

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

NMOC

Responsible Party

JUN 13 2019

Responsible Party: Hilcorp Energy	OGRID: 372171
Contact Name: Lindsay Dumas	Contact Telephone: 832-839-4585
Contact email: Ldumas@hilcorp.com	Incident # (assigned by OCD): NCS1901155075
Contact mailing address: 1111 Travis St. Houston, TX 77002	

DISTRICT III

Location of Release Source

Latitude 36.61179 Longitude -107.29706
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: San Juan 28-4 Unit 18	Site Type: Gas
Date Release Discovered: 1/11/19	API# (if applicable) 30-039-07225

Unit Letter	Section	Township	Range	County
M	31	28N	04W	Rio Arriba

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 12 bbls	Volume Recovered (bbls) 12 bbls
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Condensate	Volume Released (bbls) 38 bbls	Volume Recovered (bbls) 38 bbls
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was a result of a piping freeze near the production tank, which allowed some of the contents of the tank to run out on to the frozen ground inside of the bermed area.

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Tuesday, July 9, 2019 3:40 PM
To: 'Lindsay Dumas'
Cc: Kurt Hoekstra; Powell, Brandon, EMNRD
Subject: RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Lindsay,

Please remember that when submitting a site characterization and remediation plan the site must be completely delineated both vertically and horizontally. The Plan reviewed below is inadequate and essentially is asking for more time to continue to remediate the site via Dig and haul. Per 19.15.29 NMAC HEC has the opportunity to ask for an extension to submit a closure report for good cause. HEC should not be submitting an incomplete delineation report and then asking for more time.

OCD has approved the remediation plan submitted on June 13, 2019 with the following conditions of approval.

- HEC will submit to the OCD a full site characterization prior to the application of any insitu remediation therefore HEC request to apply potassium permanganate is denied.
- HEC will complete and submit to the OCD a closure report no later than September 2, 2019 which is 7 months from the date of discovery.
- HEC will sample per 19.15.29.12 NMAC

If you have 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: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Monday, June 10, 2019 8:41 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Kurt Hoekstra <khoekstra@hilcorp.com>
Subject: [EXT] RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

A follow up to my email on 6/7/19 for confirmation sampling...

This release will be sampled following the confirmation sampling on the San Juan 27-5 #83. Kurt Hoekstra will be onsite from HEC.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Lindsay Dumas
Sent: Monday, June 10, 2019 9:18 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Please find attached the updated site characterization plan attached to the C-141. A signed hard copy has been placed in the mail.

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Smith, Cory, EMNRD [<mailto:Cory.Smith@state.nm.us>]
Sent: Friday, June 7, 2019 2:29 PM
To: Lindsay Dumas <ldumas@hilcorp.com>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Lindsay,

The Site characterization needs to be attached to a signed C-141.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410

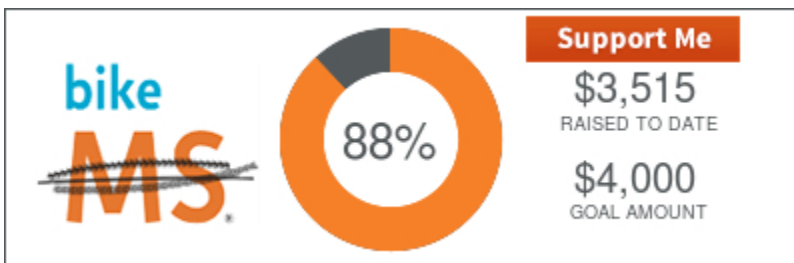
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Friday, June 7, 2019 1:23 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Please find attached the updated site characterization report. This release will be sampled on June 11. There are two other HEC locations in the area that need sampling, one is confirmation sampling and the other is a BGT closure. I planned to let Kurt decide on the times, he will send out an email update on Monday with the times for each location. Thank you!

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159



From: Lindsay Dumas
Sent: Monday, May 13, 2019 9:34 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: RE: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

These are both incorrect statements that I didn't catch during my review of the report prior to submittal.

NMOCD was notified of confirmation sampling, but NMOCD was not present.

The soil on location was only stockpiled and sampled, the soil was never treated.

I am having Timberwolf modify the report and I will get it to you as soon as possible. Please give me a call with any questions. Thanks!

Kind regards,

Lindsay Dumas
Environmental Specialist
Hilcorp Energy – L48 West
Office: 832-839-4585
Mobile: 281-794-9159

From: Smith, Cory, EMNRD [<mailto:Cory.Smith@state.nm.us>]
Sent: Monday, May 6, 2019 10:27 AM
To: Lindsay Dumas <ldumas@hilcorp.com>
Cc: Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Subject: [EXTERNAL] RE: San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Lindsay,

I am reviewing the report from Timberwolf and checking my notes. Whom with OCD was onsite to witness sampling on April 2, 2019?

Remedial Action and Soil Confirmation Sampling

In March 2019, Hilcorp crews excavated approximately 20 cubic yards of impacted soil from the Site. Excavated soil was treated and stockpiled on location. Following excavation and soil treatment, Hilcorp personnel Kurt Hoekstra collected composite confirmation samples from the excavation (i.e., N ½ Base & Walls and S ½ Base and Walls) and the treated soil (i.e., Soil Pile). Confirmation sampling was witnessed by NMOCD staff. The excavation and confirmation sample locations are depicted on Figure 5.

I also noticed

Remedial Action and Soil Confirmation Sampling

In March 2019, Hilcorp crews excavated approximately 20 cubic yards of impacted soil from the Site. Excavated soil was treated and stockpiled on location. Following excavation and soil treatment, Hilcorp personnel Kurt Hoekstra collected composite confirmation samples from the excavation (i.e., N ½ Base

Could you please provide the Approval from the OCD and USFS for onsite treatment?

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: Jim Foster <jim@teamtinberwolf.com>
Sent: Friday, April 26, 2019 3:22 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Lindsay Dumas <ldumas@hilcorp.com>
Cc: Ryan Mersmann <ryan@teamtinberwolf.com>; Russell Greer <russell@teamtinberwolf.com>
Subject: [EXT] San Juan 28-4 No. 18 - C-141, Site Characterization Report and RAP

Cory,

Attached is Site Characterization Report and Remedial Action Plan. Documents have been reordered as requested. Please note, siting information is presented in the Environmental Setting and Regulatory Criteria.

Please let me know if you have any further questions.

Thank you,

Jim Foster
President



691 CR 233, Suite B-4
Durango, CO 81301
970-516-8419 (O) 979-324-2139 (C)
Teamtinberwolf.com

The information contained in this e-mail message is confidential information intended only for the use of the recipient(s) named above. In addition, this communication may be legally privileged. If the reader of this e-mail is not an intended recipient, you have received this e-mail in error and any review, dissemination, distribution or copying is strictly prohibited. If you have received this e-mail in error, please notify the sender immediately by return e-mail and permanently delete the copy you received.

While all reasonable care has been taken to avoid the transmission of viruses, it is the responsibility of the recipient to ensure that the onward transmission, opening or use of this message and any attachments will not adversely affect its systems or data. No responsibility is accepted by the company in this regard and the recipient should carry out such virus and other checks as it considers appropriate.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?

☒ Yes ☐ No

If YES, for what reason(s) does the responsible party consider this a major release?

Per 19.15.29.7 (A) (1) an unauthorized release of a volume, excluding gas, of 25 barrels or more.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Yes, by Clayton Hamilton (HEC Area 13 Foreman); to Cory Smith (NMOCD), Vanessa Fields (NMOCD), Whitney Thomas (BLM), Emmanuel Adeloya (BLM) and J.J. Miller (USFS) by email on 1/11/19 at 2:56pm MST. Email is attached.

Initial Response

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

- ☒ The source of the release has been stopped.
- ☒ The impacted area has been secured to protect human health and the environment.
- ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

All above actions have been completed.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Lindsay Dumas Title: Environmental Specialist

Signature:  Date: 1/15/19

email: Ldumas@hilcorp.com Telephone: 832-839-4585

OCD Only

Received by: _____ Date: _____

Lindsay Dumas

From: Clayton Hamilton
Sent: Friday, January 11, 2019 3:56 PM
To: 'l1thomas@blm.gov'; 'aadeloye@blm.gov'; 'jjmiller@fs.fed.us'; 'cory.smith@state.nm.us'; 'Vanessa.fields@state.nm.us'
Cc: Lindsay Dumas; Nick Kunze; Lee Murphy; Lisa Hunter; Matt Henderson; Ashton Hemphill
Subject: Hilcorp Release - San Juan 28-4 Unit 18

On 01/11/2019 at 12:00PM, Hilcorp Energy discovered a release on the San Juan 28-4 Unit 18, API# 3003907225, Lat. 236.61166, Long. -107.29639, Unit M, Section 31, Township 028N, Range 004W. The release was 48 bbls of condensate and 12 bbls of produced water from the production tank. The release was the result of a piping freeze near the production tank which allowed some of the contents of the tank to run out on to the frozen ground inside of the bermed area. The release remained on location and inside the bermed area – approximately 60 bbls of standing fluid was recovered and put back into the tank from which it was spilled after temporary repairs were made. Permanent repairs will be made before the tank is returned to service.

Hilcorp Environmental will submit an Initial C-141 within 15 days, and follow up with spill assessment.

Please let me know if there are any questions.

Clayton Hamilton
Area 13 Production Foreman
Hilcorp Energy Company – San Juan East
Office – 505-324-5137
Cell – 530-665-3077

“Looking back is a bad habit” ~Rooster Cogburn

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	>51 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

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

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: Lindsay Dumas Title: Environmental Specialist

Signature:  Date: 6/10/19

email: Ldumas@hilcorp.com Telephone: 832-839-4585

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Lindsay DumasTitle: Environmental SpecialistSignature: Date: 6/10/19email: Ldumas@hilcorp.comTelephone: 832-839-4585
OCD Only
Received by: Date: 6/13/19☐ Approved☒ Approved with Attached Conditions of Approval☐ Denied☐ Deferral ApprovedSignature: Date: 7/9/19



691 CR233, Ste. B-4
Durango, CO 81301
979.324.2139
www.teamtimberwolf.com

June 6, 2019

Mr. Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Rd
Aztec, New Mexico 87410

Re: Site Characterization Report and Remedial Action Plan
San Juan 28-4 No. 18 Release (SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 31, T28N, R4W)
Rio Arriba County, New Mexico
OCD Incident No.: NCS1901155075

Dear Mr. Smith,

At the request of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) prepared this site characterization report and remedial action plan in response to a release occurring from the San Juan 28-4 No. 18 ("Site"). The Site is located approximately 27.5 miles southwest of Dulce, Rio Arriba County, New Mexico (Figures 1 and 2).

On 1/11/19, Hilcorp personnel discovered a produced water and condensate release from the Site. Frozen piping at the production tank resulted in a release of an estimated 12 barrels (bbls) of produced water and 38 bbls of condensate. Released fluids were contained within the facility berm and recovered via vacuum truck.

Immediate notification was provided to New Mexico Oil Conservation Division (NMOCD) staff. Additionally, a C-141 Release Notification was filed with the District office on or about 1/15/19.

Site Characterization Report

Timberwolf characterized the site which included a field investigation and desktop review of publicly available data. The environmental setting, applicable regulatory criteria, soil investigation, and conclusions are presented below.

Site Description and Environmental Setting

The Site consists of an oil production tank, below-grade produced water tank, heater treater, separator, interconnecting flowlines and a wellhead. No identified buried pipelines were identified within the area of concern (i.e., facility berm). Aerial views of the Site are presented in Figures 4 and 5; surface equipment is identified on Figure 5.

The Site is situated within Carson National Forest. The surrounding area is characterized mountainous terrain with numerous streams which drain into canyons. The Site is positioned along a mountain ridge; elevation is approximately 7,337 feet (ft) above mean sea level.

Watershed from the Site drains to the south, northwest, and northeast. The nearest surface water is an unnamed stream, situated approximately 600 ft south of the Site, which empties into Tecolote Canyon. Additionally, Tecolote Spring is located approximately 1,800 ft south of the Site.

According the United States Department of Agriculture – Natural Resources Conservation Service (USDA – NRCS) web soil survey, soil at the Site is mapped as the Vessilla-Menefee-Orlie complex, 1 to 30 percent slopes. This soil type consists of sandy loam from 0 – 15 inches, underlain by cemented material.

Regulatory Criteria

The New Mexico Oil Conservation Division (NMOCD) established remediation action levels for soil impacted by oilfield products or wastes, which are documented under New Mexico Administrative Code (NMAC) Rule 19.15.29. The Rule was promulgated by Oil Conservation Commission Order No.: R-14751, dated June 21, 2018.

Under Rule 19.15.29, soil cleanup criteria is determined based on the depth to usable groundwater, distance to surface water resources and sensitive features. Regulated groundwater intervals, required laboratory methodology, and soil closure criteria are presented in the following table.

Table 1. Closure Criteria for Soil Impacted by a Release

Depth to Groundwater ¹	Constituent	Method ²	Regulatory Limit ³ (mg/kg)
≤ 50 feet	Chloride ⁴	EPA 300.0	600
	TPH	EPA SW-846 Method 8015M	100
	Total BTEX	EPA SW-846 Method 8021B or 8260B	50
	Benzene	EPA SW-846 Method 8021B or 8015M	10
51 feet-100 feet	Chloride ⁴	EPA 300.0	10,000
	TPH	EPA SW-846 Method 8015M	2,500
	GRO+DRO	EPA SW-846 Method 8015M	1,000
	Total BTEX	EPA SW-846 Method 8021B or 8260B	50
	Benzene	EPA SW-846 Method 8021B or 8260B	10
> 100 feet	Chloride ⁴	EPA 300.0	20,000
	TPH	EPA SW-846 Method 8015M	2,500
	GRO+DRO	EPA SW-846 Method 8015M	1,000
	Total BTEX	EPA SW-846 Method 8021B or 8260B	50
	Benzene	EPA SW-846 Method 8021B or 8015M	10

¹From base of impact to useable groundwater (i.e., less than 10,000 milligrams per liter (mg/L) total dissolved solids (TDS))

²Or other test methods approved by the division

³Numerical limits or natural background level, whichever is greater

⁴Applies to produced water releases or other fluids which may contain chloride

mg/kg – milligrams per kilogram

GRO – gasoline range organics

DRO – diesel range organics

ORO – motor oil range organics

TPH = GRO + DRO + ORO

Additionally, the most stringent closure criteria in Table 1 (i.e., ≤ 50 feet) are applicable for releases within a municipal boundary, 100-year floodplain, overlying a mine or unstable area, or within the specified protective distance from sensitive features as shown in Table 2.

Table 2. Protective Distances for Sensitive Features

Sensitive Feature	Protective Distance (ft)
Continuously flowing watercourse	300
Lakebed, sinkhole, or playa lake	200
Residence, school, hospital, or church	300
Spring or water well for private domestic/livestock water source	500
Any spring or fresh water well	1,000
Wetland	300

ft – feet

To determine the depth to groundwater at the Site, Timberwolf review well records maintained by the New Mexico Office of the State Engineer (NMOSE). The review revealed no water wells within a one-mile radius of the Site. The nearest water well found in NMOSE records is situated approximately 11.4 miles west of the Site and may not be indicative of Site hydrology. This well is identified by the NMOSE as POD No.: SJ-03001-POD2 (“referenced well”) and has the following GPS coordinates: 36.59461° / -107.50297°. A copy of the well file is attached.

The depth to water recorded in the referenced well is 45 ft below ground surface (bgs). The differential surface elevation between the referenced water well and the Site plus the depth to groundwater in the referenced well yields a depth to water of 1,200 ft.

The Site is not situated within a municipal boundary, floodplain, mine or unstable area, or within 1,000 ft of any sensitive feature as shown in Figure 3. Additionally, because the Site is situated along a mountain ridge, depth to groundwater is expected to be greater than 51 ft bgs; therefore, soil closure criteria at the Site is as follows:

- Chloride < 10,000 mg/kg
- Total petroleum hydrocarbons (TPH) < 2,500 mg/kg
- GRO + DRO < 1,000 mg/kg
- Total benzene, toluene, ethylbenzene, and xylenes (BTEX) < 50 mg/kg
- Benzene < 10 mg/kg

Soil Investigation

On 2/07/19, Timberwolf personnel installed nine soil borings (i.e., SB1 – SB9) to assess impacted soil at the Site (Figure 5). Boring SB1 was oriented immediately adjacent to the point of release. Additionally, SB2, SB3, SB4 and SB6 were positioned within the body of the release to determine the nature and degree of impact to Site soil.

Twelve samples were collected from the nine borings using a stainless steel handauger; sample depths ranged from 0 to 2.5 ft below ground surface (bgs). Bedrock (i.e., consolidated sandstone) was encountered as shallow as 16 inches bgs. Auger refusal was encountered between 1.5 and 2.5 ft bgs.

Samples were screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Samples selected for laboratory analysis included the depth interval exhibiting the highest PID and the sample collected at total depth from each boring. To prevent cross-contamination, all sampling equipment was decontaminated between samples using Alconox® and deionized water.

The soil samples were placed in laboratory-provided sample containers, stored on ice, and transported under proper chain-of-custody protocol to Pace Analytical in Mount Juliet, TN. The laboratory reports and chain-of-custody documents are attached.

Analytical methods are documented in the attached laboratory reports. Analytical results are summarized in Table 3 and presented on Figure 5.

Table 3. Analytical Results of Soil Samples – 2/07/19

Sample ID	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
	B	T	E	X							
SB1 0-1'	6.89	191	36.8	519	753.7	13,200	1,950	< 4.0	15,150	15,154	4.11
SB 1-1.5'	0.379	13.4	2.69	84.9	101.8	4,050	2,140	< 4.0	6,190	6,194	3.8
SB2 0-1'	2.48	72.8	17.5	242	334.8	5,590	836	< 4.0	6,426	6,430	4.44
SB2 1-2'	Sample placed on "Hold" / no laboratory analysis conducted										
SB2 2-2.5'	18	224	38.4	503	783.4	14,200	1,590	< 4.0	15,790	15,794	4.84
SB3 0-1'	4.09	59.4	11.4	155	229.9	3,720	271	< 4.0	3,991	3,995	NA
SB4 0-0.5'	0.522	23.9	8.4	124	156.8	2,560	407	< 4.0	2,967	2,971	NA
SB5 0-0.5'	0.00075	0.00463	0.00115	0.14	0.147	11.3	< 4.0	< 4.0	11	19.3	NA
SB6 0-1'	0.248	25.5	8.79	126	160.5	2,760	540	< 4.0	3,300	3,304	NA
SB7 0-1'	< 0.001	0.00195	< 0.0025	< 0.00541	< 0.015	< 0.1	< 4.0	< 4.0	< 4.0	8.1	NA
SB8 0-0.5'	0.0217	0.652	0.26	4.05	4.98	136	17.7	< 4.0	154	157.7	NA
SB9 0-0.5'	< 0.001	< 0.005	< 0.0025	< 0.0065	< 0.015	0.0412	< 4.0	< 4.0	< 4.0	8.04	NA
Remedial Target	10	--	--	--	50	--	--	--	1,000	2,500	10,000

mg/kg – milligrams per kilogram

BTEX – benzene, toluene, ethylbenzene, and total xylenes

GRO – gasoline range organics

DRO – diesel range organics

-- – no applicable regulatory criteria

 – exceeds regulatory criteria

NA – not analyzed

ORO – oil range organics

TPH = GRO + DRO + ORO

Conclusions of Site Characterization

Based on the site characterization, the NMOCD cleanup criteria, and analytical results, the following is concluded:

- Field observations and the review of the NRCS soil survey revealed that the soil horizon is approximately 1.3 to 2.5 ft thick and is underlain by bedrock (i.e., consolidated sandstone)
- Concentrations of chloride were below NMOCD criteria
- Concentrations of petroleum hydrocarbon (i.e., BTEX, GRO+DRO, and TPH) exceeded the NMOCD cleanup criteria in seven soil samples (i.e., SB1 0-1', SB1 1-1.5', SB2 0-1', SB2 2-2.5', SB3 0-1', SB4 0-0.5', and SB6 0-1'):
 - Constituents were not vertically delineated due to auger refusal (i.e., bedrock)
 - Constituents were horizontally delineated
 - The main body of the spill area encompasses approximately 0.01 acres and is situated along the western side of the tank battery as shown in Figure 5

The constituents of concern (COCs) are benzene, total BTEX, and TPH. Most of the TPH was observed in the GRO fraction.

Remedial Strategy, Remedial Actions Conducted, and Remedial Action Plan

The Site remedial strategy, remedial actions and confirmation samples, and remedial action plan proposed to bring Site soil into compliance are presented below.

Site Remedial Strategy

The proposed site remedial strategy is to excavate impacted soil to the extent technically practicable (i.e., refusal) or until visual signs of petroleum hydrocarbons are not longer present. Impacted soil will be trucked to a permitted commercial disposal facility.

Composite soil confirmation samples will be collected from the excavation base and sidewalls to ensure that soil meets all remedial targets. Confirmation samples will be analyzed for TPH (i.e., GRO, DRO, and ORO), BTEX, and chloride. Once laboratory results reveal that all remedial targets have been achieved, the excavation will be backfilled with clean material.

In the event that excavation refusal is encountered, and confirmation samples exceed one or more remedial targets, a variance will be requested to provide closure following a potassium permanganate treatment of the bedrock.

Remedial Action and Soil Confirmation Sampling

In March 2019, Hilcorp crews excavated approximately 20 cubic yards (yd³) of impacted soil from the Site. Hilcorp personnel Kurt Hoekstra collected composite confirmation samples from the excavation (i.e., N ½ Base & Walls and S ½ Base and Walls) and from the excavated soil (i.e., Soil Pile). NMOCD staff was provided two-day advance notice prior to confirmation sampling. The excavation and confirmation sample locations are depicted on Figure 6.

Soil samples were submitted to Pace Analytical for chemical analysis of TPH (i.e., GRO, DRO, ORO), BTEX, and chloride. Laboratory methods are documented on the attached report. Analytical results are summarized in Table 4 below and presented on Figure 6.

Table 4. Analytical Results of Soil Confirmation Samples

Sample ID	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
	B	T	E	X							
N ½ Base & Walls	0.033	< 0.250	< 0.025	4.27	4.30	180	57.1	< 4.0	237.1	237.1	< 10.0
S ½ Base & Walls	2.23	13.1	7.45	77.8	100.6	1,500	171	< 4.0	1,671	1,671	< 10.0
Soil Pile	< 0.050	3.08	< 0.050	242	15.1	476	130	< 4.0	606	606	< 10.0
Remedial Target	10	--	--	--	50	--	--	--	1,000	2,500	10,000

mg/kg – milligrams per kilogram

BTEX – benzene, toluene, ethylbenzene, and total xylenes

-- – no applicable regulatory criteria

TPH = GRO + DRO + ORO

 – exceeds regulatory criteria

GRO – gasoline range organics

DRO – diesel range organics

ORO – oil range organics

Conclusions

Based on laboratory results from soil confirmation samples, the following is concluded:

- Hilcorp excavated approximately 20 yd³ of impacted soil from the Site
- Two composite soil confirmation samples were collected from the excavation (i.e., “N ½ Base * Walls” and “S ½ Base & Walls”). Laboratory analysis revealed the following:
 - The composite sample collected from the north half of the excavation base and sidewalls met all remedial targets; however,
 - The composite sample collected from the south half of the excavation base and sidewalls exceeded remedial targets for total BTEX and GRO + DRO
- During the confirmation sampling event, a composite sample was collected from the excavated soil (“Soil Pile”). Laboratory analysis revealed that the composite sample met all remedial targets and is suitable for reuse as backfill

Remedial Action Plan

Timberwolf recommends the following to bring the Site into compliance:

- 1) Excavate an additional 1-2 feet of soil from the south half of the excavation (approximately 12 yds³) of impacted soil
- 2) Truck excavated soil to a commercially permitted disposal facility
- 3) Collect confirmation samples to determine if all remedial targets have been met at the excavation and treated soil
- 4) Backfill excavation after confirmation samples confirm the excavation base and sidewalls meet remedial targets
- 5) Report findings to the NMOCD

The anticipated timeline for the remedial action plan is 4 months from NMOCD approval. The proposed schedule of activities is provided in Table 5.

Table 5. Proposed Timeline for Proposed Remedial Actions

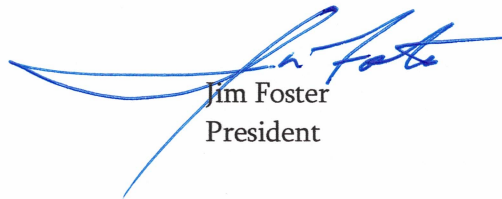
Remedial Activity	June	July	August
NMOCD Plan Approval	■		
Additional Excavation	■■■		
Confirmation Sampling and Laboratory Analysis		■■■■■	
Excavation Backfill		■■■	
Report Preparation and Delivery to NMOCD			■■■■■

If you have any questions regarding this report, please do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC



Kevin Cole
Project Manager



Jim Foster
President

Attachments: Figures
NMOCD Well Records
Laboratory Report and Chain-of-Custody Documents

cc: Lindsay Dumas, Hilcorp Energy Company

Figures

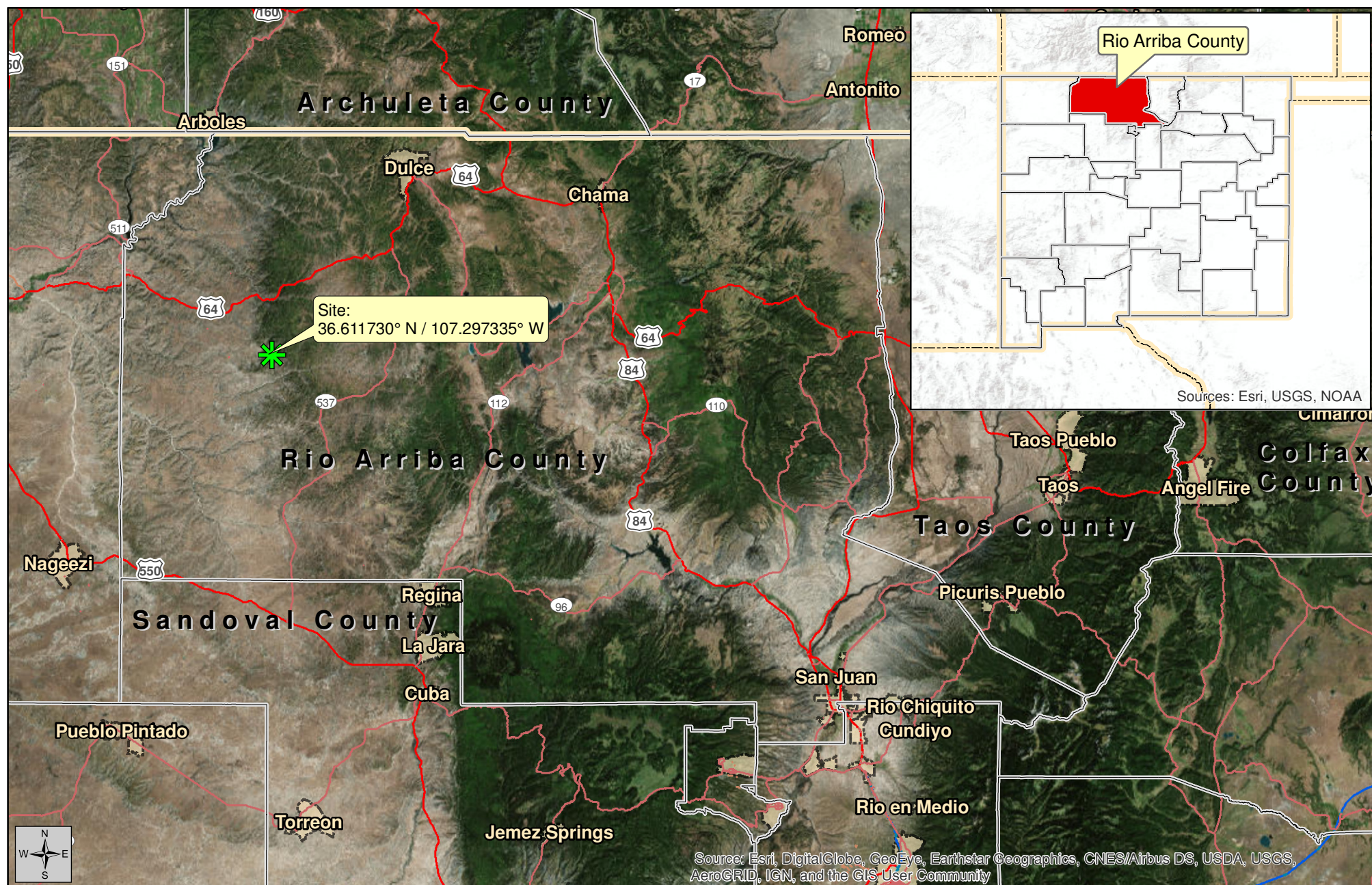


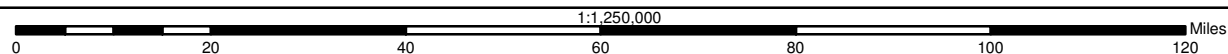
Figure 1
Site Location Map

Site Characterization Report and Remedial Action Plan

May 22, 2019



Created By:
Kevin Cole
TE Project No.: HEC-190004



San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: ESRI and TE



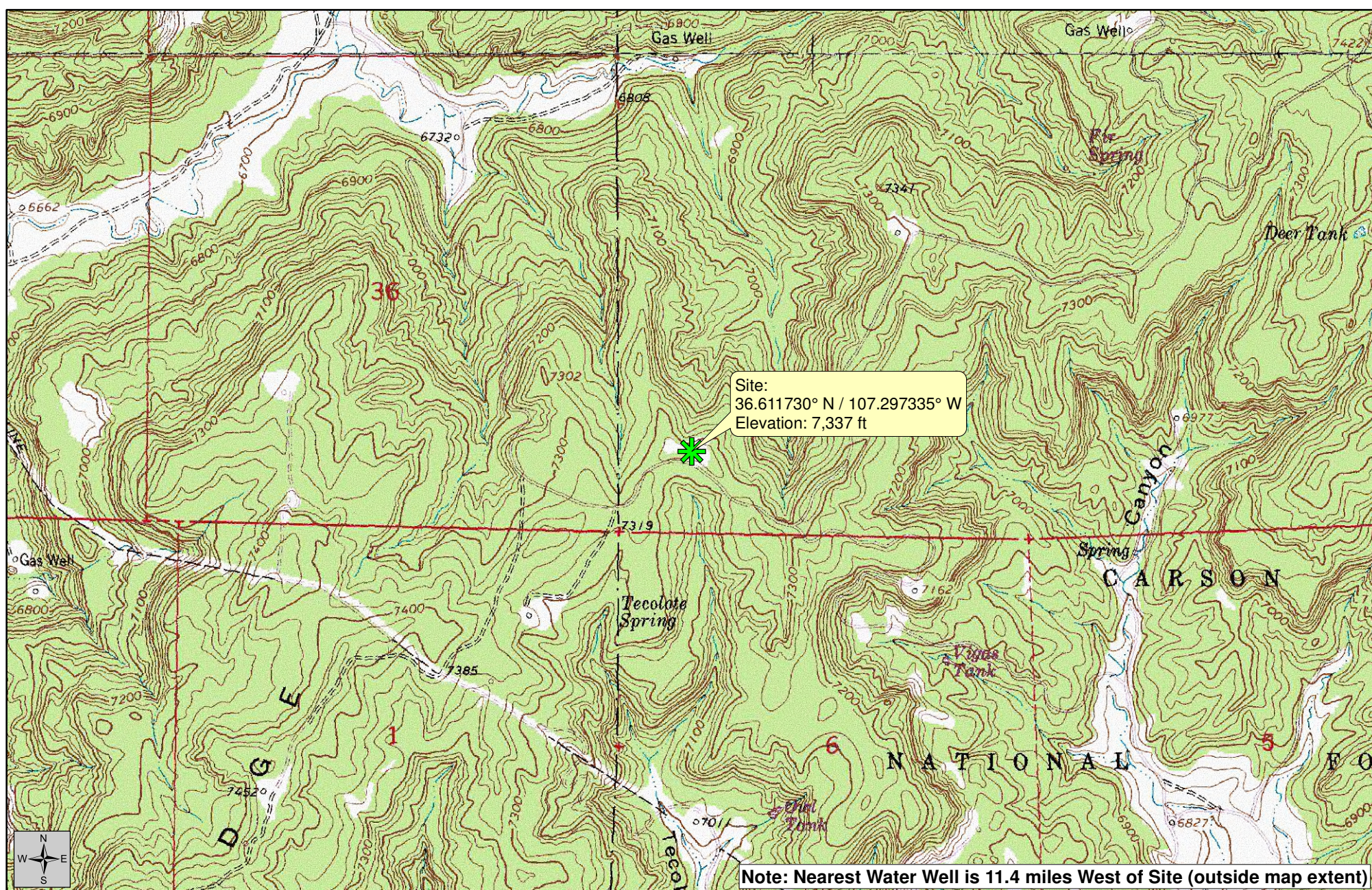


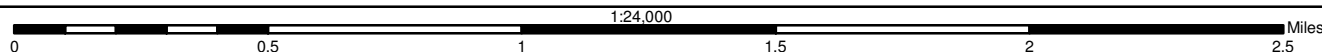
Figure 2
Topographic Map

Site Characterization Report and Remedial Action Plan

May 22, 2019

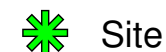


Created By:
Kevin Cole
TE Project No.: HEC-190004



San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
 Hilcorp Energy Company
 Rio Arriba County, New Mexico

Datum: NAD83
 Imagery Source: USGS
 Quads: Gobernador and Vigas Canyon
 Vector Source: TE



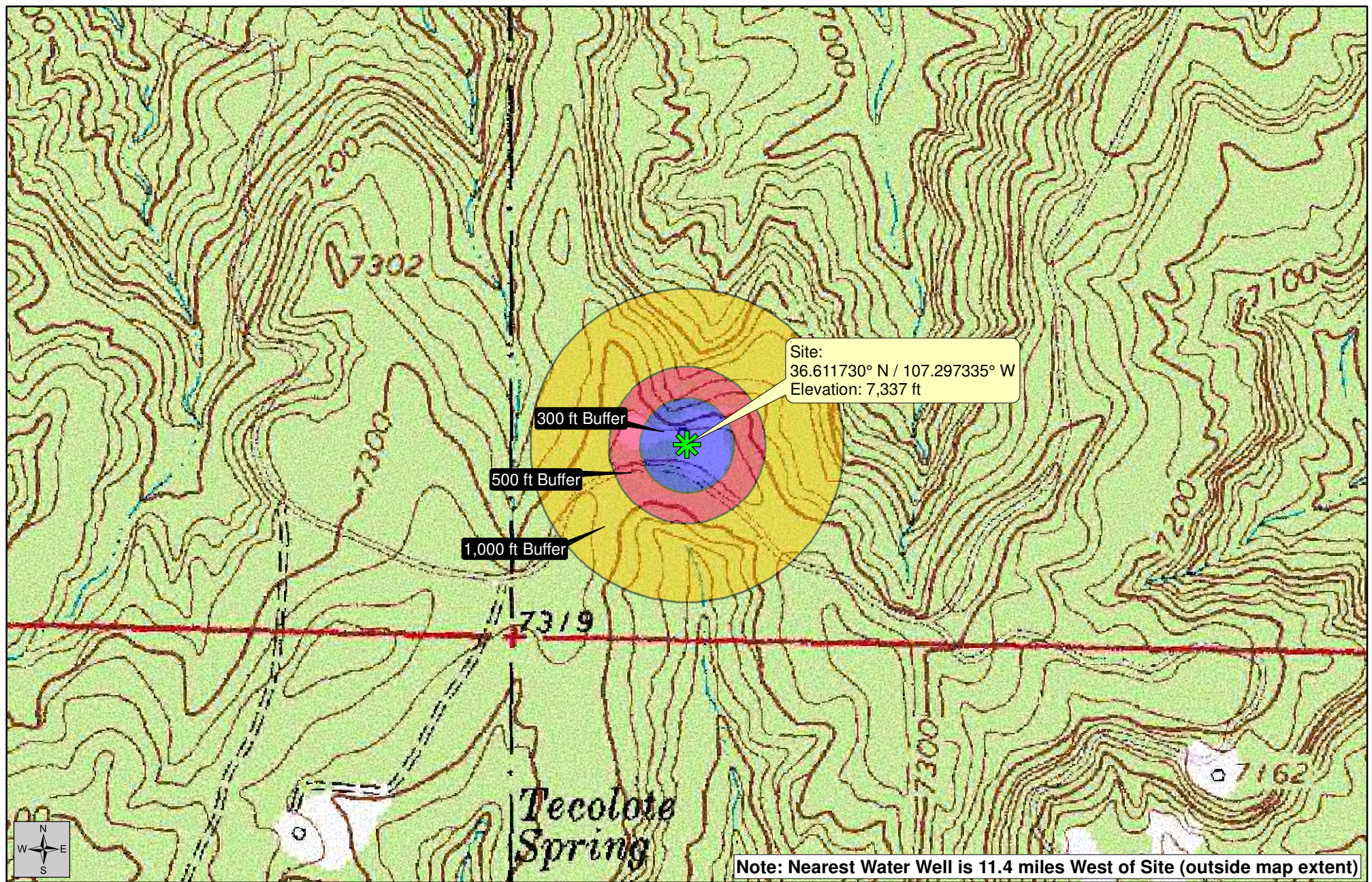


Figure 3
Sensitive Feature Buffer Map

Site Characterization Report and Remedial Action Plan

May 22, 2019



Created By:
Kevin Cole
TE Project No.: HEC-190004

San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: USGS
Quads: Gobernador and Vigas Canyon
Vector Source: TE

- Site
- 1,000 ft Buffer
- 500 ft Buffer
- 300 ft Buffer



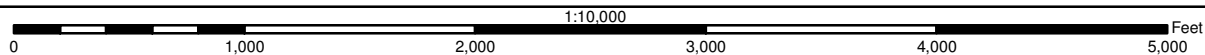
Figure 4
Aerial Map

Site Characterization Report and Remedial Action Plan

May 22, 2019



Created By:
Kevin Cole
TE Project No.: HEC-190004



San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

Site

Sample ID	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	GRO + DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
	B	T	E	X							
SB1 0-1'	6.89	191	36.8	519	753.69	13,200	1,950	< 4.0	15,150	15,154	4.11
SB1 1-1.5'	0.379	13.4	2.69	84.9	101.37	4,050	2,140	< 4.0	6,190	6,194	3.8
SB2 0-1'	2.48	72.8	17.5	242	334.78	5,590	836	< 4.0	6,426	6,430	4.44
SB2 1-2'	--	--	--	--	--	--	--	--	--	--	--
SB2 2-2.5'	18	224	38.4	503	783.4	14,200	1,590	< 4.0	15,790	15,794	4.84
SB3 0-1'	4.09	59.4	11.4	155	229.89	3,720	271	< 4.0	3,991	3,995	--
SB4 0-0.5'	0.522	23.9	8.4	124	156.82	2,560	407	< 4.0	2,967	2,971	--
SB5 0-0.5'	0.000724	0.00463	0.00115	0.14	0.147	11.3	< 4.0	< 4.0	11	19.3	--
SB6 0-1'	0.248	25.5	8.79	126	160.54	2,760	540	< 4.0	3,300	3,304	--
SB7 0-1'	< 0.001	0.00195	< 0.0025	< 0.00541	< 0.015	< 0.1	< 4.0	< 4.0	< 4.0	8.1	--
SB8 0-0.5'	0.0217	0.652	0.26	4.05	4.98	136	17.7	< 4.0	154	157.7	--
SB9 0-0.5'	< 0.001	< 0.005	< 0.0025	< 0.0065	< 0.015	0.0412	< 4.0	< 4.0	< 4.0	8.04	--
Remedial Target	10	--	--	--	50	--	--	--	1,000	2,500	10,000



Figure 5
Sample Location Map

Site Characterization Report and Remedial Action Plan

Sample Date:
February 7, 2019



Created By:
Kevin Cole
May 22, 2019
TE Project No.: HEC-190004

San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

- Sample Location (clean)
- Sample Location (elevated)
- Spill Trajectory
- Facility Berm

0 50 100 150 Feet
1:300

Sample ID	Volatile Organic Compounds (mg/kg)				Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	GRO + DRO	TPH (mg/kg)	Chloride (mg/kg)
	B	T	E	X							
North Base & Walls	0.033	< 0.25	< 0.025	4.27	4.303	180	57.1	< 4.0	237	237	< 10.0
South Base & Walls	2.23	13.1	7.45	77.8	100.60	1,500	171	< 4.0	1,671	1,671	< 10.0
Soil Pile	< 0.050	3.08	< 0.050	242	15.1	476	130	< 4.0	606	606	< 10.0
Remedial Target	10	--	--	--	50	--	--	--	1,000	2,500	10,000

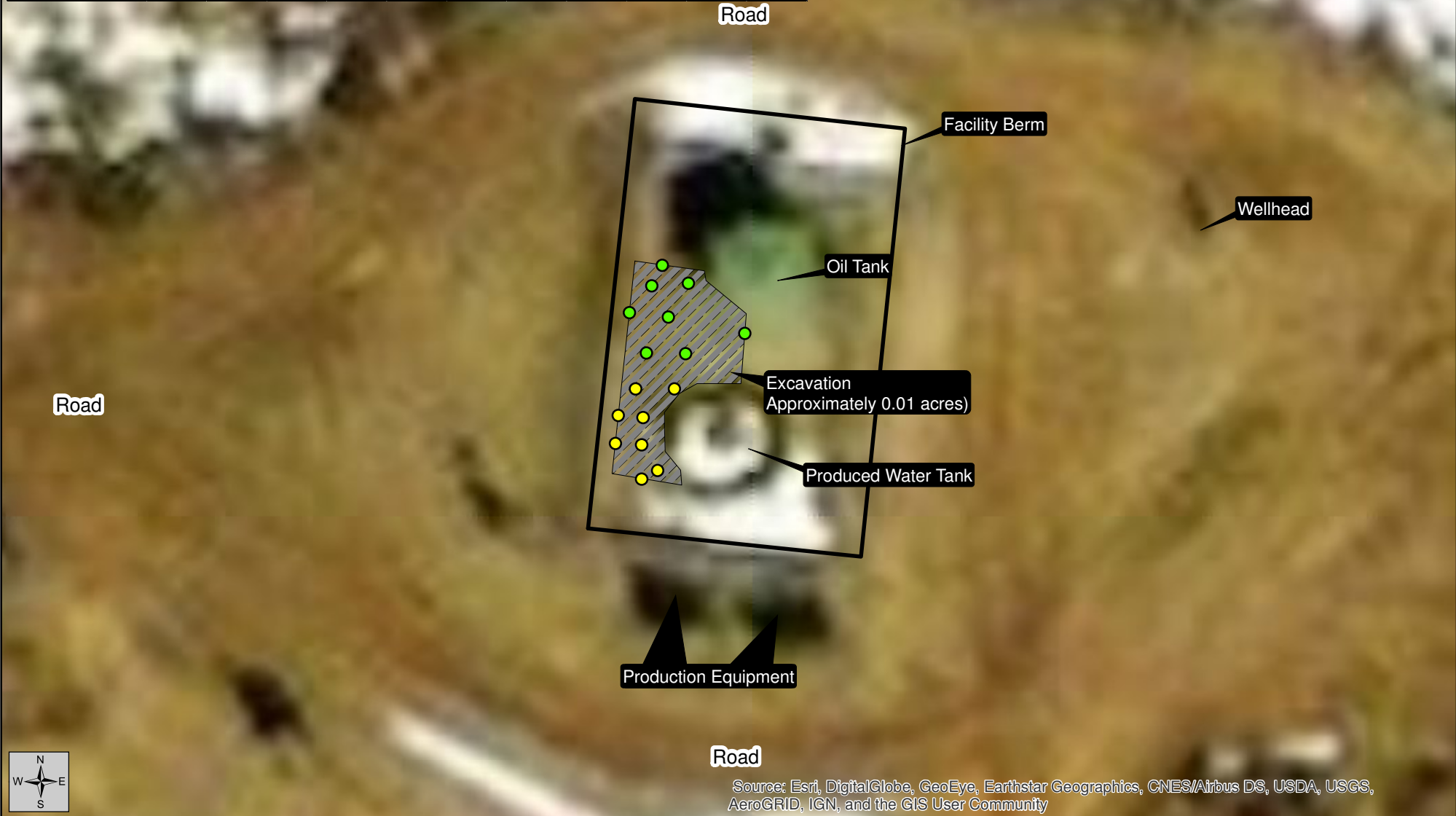


Figure 6
Excavation and Confirmation
Sample Location Map

Site Characterization Report and Remedial Action Plan

Sample Date:
April 2, 2019

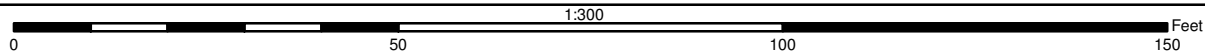


Created By:
Kevin Cole
May 22, 2019
TE Project No.: HEC-190004

San Juan 28-4 No. 18 Release - OCD Incident No. NCS1901155075
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

- North Base & Wall Composite (clean)
- South Base & Wall Composite (elevated)
- Excavation
- Facility Berm




NMOSE Well Log



New Mexico Office of the State Engineer

Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)						(NAD83 UTM in meters)		
Well Tag	POD Number	Q64	Q16	Q4	Sec	Tw	Rng	X	Y	
50009	SJ 03001 POD2	1	2	2	07	27N	06W	276178	4052801	
<hr/>										
Driller License: 1357		Driller Company:				BAILEY DRILLING COMPANY				
Driller Name:		BAILEY, MARK								
Drill Start Date: 12/28/2017		Drill Finish Date:				01/05/2018		Plug Date:		
Log File Date: 01/10/2018		PCW Rev Date:							Source: Shallow	
Pump Type:		Pipe Discharge Size:							Estimated Yield: 10 GPM	
Casing Size: 5.00		Depth Well:				140 feet		Depth Water: 45 feet		
<hr/>										
Water Bearing Stratifications:					Top	Bottom	Description			
					0	20	Shallow Alluvium/Basin Fill			
					20	140	Sandstone/Gravel/Conglomerate			
<hr/>										
Casing Perforations:					Top	Bottom				
					0	70				
					0	123				
					123	140				

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

5/22/19 9:02 AM

POINT OF DIVERSION SUMMARY

Laboratory Reports and Chain-of-Custody Documents

April 08, 2019

HilCorp-Farmington, NM

Sample Delivery Group: L1085048

Samples Received: 04/03/2019

Project Number:

Description: S.J. 28-4 #18

Report To: Lindsay Dumas

382 Road 3100

Aztec, NM 87401

Entire Report Reviewed By:



Daphne Richards

Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
N 1/2 BASE & WALLS L1085048-01	5	
S 1/2 BASE & WALLS L1085048-02	6	⁴ Cn
SOIL PILE L1085048-03	7	⁵ Sr
Qc: Quality Control Summary	8	
Wet Chemistry by Method 9056A	8	⁶ Qc
Volatile Organic Compounds (GC) by Method 8015/8021	9	
Semi-Volatile Organic Compounds (GC) by Method 8015	11	⁷ Gl
Gl: Glossary of Terms	12	⁸ Al
Al: Accreditations & Locations	13	
Sc: Sample Chain of Custody	14	⁹ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



N 1/2 BASE & WALLS L1085048-01 Solid

Collected by
Kurt

Collected date/time
04/02/19 09:17

Received date/time
04/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1260237	1	04/04/19 22:00	04/05/19 04:18	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015/8021	WG1262203	50	04/03/19 16:38	04/07/19 18:19	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1260886	1	04/04/19 13:22	04/05/19 04:04	AAT	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

S 1/2 BASE & WALLS L1085048-02 Solid

Collected by
Kurt

Collected date/time
04/02/19 08:25

Received date/time
04/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1260237	1	04/04/19 22:00	04/05/19 04:27	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015/8021	WG1261455	500	04/03/19 16:38	04/05/19 21:10	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1260886	1	04/04/19 13:22	04/05/19 04:16	AAT	Mt. Juliet, TN

SOIL PILE L1085048-03 Solid

Collected by
Kurt

Collected date/time
04/02/19 09:40

Received date/time
04/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1260237	1	04/04/19 22:00	04/05/19 04:36	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015/8021	WG1262203	100	04/03/19 16:38	04/07/19 18:39	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1260886	1	04/04/19 13:22	04/05/19 07:35	AAT	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	ND		10.0	1	04/05/2019 04:18	WG1260237

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0330		0.0250	50	04/07/2019 18:19	WG1262203
Toluene	ND		0.250	50	04/07/2019 18:19	WG1262203
Ethylbenzene	ND		0.0250	50	04/07/2019 18:19	WG1262203
Total Xylene	4.27		0.0750	50	04/07/2019 18:19	WG1262203
TPH (GC/FID) Low Fraction	180		5.00	50	04/07/2019 18:19	WG1262203
(S) a,a,a-Trifluorotoluene(FID)	97.5		77.0-120		04/07/2019 18:19	WG1262203
(S) a,a,a-Trifluorotoluene(PID)	97.9		72.0-128		04/07/2019 18:19	WG1262203

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	57.1		4.00	1	04/05/2019 04:04	WG1260886
C28-C40 Oil Range	ND		4.00	1	04/05/2019 04:04	WG1260886
(S) o-Terphenyl	67.3		18.0-148		04/05/2019 04:04	WG1260886



Wet Chemistry by Method 9056A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chloride	ND		10.0	1	04/05/2019 04:27	WG1260237

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	2.23		0.250	500	04/05/2019 21:10	WG1261455
Toluene	13.1		2.50	500	04/05/2019 21:10	WG1261455
Ethylbenzene	7.45		0.250	500	04/05/2019 21:10	WG1261455
Total Xylene	77.8		0.750	500	04/05/2019 21:10	WG1261455
TPH (GC/FID) Low Fraction	1500		50.0	500	04/05/2019 21:10	WG1261455
(S) a,a,a-Trifluorotoluene(FID)	85.9		77.0-120		04/05/2019 21:10	WG1261455
(S) a,a,a-Trifluorotoluene(PID)	98.7		72.0-128		04/05/2019 21:10	WG1261455

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	171		4.00	1	04/05/2019 04:16	WG1260886
C28-C40 Oil Range	ND		4.00	1	04/05/2019 04:16	WG1260886
(S) o-Terphenyl	62.3		18.0-148		04/05/2019 04:16	WG1260886



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	ND		10.0	1	04/05/2019 04:36	WG1260237

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0500	100	04/07/2019 18:39	WG1262203
Toluene	3.08		0.500	100	04/07/2019 18:39	WG1262203
Ethylbenzene	ND		0.0500	100	04/07/2019 18:39	WG1262203
Total Xylene	15.1		0.150	100	04/07/2019 18:39	WG1262203
TPH (GC/FID) Low Fraction	476		10.0	100	04/07/2019 18:39	WG1262203
(S) a,a,a-Trifluorotoluene(FID)	99.2		77.0-120		04/07/2019 18:39	WG1262203
(S) a,a,a-Trifluorotoluene(PID)	95.8		72.0-128		04/07/2019 18:39	WG1262203

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	130		4.00	1	04/05/2019 07:35	WG1260886
C28-C40 Oil Range	ND		4.00	1	04/05/2019 07:35	WG1260886
(S) o-Terphenyl	79.8		18.0-148		04/05/2019 07:35	WG1260886

Method Blank (MB)

(MB) R3398760-1 04/05/19 00:04				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chloride	3.12	<u>J</u>	0.795	10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1084131-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1084131-04 04/05/19 02:28 • (DUP) R3398760-5 04/05/19 02:36					
	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP RPD Limits
Analyte	mg/kg	mg/kg		%	%
Chloride	7790	8120	20	4.21	15

L1085048-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1085048-03 04/05/19 04:36 • (DUP) R3398760-6 04/05/19 04:44					
	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Analyte	mg/kg	mg/kg		%	%
Chloride	ND	5.81	1	0.000	15

Laboratory Control Sample (LCS)

(LCS) R3398760-2 04/05/19 00:13					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chloride	200	194	97.2	80.0-120	

L1084131-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1084131-03 04/05/19 01:36 • (MS) R3398760-3 04/05/19 01:45 • (MSD) R3398760-4 04/05/19 02:11												
	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chloride	594	9020	9700	9550	115	90.1	1	80.0-120	E	E	1.54	15

Method Blank (MB)

(MB) R3399213-3 04/05/19 20:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000304	U	0.000150	0.00500
Ethylbenzene	0.000126	U	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	102			72.0-128

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3399213-1 04/05/19 18:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0492	98.5	76.0-121	
Toluene	0.0500	0.0484	96.8	80.0-120	
Ethylbenzene	0.0500	0.0518	104	80.0-124	
Total Xylene	0.150	0.147	98.2	37.0-160	
(S) a,a,a-Trifluorotoluene(FID)			96.4	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			98.7	72.0-128	

Laboratory Control Sample (LCS)

(LCS) R3399213-2 04/05/19 19:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.44	117	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			112	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			111	72.0-128	

Method Blank (MB)

(MB) R3399381-4 04/07/19 15:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	0.0271	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	106			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	99.1			72.0-128

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3399381-1 04/07/19 13:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0507	101	76.0-121	
Toluene	0.0500	0.0490	98.0	80.0-120	
Ethylbenzene	0.0500	0.0540	108	80.0-124	
Total Xylene	0.150	0.160	107	37.0-160	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			98.3	72.0-128	

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3399381-2 04/07/19 14:23 • (LCSD) R3399381-3 04/07/19 14:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.32	5.24	96.8	95.4	72.0-127			1.51	20
(S) a,a,a-Trifluorotoluene(FID)				93.2	92.8	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				98.8	98.5	72.0-128				



Method Blank (MB)

(MB) R3398988-1 04/05/19 03:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	70.0			18.0-148

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3398988-2 04/05/19 03:17 • (LCSD) R3398988-3 04/05/19 03:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Extractable Petroleum Hydrocarbon	50.0	25.0	29.1	50.0	58.2	50.0-150			15.2	20
C10-C28 Diesel Range	50.0	25.2	29.8	50.4	59.6	50.0-150			16.7	20
(S) o-Terphenyl				84.1	98.0	18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chrystan Lyle



Login #: L1085048	Client: HILCORANM	Date: 04/03/19	Evaluated by: Chrystan Lyle
-------------------	-------------------	----------------	-----------------------------

Non-Conformance (check applicable items)

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	Insufficient packing material around container
Temperature not in range	Chain of custody is incomplete	Insufficient packing material inside cooler
Improper container type	Please specify Metals requested.	
pH not in range.	Please specify TCLP requested.	Improper handling by carrier (FedEx / UPS / Couri
Insufficient sample volume.	Received additional samples not listed on coc.	Sample was frozen
Sample is biphasic.	Sample ids on containers do not match ids on coc	Container lid not intact
Vials received with headspace.	Trip Blank not received.	If no Chain of Custody:
Broken container	Client did not "X" analysis.	Received by:
X Broken container:	Chain of Custody is missing	Date/Time:
Sufficient sample remains		Temp./Cont. Rec./pH:
		Carrier:
		Tracking#

Login Comments: 4oz containers for IDs "N ½ base and walls" and "S ½ Base and walls" received broken. No cooler water contamination. Samples places in 16oz containers.

Client informed by:	Call	Email	Voice Mail	Date: 4/3/19	Time: 1305
TSR Initials: JCR	Client Contact:				

Login Instructions:

Analyze from 16oz salvage containers due to no contamination observed.

February 14, 2019

Timberwolf Environmental, LLC

Sample Delivery Group: L1068580
Samples Received: 02/09/2019
Project Number: 190004
Description: SJ 28-4 #18
Site: SAN JUAN 28-4 #18
Report To: Jim Foster
1920 W Villa Maria, Ste 205
Bryan, TX 77807

Entire Report Reviewed By:



Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	5	
Sr: Sample Results	6	³ Ss
SB1 0-1 L1068580-01	6	
SB1 1-1.5 L1068580-02	7	⁴ Cn
SB2 0-1 L1068580-03	8	⁵ Sr
SB2 2-2.5 L1068580-04	9	
SB3 0-1 L1068580-05	10	⁶ Qc
SB4 0-0.5 L1068580-06	11	
SB5 0-0.5 L1068580-07	12	⁷ Gl
SB6 0-1 L1068580-08	13	⁸ Al
SB7 0-1 L1068580-09	14	
SB8 0-0.5 L1068580-10	15	⁹ Sc
SB9 0-0.5 L1068580-11	16	
Qc: Quality Control Summary	17	
Total Solids by Method 2540 G-2011	17	
Wet Chemistry by Method 9056A	19	
Volatile Organic Compounds (GC) by Method 8015D/GRO	20	
Volatile Organic Compounds (GC/MS) by Method 8260B	23	
Semi-Volatile Organic Compounds (GC) by Method 8015	24	
Gl: Glossary of Terms	25	
Al: Accreditations & Locations	26	
Sc: Sample Chain of Custody	27	

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SB1 0-1 L1068580-01 Solid

Collected by
Collected date/time
Received date/time

02/07/19 10:10

02/09/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Wet Chemistry by Method 9056A	WG1235022	1	02/11/19 16:30	02/13/19 10:39	ELN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1236575	2500	02/12/19 09:04	02/13/19 15:33	ACE
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	40	02/12/19 09:04	02/12/19 13:34	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	20	02/12/19 07:44	02/13/19 15:29	AAT
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 14:07	AAT

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

SB1 1-1.5 L1068580-02 Solid

Collected by
Collected date/time
Received date/time

02/07/19 10:40

02/09/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Wet Chemistry by Method 9056A	WG1235022	1	02/11/19 16:30	02/13/19 11:05	ELN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1236575	1000	02/12/19 09:04	02/13/19 15:54	ACE
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	20	02/12/19 09:04	02/12/19 13:53	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	20	02/12/19 07:44	02/13/19 15:43	AAT
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 14:21	AAT

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SB2 0-1 L1068580-03 Solid

Collected by
Collected date/time
Received date/time

02/07/19 11:05

02/09/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Wet Chemistry by Method 9056A	WG1235022	1	02/11/19 16:30	02/13/19 11:31	ELN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	500	02/12/19 09:04	02/12/19 17:20	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	40	02/12/19 09:04	02/12/19 14:13	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 14:34	AAT

Collected by
Collected date/time
Received date/time

02/07/19 11:25

02/09/19 08:45

SB2 2-2.5 L1068580-04 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Wet Chemistry by Method 9056A	WG1235022	1	02/11/19 16:30	02/13/19 11:57	ELN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1236575	5000	02/12/19 09:04	02/13/19 16:16	ACE
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	40	02/12/19 09:04	02/12/19 14:34	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 14:48	AAT

Collected by
Collected date/time
Received date/time

02/07/19 11:35

02/09/19 08:45

SB3 0-1 L1068580-05 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	500	02/12/19 09:04	02/12/19 18:05	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	40	02/12/19 09:04	02/12/19 14:54	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 15:02	AAT

ACCOUNT:

Timberwolf Environmental, LLC

PROJECT:

190004

SDG:

L1068580

DATE/TIME:

02/14/19 13:50

PAGE:

3 of 28

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SB4 0-0.5 L1068580-06 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 11:45	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	250	02/12/19 09:04	02/12/19 18:28	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	20	02/12/19 09:04	02/12/19 15:15	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	1	02/12/19 07:44	02/13/19 02:31	AAT
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 13:26	AAT

¹ Cp

² Tc

³ Ss

⁴ Cn

SB5 0-0.5 L1068580-07 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 11:50	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1236836	25	02/12/19 09:04	02/14/19 12:55	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	1	02/12/19 09:04	02/12/19 12:13	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	1	02/12/19 07:44	02/13/19 02:58	AAT

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

SB6 0-1 L1068580-08 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 12:00	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	500	02/12/19 09:04	02/12/19 19:12	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	40	02/12/19 09:04	02/12/19 15:35	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	5	02/12/19 07:44	02/13/19 15:15	AAT

⁹ Sc

SB7 0-1 L1068580-09 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 12:10	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	1	02/12/19 09:04	02/12/19 19:35	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	1	02/12/19 09:04	02/12/19 12:33	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	1	02/12/19 07:44	02/13/19 02:17	AAT

SB8 0-0.5 L1068580-10 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 12:20	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235381	1	02/12/19 08:56	02/12/19 09:04	KBC
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1235843	25	02/12/19 09:04	02/12/19 19:57	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	1	02/12/19 09:04	02/12/19 12:54	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	1	02/12/19 07:44	02/13/19 03:12	AAT

SB9 0-0.5 L1068580-11 Solid

			Collected by	Collected date/time	Received date/time
				02/07/19 13:40	02/09/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1235383	1	02/11/19 13:38	02/11/19 13:50	JD
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1236575	1	02/12/19 09:04	02/13/19 15:12	ACE
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1235767	1	02/12/19 09:04	02/12/19 13:14	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1235624	1	02/12/19 07:44	02/13/19 02:44	AAT

ACCOUNT:

Timberwolf Environmental, LLC

PROJECT:

190004

SDG:

L1068580

DATE/TIME:

02/14/19 13:50

PAGE:

4 of 28



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	93.3		1	02/12/2019 09:04	WG1235381

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	4.11	B J	0.852	10.0	10.7	1	02/13/2019 10:39	WG1235022

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	13200		58.1	0.100	268	2500	02/13/2019 15:33	WG1236575
(S) a,a,a-Trifluorotoluene(FID)	90.5				77.0-120		02/13/2019 15:33	WG1236575

Volatile Organic Compounds (GC/MS) by Method 8260B

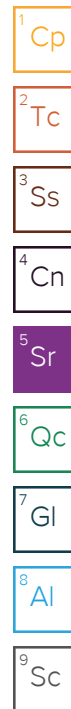
Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	6.89		0.0171	0.00100	0.0429	40	02/12/2019 13:34	WG1235767
Toluene	191		0.0536	0.00500	0.214	40	02/12/2019 13:34	WG1235767
Ethylbenzene	36.8		0.0227	0.00250	0.107	40	02/12/2019 13:34	WG1235767
Total Xylenes	519		0.205	0.00650	0.279	40	02/12/2019 13:34	WG1235767
(S) Toluene-d8	118				75.0-131		02/12/2019 13:34	WG1235767
(S) 4-Bromofluorobenzene	138				67.0-138		02/12/2019 13:34	WG1235767
(S) 1,2-Dichloroethane-d4	88.1				70.0-130		02/12/2019 13:34	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1950		34.5	4.00	85.7	20	02/13/2019 15:29	WG1235624
C28-C40 Oil Range	U		1.47	4.00	21.4	5	02/13/2019 14:07	WG1235624
(S) o-Terphenyl	129				18.0-148		02/13/2019 14:07	WG1235624
(S) o-Terphenyl	128	J7			18.0-148		02/13/2019 15:29	WG1235624

Sample Narrative:

L1068580-01 WG1235624: Cannot run at lower dilution due to viscosity of extract





Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	92.1		1	02/12/2019 09:04	WG1235381

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	3.80	B J	0.863	10.0	10.9	1	02/13/2019 11:05	WG1235022

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	4050		23.6	0.100	109	1000	02/13/2019 15:54	WG1236575
(S) a,a,a-Trifluorotoluene(FID)	89.3				77.0-120		02/13/2019 15:54	WG1236575

Volatile Organic Compounds (GC/MS) by Method 8260B

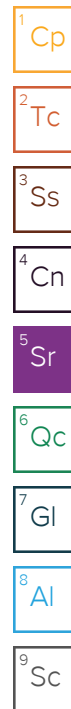
Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.379		0.00868	0.00100	0.0217	20	02/12/2019 13:53	WG1235767
Toluene	13.4		0.0271	0.00500	0.109	20	02/12/2019 13:53	WG1235767
Ethylbenzene	2.69		0.0115	0.00250	0.0543	20	02/12/2019 13:53	WG1235767
Total Xylenes	84.9		0.104	0.00650	0.141	20	02/12/2019 13:53	WG1235767
(S) Toluene-d8	93.5				75.0-131		02/12/2019 13:53	WG1235767
(S) 4-Bromofluorobenzene	128				67.0-138		02/12/2019 13:53	WG1235767
(S) 1,2-Dichloroethane-d4	84.9				70.0-130		02/12/2019 13:53	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2140		35.0	4.00	86.8	20	02/13/2019 15:43	WG1235624
C28-C40 Oil Range	U		1.49	4.00	21.7	5	02/13/2019 14:21	WG1235624
(S) o-Terphenyl	114	J7			18.0-148		02/13/2019 15:43	WG1235624
(S) o-Terphenyl	135				18.0-148		02/13/2019 14:21	WG1235624

Sample Narrative:

L1068580-02 WG1235624: Cannot run at lower dilution due to viscosity of extract





Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	88.7		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	4.44	B J	0.897	10.0	11.3	1	02/13/2019 11:31	WG1235022

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	5590		12.2	0.100	56.4	500	02/12/2019 17:20	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	94.4				77.0-120		02/12/2019 17:20	WG1235843

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	2.48		0.0180	0.00100	0.0451	40	02/12/2019 14:13	WG1235767
Toluene	72.8		0.0564	0.00500	0.226	40	02/12/2019 14:13	WG1235767
Ethylbenzene	17.5		0.0239	0.00250	0.113	40	02/12/2019 14:13	WG1235767
Total Xylenes	242		0.216	0.00650	0.293	40	02/12/2019 14:13	WG1235767
(S) Toluene-d8	95.7				75.0-131		02/12/2019 14:13	WG1235767
(S) 4-Bromofluorobenzene	106				67.0-138		02/12/2019 14:13	WG1235767
(S) 1,2-Dichloroethane-d4	86.3				70.0-130		02/12/2019 14:13	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	836		9.08	4.00	22.6	5	02/13/2019 14:34	WG1235624
C28-C40 Oil Range	U		1.54	4.00	22.6	5	02/13/2019 14:34	WG1235624
(S) o-Terphenyl	121				18.0-148		02/13/2019 14:34	WG1235624

Sample Narrative:

L1068580-03 WG1235624: Cannot run at lower dilution due to viscosity of extract



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.7		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	4.84	B J	0.907	10.0	11.4	1	02/13/2019 11:57	WG1235022

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	14200		124	0.100	570	5000	02/13/2019 16:16	WG1236575
(S) a,a,a-Trifluorotoluene(FID)	85.0				77.0-120		02/13/2019 16:16	WG1236575

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	18.0		0.0183	0.00100	0.0456	40	02/12/2019 14:34	WG1235767
Toluene	224		0.0570	0.00500	0.228	40	02/12/2019 14:34	WG1235767
Ethylbenzene	38.4		0.0242	0.00250	0.114	40	02/12/2019 14:34	WG1235767
Total Xylenes	503		0.218	0.00650	0.297	40	02/12/2019 14:34	WG1235767
(S) Toluene-d8	95.6				75.0-131		02/12/2019 14:34	WG1235767
(S) 4-Bromofluorobenzene	101				67.0-138		02/12/2019 14:34	WG1235767
(S) 1,2-Dichloroethane-d4	85.0				70.0-130		02/12/2019 14:34	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1590		9.18	4.00	22.8	5	02/13/2019 14:48	WG1235624
C28-C40 Oil Range	U		1.56	4.00	22.8	5	02/13/2019 14:48	WG1235624
(S) o-Terphenyl	125				18.0-148		02/13/2019 14:48	WG1235624

Sample Narrative:

L1068580-04 WG1235624: Cannot run at lower dilution due to viscosity of extract



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	80.1		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3720		13.6	0.100	62.5	500	02/12/2019 18:05	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	96.7				77.0-120		02/12/2019 18:05	WG1235843

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	4.09		0.0200	0.00100	0.0500	40	02/12/2019 14:54	WG1235767
Toluene	59.4		0.0625	0.00500	0.250	40	02/12/2019 14:54	WG1235767
Ethylbenzene	11.4		0.0265	0.00250	0.125	40	02/12/2019 14:54	WG1235767
Total Xylenes	155		0.239	0.00650	0.325	40	02/12/2019 14:54	WG1235767
(S) Toluene-d8	96.5				75.0-131		02/12/2019 14:54	WG1235767
(S) 4-Bromofluorobenzene	106				67.0-138		02/12/2019 14:54	WG1235767
(S) 1,2-Dichloroethane-d4	86.9				70.0-130		02/12/2019 14:54	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	271		10.1	4.00	25.0	5	02/13/2019 15:02	WG1235624
C28-C40 Oil Range	U		1.71	4.00	25.0	5	02/13/2019 15:02	WG1235624
(S) o-Terphenyl	100				18.0-148		02/13/2019 15:02	WG1235624

Sample Narrative:

L1068580-05 WG1235624: Cannot run at lower dilution due to viscosity of extract



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	85.0		1	02/12/2019 09:04	WG1235381

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2560		6.38	0.100	29.4	250	02/12/2019 18:28	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	98.1				77.0-120		02/12/2019 18:28	WG1235843

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.522		0.00942	0.00100	0.0235	20	02/12/2019 15:15	WG1235767
Toluene	23.9		0.0294	0.00500	0.118	20	02/12/2019 15:15	WG1235767
Ethylbenzene	8.40		0.0125	0.00250	0.0588	20	02/12/2019 15:15	WG1235767
Total Xylenes	124		0.113	0.00650	0.153	20	02/12/2019 15:15	WG1235767
(S) Toluene-d8	95.5				75.0-131		02/12/2019 15:15	WG1235767
(S) 4-Bromofluorobenzene	112				67.0-138		02/12/2019 15:15	WG1235767
(S) 1,2-Dichloroethane-d4	85.1				70.0-130		02/12/2019 15:15	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	407		9.47	4.00	23.5	5	02/13/2019 13:26	WG1235624
C28-C40 Oil Range	U		0.322	4.00	4.71	1	02/13/2019 02:31	WG1235624
(S) o-Terphenyl	142				18.0-148		02/13/2019 02:31	WG1235624
(S) o-Terphenyl	144				18.0-148		02/13/2019 13:26	WG1235624

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	81.6		1	02/12/2019 09:04	WG1235381

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	11.3		0.665	0.100	3.06	25	02/14/2019 12:55	WG1236836
(S) a,a,a-Trifluorotoluene(FID)	102				77.0-120		02/14/2019 12:55	WG1236836

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000724	J	0.000490	0.00100	0.00123	1	02/12/2019 12:13	WG1235767
Toluene	0.00463	J	0.00153	0.00500	0.00613	1	02/12/2019 12:13	WG1235767
Ethylbenzene	0.00115	J	0.000649	0.00250	0.00306	1	02/12/2019 12:13	WG1235767
Total Xylenes	0.140		0.00586	0.00650	0.00797	1	02/12/2019 12:13	WG1235767
(S) Toluene-d8	102				75.0-131		02/12/2019 12:13	WG1235767
(S) 4-Bromofluorobenzene	107				67.0-138		02/12/2019 12:13	WG1235767
(S) 1,2-Dichloroethane-d4	83.3				70.0-130		02/12/2019 12:13	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	U		1.97	4.00	4.90	1	02/13/2019 02:58	WG1235624
C28-C40 Oil Range	U		0.336	4.00	4.90	1	02/13/2019 02:58	WG1235624
(S) o-Terphenyl	105				18.0-148		02/13/2019 02:58	WG1235624

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.2		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	2760		12.0	0.100	55.4	500	02/12/2019 19:12	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	101				77.0-120		02/12/2019 19:12	WG1235843

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.248	J3	0.0177	0.00100	0.0443	40	02/12/2019 15:35	WG1235767
Toluene	25.5		0.0554	0.00500	0.222	40	02/12/2019 15:35	WG1235767
Ethylbenzene	8.79		0.0235	0.00250	0.111	40	02/12/2019 15:35	WG1235767
Total Xylenes	126		0.212	0.00650	0.288	40	02/12/2019 15:35	WG1235767
(S) Toluene-d8	97.9				75.0-131		02/12/2019 15:35	WG1235767
(S) 4-Bromofluorobenzene	108				67.0-138		02/12/2019 15:35	WG1235767
(S) 1,2-Dichloroethane-d4	85.0				70.0-130		02/12/2019 15:35	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	540		8.92	4.00	22.2	5	02/13/2019 15:15	WG1235624
C28-C40 Oil Range	U		1.52	4.00	22.2	5	02/13/2019 15:15	WG1235624
(S) o-Terphenyl	131				18.0-148		02/13/2019 15:15	WG1235624

Sample Narrative:

L1068580-08 WG1235624: Cannot run at lower dilution due to viscosity of extract



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	88.4		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0245	0.100	0.113	1	02/12/2019 19:35	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	102				77.0-120		02/12/2019 19:35	WG1235843

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000452	0.00100	0.00113	1	02/12/2019 12:33	WG1235767
Toluene	0.00195	J	0.00141	0.00500	0.00566	1	02/12/2019 12:33	WG1235767
Ethylbenzene	U		0.000600	0.00250	0.00283	1	02/12/2019 12:33	WG1235767
Total Xylenes	U		0.00541	0.00650	0.00735	1	02/12/2019 12:33	WG1235767
(S) Toluene-d8	101				75.0-131		02/12/2019 12:33	WG1235767
(S) 4-Bromofluorobenzene	104				67.0-138		02/12/2019 12:33	WG1235767
(S) 1,2-Dichloroethane-d4	82.9				70.0-130		02/12/2019 12:33	WG1235767

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.82	4.00	4.52	1	02/13/2019 02:17	WG1235624
C28-C40 Oil Range	U		0.310	4.00	4.52	1	02/13/2019 02:17	WG1235624
(S) o-Terphenyl	129				18.0-148		02/13/2019 02:17	WG1235624



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	81.4		1	02/12/2019 09:04	WG1235381

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	136		0.667	0.100	3.07	25	02/12/2019 19:57	WG1235843
(S) a,a,a-Trifluorotoluene(FID)	98.5				77.0-120		02/12/2019 19:57	WG1235843

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.0217		0.000491	0.00100	0.00123	1	02/12/2019 12:54	WG1235767
Toluene	0.652		0.00154	0.00500	0.00614	1	02/12/2019 12:54	WG1235767
Ethylbenzene	0.260		0.000651	0.00250	0.00307	1	02/12/2019 12:54	WG1235767
Total Xylenes	4.05		0.00587	0.00650	0.00799	1	02/12/2019 12:54	WG1235767
(S) Toluene-d8	98.1				75.0-131		02/12/2019 12:54	WG1235767
(S) 4-Bromofluorobenzene	111				67.0-138		02/12/2019 12:54	WG1235767
(S) 1,2-Dichloroethane-d4	83.3				70.0-130		02/12/2019 12:54	WG1235767

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	17.7		1.98	4.00	4.91	1	02/13/2019 03:12	WG1235624
C28-C40 Oil Range	U		0.337	4.00	4.91	1	02/13/2019 03:12	WG1235624
(S) o-Terphenyl	105				18.0-148		02/13/2019 03:12	WG1235624



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.7		1	02/11/2019 13:50	WG1235383

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0412	B J	0.0247	0.100	0.114	1	02/13/2019 15:12	WG1236575
(S) a,a,a-Trifluorotoluene(FID)	95.1				77.0-120		02/13/2019 15:12	WG1236575

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000456	0.00100	0.00114	1	02/12/2019 13:14	WG1235767
Toluene	U		0.00143	0.00500	0.00570	1	02/12/2019 13:14	WG1235767
Ethylbenzene	U		0.000604	0.00250	0.00285	1	02/12/2019 13:14	WG1235767
Total Xylenes	U		0.00545	0.00650	0.00741	1	02/12/2019 13:14	WG1235767
(S) Toluene-d8	99.5				75.0-131		02/12/2019 13:14	WG1235767
(S) 4-Bromofluorobenzene	103				67.0-138		02/12/2019 13:14	WG1235767
(S) 1,2-Dichloroethane-d4	83.6				70.0-130		02/12/2019 13:14	WG1235767

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.84	4.00	4.56	1	02/13/2019 02:44	WG1235624
C28-C40 Oil Range	U		0.312	4.00	4.56	1	02/13/2019 02:44	WG1235624
(S) o-Terphenyl	133				18.0-148		02/13/2019 02:44	WG1235624

Method Blank (MB)

(MB) R3383257-1 02/12/19 09:04

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00100			

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1068580-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1068580-01 02/12/19 09:04 • (DUP) R3383257-3 02/12/19 09:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	93.3	93.7	1	0.365		10

Laboratory Control Sample (LCS)

(LCS) R3383257-2 02/12/19 09:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3382896-1 02/11/19 13:50

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00100			

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1068580-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1068580-11 02/11/19 13:50 • (DUP) R3382896-3 02/11/19 13:50

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	87.7	87.1	1	0.632		10

Laboratory Control Sample (LCS)

(LCS) R3382896-2 02/11/19 13:50

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	



Method Blank (MB)

(MB) R3382899-1 02/11/19 17:39

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chloride	3.80	⬇	0.795	10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1067476-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1067476-21 02/11/19 18:18 • (DUP) R3382899-3 02/11/19 18:26

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chloride	739	756	1	2.26		15

L1068318-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1068318-11 02/11/19 21:25 • (DUP) R3382899-6 02/11/19 21:33

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chloride	2490	2450	5	1.63		15

Laboratory Control Sample (LCS)

(LCS) R3382899-2 02/11/19 17:54

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chloride	200	183	91.7	80.0-120	

L1068318-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1068318-01 02/11/19 19:00 • (MS) R3382899-4 02/11/19 19:08 • (MSD) R3382899-5 02/11/19 19:17

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chloride	500	2560	2770	2710	42.3	30.1	1	80.0-120	E V	E V	2.23	15



Method Blank (MB)

(MB) R3383413-3 02/12/19 11:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3383413-1 02/12/19 10:23 • (LCSD) R3383413-2 02/12/19 10:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.69	6.17	104	112	72.0-127			8.06	20
(S) a,a,a-Trifluorotoluene(FID)				107	109	77.0-120				

L1068580-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1068580-10 02/12/19 19:57 • (MS) R3383413-4 02/12/19 20:42 • (MSD) R3383413-5 02/12/19 21:04

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.76	136	276	293	82.5	92.9	25	10.0-151			6.16	28
(S) a,a,a-Trifluorotoluene(FID)					103	103		77.0-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Method Blank (MB)

(MB) R3383583-3 02/13/19 12:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0218	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.9			77.0-120

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3383583-1 02/13/19 11:07 • (LCSD) R3383583-2 02/13/19 11:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.85	5.57	106	101	72.0-127			5.00	20
(S) a,a,a-Trifluorotoluene(FID)				113	112	77.0-120				

Method Blank (MB)

(MB) R3383792-3 02/14/19 11:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3383792-1 02/14/19 10:22 • (LCSD) R3383792-2 02/14/19 10:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.81	6.06	106	110	72.0-127			4.22	20
(S) a,a,a-Trifluorotoluene(FID)				108	109	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3383316-2 02/12/19 10:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	101			75.0-131
(S) 4-Bromofluorobenzene	104			67.0-138
(S) 1,2-Dichloroethane-d4	82.4			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3383316-1 02/12/19 09:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.127	101	70.0-123	
Ethylbenzene	0.125	0.124	99.3	74.0-126	
Toluene	0.125	0.119	94.9	75.0-121	
Xylenes, Total	0.375	0.357	95.2	72.0-127	
(S) Toluene-d8			99.9	75.0-131	
(S) 4-Bromofluorobenzene			105	67.0-138	
(S) 1,2-Dichloroethane-d4			85.2	70.0-130	

L1068580-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1068580-08 02/12/19 15:35 • (MS) R3383316-3 02/12/19 19:16 • (MSD) R3383316-4 02/12/19 19:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.139	0.248	3.70	2.08	62.2	33.1	40	10.0-149		J3	55.8	37
Ethylbenzene	0.139	8.79	13.7	11.4	88.0	47.4	40	10.0-160			18.0	38
Toluene	0.139	25.5	30.3	28.5	85.8	54.3	40	10.0-156			5.93	38
Xylenes, Total	0.416	126	145	137	113	66.0	40	10.0-160			5.50	38
(S) Toluene-d8					99.0	101		75.0-131				
(S) 4-Bromofluorobenzene					104	107		67.0-138				
(S) 1,2-Dichloroethane-d4					89.0	87.0		70.0-130				

Method Blank (MB)

(MB) R3383207-1 02/12/19 23:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	111			18.0-148

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3383207-2 02/13/19 00:00 • (LCSD) R3383207-3 02/13/19 00:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Extractable Petroleum Hydrocarbon	50.0	38.7	41.2	77.4	82.4	50.0-150			6.26	20
C10-C28 Diesel Range	50.0	42.9	45.7	85.8	91.4	50.0-150			6.32	20
(S) o-Terphenyl				139	131	18.0-148				

L1067529-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1067529-02 02/13/19 03:26 • (MS) R3383207-4 02/13/19 03:40 • (MSD) R3383207-5 02/13/19 03:53

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Extractable Petroleum Hydrocarbon	59.8	145	96.3	200	0.000	92.0	5	50.0-150	J6	J3	69.9	20
C10-C28 Diesel Range	59.8	297	175	373	0.000	128	5	50.0-150	V	J3	72.5	20
(S) o-Terphenyl					156	135		18.0-148	J1			



Guide to Reading and Understanding Your Laboratory Report

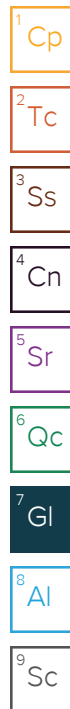
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MQL (dry)	Method Quantitation Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
SDL (dry)	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.





Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



SGS

CHAIN OF CUSTODY

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

02-061

L1068580

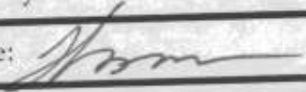
PAGE 1 OF 1

Client / Reporting Information		Project Information		Requested Analyses														Matrix Codes		
Company Name Timberwolf		Project Name: ST 28-4 #18		<div style="display: flex; justify-content: space-between;"> <div>TPH-GRO (8015)</div> <div>TPH-DRO Extended (8015)</div> <div>CI-</div> <div>BTEX</div> <div>Hold</div> </div>														DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank		
Street Address 1920 West Villa Maria, Suite 205		Street																		
City State Zip Bryan, TX 77807		City State																		
Project Contact Jim Foster jim@teamtimberwolf.com 190004		Project #																		
Phone # Fax # 361-772-8705 979-324-2139		Client Purchase Order #																		
Sampler(s) Name(s) Phone #		Project Manager Attention:																		
SGS Account Sample #	Field ID / Point of Collection	Collection				Number of preserved Bottles														LAB USE ONLY
		Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	Zn/NH ₄ OH	HNO ₃	H ₂ SO ₄	H ₂ PO ₄	DI Water	MeOH	TSP	NH ₄ SO ₄	EMCORE	OTHER		
	SB1 0-1'	2/2/19	1010	JE	S	2														-01
	SB1 1-1.5'		1040																	-02
	SB2 0-1'		1105																	-03
	SB2 1-2'		1115																	
	SB2 2-2.5'		1125																	-04
	SB3 0-1'		1135																	-05
	SB4 0-0.5'		1145																	-06
	SB5 0-0.5'		1150																	-07
	SB6 0-1'		1200																	-08
	SB7 0-1'		1210																	-09
	SB8 0-0.5'		1220																	-10
	SB9 0-0.5'		1340																	-11
Turnaround Time (Business days)		Data Deliverable Information														Comments / Special Instructions				
<input type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input checked="" type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink		Approved By (SGS Accutest PM): / Date:		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other														RUSH - 3 Day TAT F018		
Form: SM021-0																				
Sample Custody must be documented below each time samples change possession, including courier delivery.																				
Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:													
1	2/5/19 1455	1		2		2														
Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:													
3		3		4		4														
Relinquished by:	Date Time:	Received By:	Date Time:	Custody Seal #	<input type="checkbox"/> Intact Preserved where applicable <input type="checkbox"/> Not Intact															
5		5	2-9-19 0845		<input type="checkbox"/> On Ice Cooler Temp.															

RAD SCREEN: <0.5 mR/hr

0.4-0.1=0.342

Pace Analytical National Center for Testing & Innovation Cooler Receipt Form

Client: <u>ACCUMHTX</u>		SDG#:	<u>L1068580</u>	
Cooler Received/Opened On: <u>2 / 9 / 19</u>		Temperature:	<u>0.3</u>	
Received By: Thomas Virden				
Signature: 				
	NP	Yes	No	
Receipt Check List				
COC Seal Present / Intact?			✓	
COC Signed / Accurate?			✓	
Bottles arrive intact?		✓		
Correct bottles used?		✓		
Sufficient volume sent?		✓		
If Applicable				
VOA Zero headspace?				
Preservation Correct / Checked?				