWCA (the Netherlands): KGA category 03. Can be considered as non hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated for transport

TDG

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Urea Fertilizer 46-0-0
Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

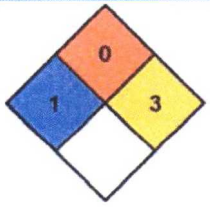
Full text of H-statements:

H320	Causes eye irritation

NFPA health hazard : 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 3 - Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation, or reacts explosively with water.



SDS US (GHS HazCom 2012)