



Kate Kaufman
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October 6, 2021

Accepted for Record

CS

Ms. Emily Hernandez
Bureau Chief, Environmental
New Mexico Oil Conservation Division
New Mexico Energy, Minerals, and Natural Resources Department
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Re: Compliance Plan
San Juan 28-7 Unit 183M
Rio Arriba County, New Mexico
OCD Incident No. NCS1901627746

Dear Ms. Hernandez:

Hilcorp Energy Company (Hilcorp) presents this overview plan to bring the San Juan 28-7 Unit 183M site into compliance in accordance with the Site Characterization Report and Remedial Action Plan dated May 21, 2019 and New Mexico Oil Conservation Division (NMOCD) Notice of Violation dated September 1, 2021.

- The third quarter 2020 report has been submitted to NMOCD via the ePermitting System.
- System runtime will be monitored real-time by Operations and Environmental personnel utilizing computer based telemetry. Real time monitoring and trouble alarms will ensure system down time is kept to a minimum, better enabling Hilcorp to meet run-time requirements.
- Hilcorp personnel will complete semi-monthly operations and maintenance site visits to further ensure run-time requirements are met and to collect system data as needed.

Further information on system performance will be provided in the third quarter 2021 status report.

Please contact me at 346-237-2275 or kkaufman@hilcorp.com if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink that reads "Kate Kaufman".

Kathryn Kaufman
Environmental Specialist



1920 W. Villa Maria, Ste. 205
Bryan, Texas 77807
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November 25, 2020

Mr. Cory Smith, Environmental Specialist
New Mexico Oil Conservation Division – District 3
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: Status Report – 3rd Quarter 2020
San Juan 28-7 Unit 183M
Rio Arriba County, New Mexico
OCD Incident No. NCS1901627746

Dear Mr. Smith:

On behalf of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document remedial activities conducted during the third quarter of 2020 (3Q20) at the San Juan 28-7 Unit 183M (Site). Activities conducted during 3Q20 consisted of the following:

- Operation and maintenance of the soil vapor extraction (SVE) system
- Installation of a new vacuum pump

Environmental Setting and Site Geology

The Site is situated on federal land managed by the Bureau of Land Management (BLM) in western Rio Arriba County, New Mexico (Figure 1). The area consists of sparse vegetative cover comprised primarily of scrub brush and native grasses. Area terrain is comprised of plateaus divided by canyons. The primary canyon in the area is Carrizo Canyon, which drains to the northwest into the San Juan River, approximately 19 miles from the Site (Figures 2 and 3).

The Site is situated along the rimrock of an unnamed side canyon to Carrizo Canyon. Average elevation at the Site is approximately 6,523 feet (ft) above mean sea level. The closest surface water is a first order tributary of Carrizo Creek, situated 1,500 ft southeast of the Site and 330 ft lower in elevation.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), the Site soil consists of the Vessilla-Menefee-Orlie complex, 2 to 30 percent slopes. The surface horizon is comprised of a sandy loam, underlain by bedrock encountered between 15 to 19 inches below ground surface (bgs). Native salinity of the soil is nonsaline to very slightly saline (0.0 to 2.0 millimhos per centimeter (mmhos/cm)).

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Site History

Release Event

Corrosion near the base of the former oil tank resulted in the release of approximately 150 barrels (bbls) of oil and 7 bbls of produced water. All released fluid was contained by the berm. Standing fluid was recovered; the tank was removed from service and disposed off-site. The initial investigation identified the area of the former tank battery as the primary area of concern (AOC).

Hilcorp constructed a new tank battery northeast of the original tank battery. Tanks and interconnective piping were removed from the original tank battery.

Site Investigation

A soil investigation, conducted during March 2019, revealed the constituents of concern (COC) were: total BTEX (i.e., benzene, toluene, ethylbenzene, and xylene) and total petroleum hydrocarbons (TPH). Impacted soil was horizontally and vertically delineated; the vertical extent of impacted soil was approximately 27 ft bgs. Additionally, the soil investigation revealed that subsurface soil is unconsolidated to a depth of 10 ft below ground surface (bgs) which is underlain by sandstone. Findings of the investigation are documented in Timberwolf's report entitled: *Site Characterization Report and Remedial Action Plan*, dated May 21, 2019.

Site Remediation –SVE System

To remediate hydrocarbon impacted soil, a soil vapor extraction (SVE) system was designed, constructed, and installed at the Site. System start-up date was 12/18/19. The SVE system is comprised of 11 SVE wells, four vent wells, and a SVE trailer. The SVE trailer is comprised of a regenerative blower, hour meter, moisture separator and filter, sampling port, and a manifold with three independent legs. Additionally, the SVE trailer is equipped with a programmable automation panel to control valves for each manifold leg.

The SVE system creates a treatment field of approximately 0.15 acres and treats soil to a depth of approximately 30 ft bgs for a total volume of approximately 7,021 cubic yards of soil. The SVE wells, measured radius of influence of 25 ft, and leg configurations are shown in Figure 4.

SVE System Operations

The SVE system was designed with three independent legs (i.e., Leg 1, Leg 2, and Leg 3). Legs 1 and 3 provide vacuum extraction to the deep SVE wells; Leg 2 is piped to the shallow wells.

The automation panel was programmed to oscillate between Legs 1, 2, and 3 every four hours for continuous 24-hr operations. Programmed runtimes are presented in Table 1 below.

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Table 1. Programmed Runtimes and Leg Configurations

Leg	SVE Wells and Location	Scheduled Runtime
Leg 1	Deep Wells SVE7, SVE8, and SVE9 Eastern side of treatment zone	4 hours
Leg 2	Shallow Wells SVE1, SVE2, SVE3, and SVE4	4 hours
Leg 3	Deep Wells SVE5, SVE6, SVE10, and SVE11 Central and Western side of treatment zone	4 hours
Leg 1	Deep Wells SVE7, SVE8, and SVE9 Eastern side of treatment zone	4 hours
Leg 2	Shallow Wells SVE1, SVE2, SVE3, and SVE4	4 hours
Leg 3	Deep Wells SVE5, SVE6, SVE10, and SVE11 Central and Western side of treatment zone	4 hours

SVE – soil vapor extraction well

Water and condensate collected in the moisture separator was drained through a 1-inch PVC pipe and transferred to an open-top tank fitted with bird netting. Zero (0) gallons of water/condensate was recovered during 3Q20.

Runtime, flow rates, and percentage of runtime for 3Q20 are documented in Table 2 below.

Table 2. System Runtime and Flow Rates – 3Q20

Measurement	Leg 1	Leg 2	Leg 3	Total
Runtime (hours)	364	364	361.4	1,089.4
Runtime (min)	21,840	21,840	21,684	65,364
Average CFM	11.2	9	20.6	--
Runtime Percentage	33.4%	33.4%	33.2%	100%

min – minutes

CFM – cubic feet per minute

The 3Q20 had 2,184 hours in the quarter; the SVE system ran for 1,089.4 hours. The runtime percentage (%) in 3Q20 was 49.9%. The low runtime was related to prolonged down periods due to persistent generator and SVE system malfunctions. A new regenerative blower (i.e., vacuum pump) was installed the week of 09/28/20 by Hilcorp personnel. A field log of the O&M events and maintenance performed at the Site is provided in the attached Table A-1.

Mass Removal

Timberwolf used the results from the initial gas analysis (collected on 02/12/20), flow rates, and runtimes to calculate constituent mass removal. Mass removal of GRO and BTEX and associated recovered volume for 3Q20 are presented in Table 3 below; cumulative totals are provided in the attached table A-2.

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Table 3. Mass Removal and Associated Volume

Constituent	Mass Removal by Leg (kg) ¹			Total Mass Removed ² (lbs)	Recovered Volume ³ (bbl)
	Leg 1	Leg 2	Leg 3		
GRO	149.61	120.22	273.22	1,194.7	4.43
Benzene	1.86	1.49	3.39	14.82	NC
Toluene	6.68	5.37	12.19	53.32	NC
Ethylbenzene	0.18	0.14	0.33	1.43	NC
Xylenes	1.35	1.09	2.47	10.80	NC

¹Calculation = minutes ran * CFM * Concentration (mg/m³) * 1 M³/35.3147 ft³*1g/1000 mg * 1 kg/1000 g

²Calculation = [Leg 1 + Leg 2 + Leg 3] * 2.2 lbs/kg

³Calculation = lbs / 6.42 lb/gal / 42 gal/bbl

GRO = from TPH (GC/MS) Low Fraction (i.e., gasoline range organics)

kg – kilograms

lbs – pounds

NC – not calculated

bbl -barrel

NC – not calculated

Assumptions:

- API Gravity = 52
- Concentrations of VOCs in soil gas vapor have remained static since the collection of initial gas sample

Summary

System runtime during 3Q20 was 49.9% of total available hours in 3Q20. The low runtime was related to prolonged down periods due to persistent generator and SVE system malfunctions. A new vacuum pump was installed the week of 09/28/20. The total mass removed during 3Q20 for TPH low fraction (i.e., GRO) was approximately 1,194.7 lbs (i.e., 4.26 bbls).

Further Actions – Fourth Quarter 2020

During 4Q20, the following activities are planned for the Site:

- Conduct regular Site O&M to ensure proper system function and drain any water/condensate accumulation in the moisture separator
- Prepare a 4Q20 status report

If you have any questions regarding this report or need further assistance, please call us at 979-324-2139.

Sincerely,

Timberwolf Environmental, LLC



Michael Morse
Project Scientist



Jim Foster
President

Attachments: Figures
Attached Table

Cc: Clara Cardoza, Hilcorp Energy Company

Figures

Timberwolf Project No. HEC-190007

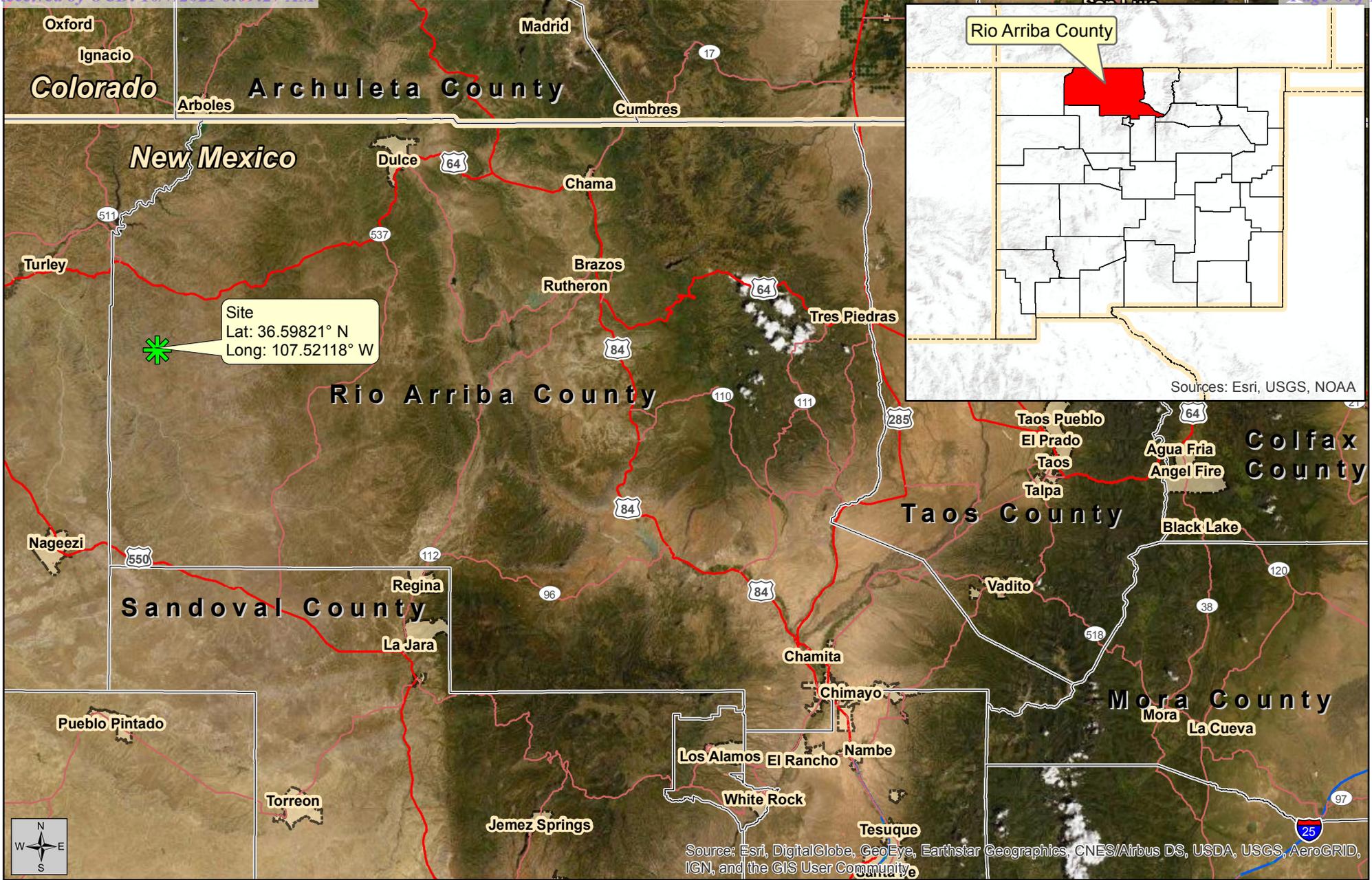


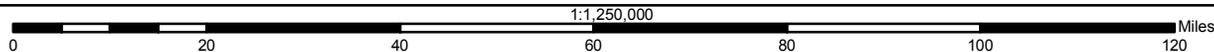
Figure 1
Site Location Map

Status Report - 3rd Quarter 2020

August 5, 2020



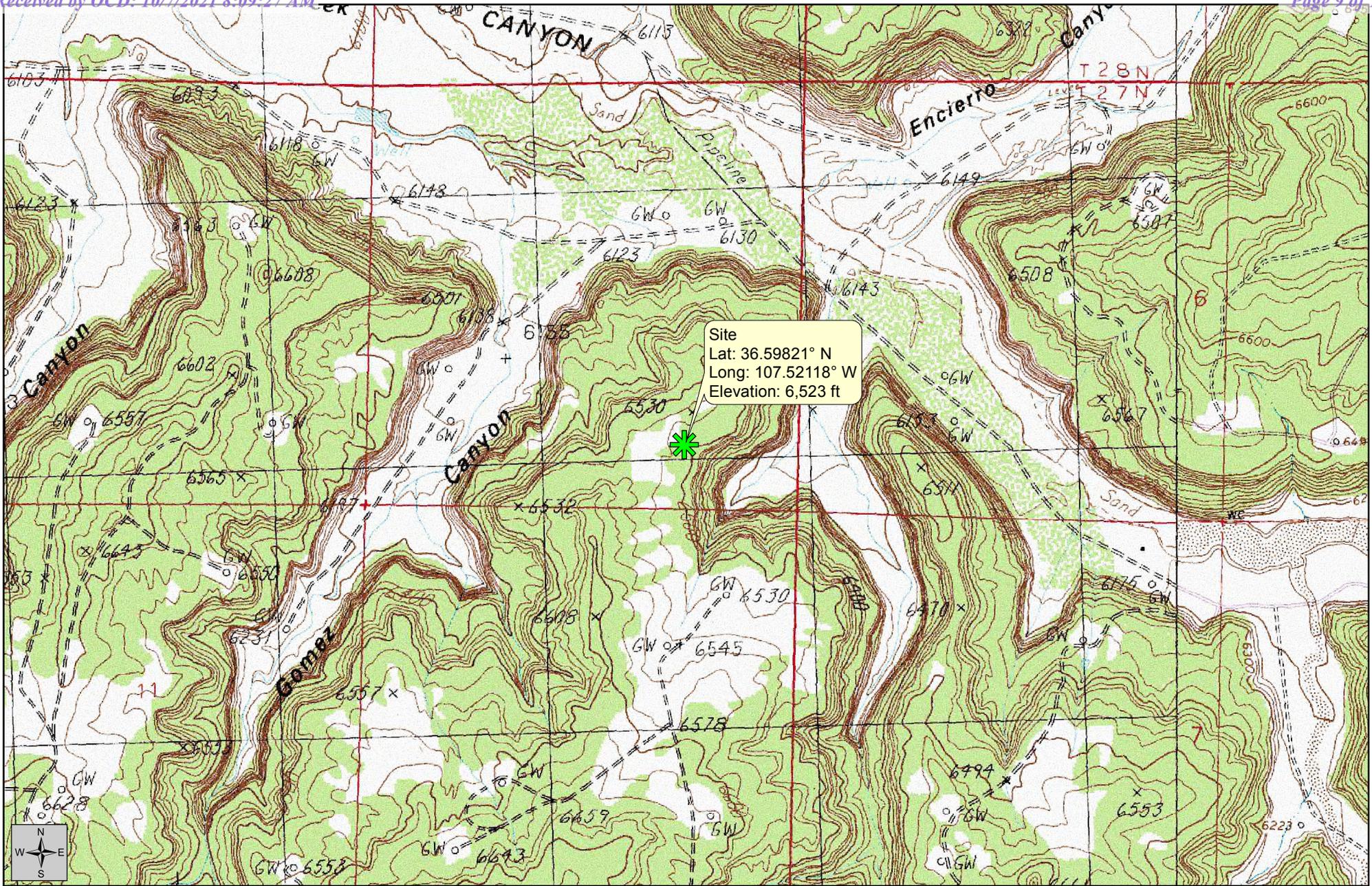
Created By:
 Kevin Cole
 TE Project No.: HEC-190007



San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
 Hilcorp Energy Company
 Rio Arriba County, New Mexico

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

 Site



Site
 Lat: 36.59821° N
 Long: 107.52118° W
 Elevation: 6,523 ft

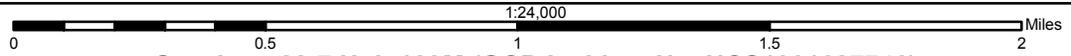
Figure 2
Topographic Map

Status Report - 3rd Quarter 2020

August 5, 2020



Created By:
 Kevin Cole
 TE Project No.: HEC-190007



San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
 Hilcorp Energy Company
 Rio Arriba County, New Mexico

Datum: NAD83
 Imagery Source: USGS
 Quads: Gould Pass and Santos Peak
 Vector Source: TE

 Site

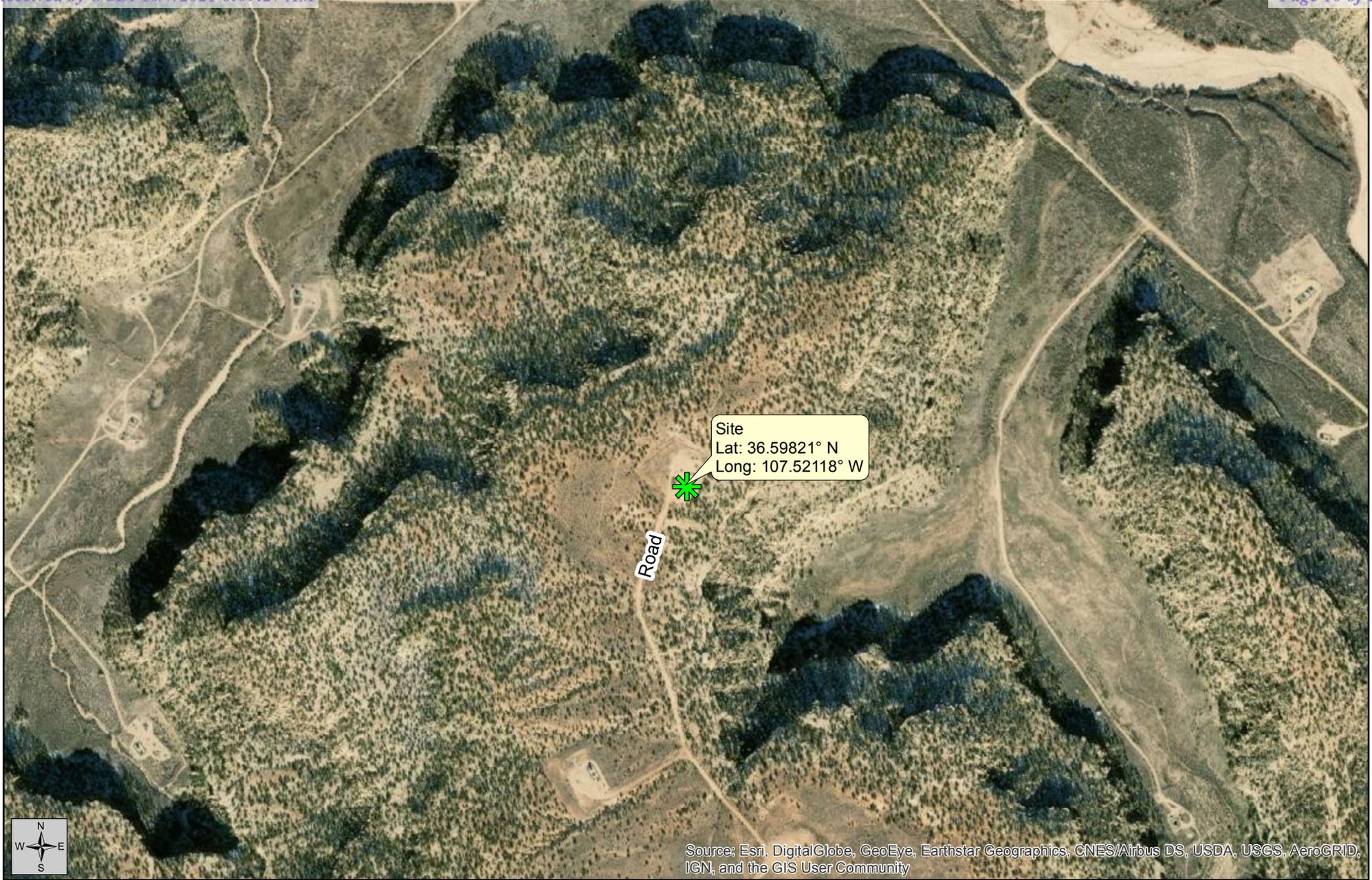


Figure 3
Aerial Map

Status Report - 3rd Quarter 2020

August 5, 2020



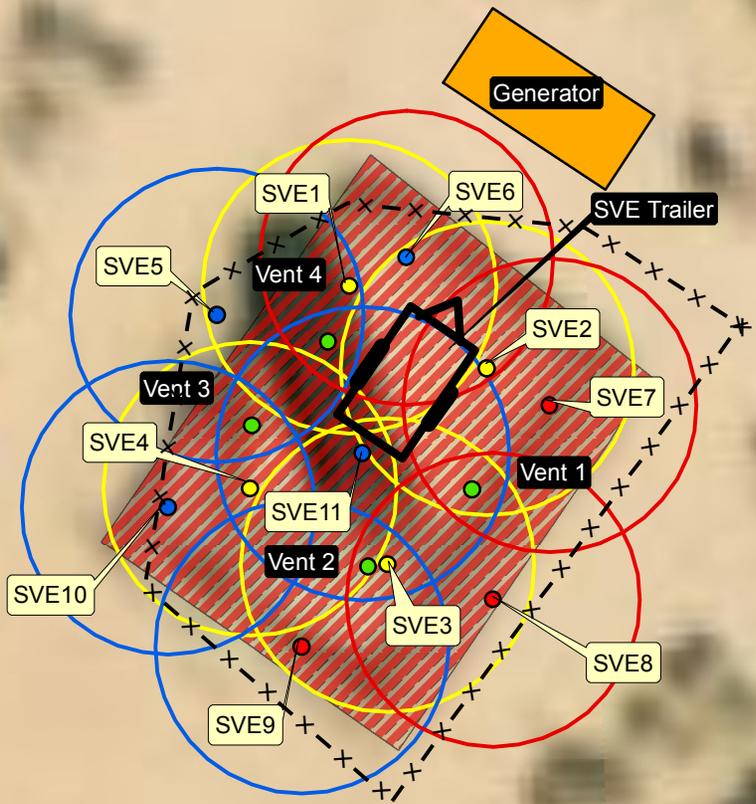
Created By:
 Kevin Cole
 TE Project No.: HEC-190007

San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
 Hilcorp Energy Company
 Rio Arriba County, New Mexico

Datum: NAD83
 Imagery Source: ESRI
 Vector Source: TE

 Site

Treatment Area= 6,320 ft²
Assuming a 25 ft radius of influence



- Legend**
- Leg 1 SVE Wells (7, 8, & 9)
 - Leg 2 SVE Wells (1, 2, 3, & 4)
 - Leg 3 SVE Wells (5, 6, 10, & 11)
 - Vent
 - ▭ Leg 1
 - ▭ Leg 2
 - ▭ Leg 3
 - ▨ Impacted Area
 - ▭ SVE Trailer
 - ▭ Generator
 - x-x- Fence

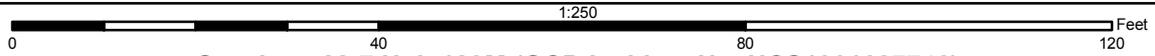


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 4
SVE System Overview

Status Report - 3rd Quarter 2020

August 5, 2020



San Juan 28-7 Unit 183M (OCD Incident No. NCS1901627746)
 Hilcorp Energy Company
 Rio Arriba County, New Mexico

Created By:
 Kevin Cole
 TE Project No.: HEC-190007

Datum: NAD83
 Imagery Source: ESRI
 Vector Source: TE



Attached Table

Timberwolf Project No. HEC-190007

**Table A-1. Operation and Maintenance Events
Status Report 3rd Quarter 2020
San Juan 28-7 183M**

Date	Hour Meter (hrs)	Water/Condensate Recovered (gal)	Maintenance
07/01/20	856.9	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. * • Hour meter reading from 10:00am: 846.9. Subtracted 10 hours to get accurate system runtime starting from midnight.
07/06/20	885.8	0	<ul style="list-style-type: none"> • Caleb with Hilcorp arrived on site and the generator and SVE system were down. Before leaving the site he was able to get the generator and SVE system back up and running. * • Maintenance provided: Low oil level; Oil added and system restarted. • Generator Alarm: Low Oil Pressure
07/08/20	934.5	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. *
07/20/20	1057.5	0	<ul style="list-style-type: none"> • Caleb with Hilcorp arrived on site and the generator and SVE system were down. Before leaving the site Caleb was able to get the generator and SVE system back up and running. * • Probable cause of generator shutdown: Caleb stated that there was a bad storm and he believes the coils on the generator got wet and caused a shut down
07/22/20	1083.4	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. *
07/29/20	1249.3	0	<ul style="list-style-type: none"> • Caleb with Hilcorp arrived on site and the generator and SVE system were down. Before leaving the site he was able to get the generator and SVE system back up and running. * • Maintenance provided: Low oil level; Oil added and system restarted. • Generator Alarm: Low Oil Pressure
08/05/20	1413.5	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. * • Small leak was detected on exhaust side of pump. After checking pump schematics and discussing issue with Clara (Hilcorp), Kurt (Hilcorp), Michael (Timberwolf), & Jim (Timberwolf) the leak was determined to not be an issue. • Moving forward the pump will be checked to make sure leak is not getting worse.
08/14/20	1539.4	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. * • SVE system operations normal.
08/24/20	1736.5	0	<ul style="list-style-type: none"> • Caleb with Hilcorp arrived on site and the generator and SVE system were down. Before leaving the site Caleb was able to get the generator and SVE system running again. * • Maintenance provided: Low oil level; Oil added and system restarted • Generator Alarm: Low Oil Pressure



**Table A-1. Operation and Maintenance Events
Status Report 3rd Quarter 2020
San Juan 28-7 183M**

Date	Hour Meter (hrs)	Water/Condensate recovered (gal)	Maintenance
09/02/20	1936.3	0	<ul style="list-style-type: none"> • Kurt Hoekstra with Hilcorp conducted the SVE system check. * Upon arrival at the Site, the generator and SVE system were down. The generator was low on oil (no oil on oil dip stick). Kurt added oil and restarted the generator. When the SVE system was turned back on it bogged down the generator and the generator shut down. Circuit breakers were tripped on the SVE trailer. • Caleb with Hilcorp arrived on site to diagnose system issues. Potential issues with SVE trailer breaker box/pump. • Unable to get system running prior to leaving Site.
09/22/20	N/A	0	<ul style="list-style-type: none"> • Hilcorp mechanic and I&E technician were on site to troubleshoot the SVE system. The mechanic and I&E technician determined the bearings in the vacuum pump (i.e., regenerative blower) need to be replaced. *
Week of 09/28/20	N/A	0	<ul style="list-style-type: none"> • Jeff Bell with Hilcorp replaced the original regenerative blower (i.e., vacuum pump). *

N/A = not available

gal - gallons

hrs - hours

* - Timberwolf personnel not on site



**Table A-2. Cumulative Mass Removal
Status Report 3rd Quarter 2020
San Juan 28-7 183M**

1Q20					
Constituent	Mass Removal by Leg (kg)			Total Mass Removed (lbs)	Recovered Volume (bbl)
	Leg 1 (kg)	Leg 2 (kg)	Leg 3 (kg)		
GRO	58.12	39.11	86.16	403.47	1.50
Benzene	0.72	0.49	1.07	5.01	NC
Toluene	2.59	1.75	3.85	18.01	NC
Ethylbenzene	0.07	0.05	0.10	0.48	NC
Xylene	0.53	0.35	0.78	3.65	NC
2Q20					
Constituent	Mass Removal by Leg (kg)			Total Mass Removed (lbs)	Recovered Volume (bbl)
	Leg 1 (kg)	Leg 2 (kg)	Leg 3 (kg)		
GRO	75.04	57.25	111.64	536.65	1.99
Benzene	0.93	0.71	1.39	6.66	NC
Toluene	3.35	2.56	4.98	23.95	NC
Ethylbenzene	0.09	0.07	0.13	0.64	NC
Xylene	0.68	0.52	1.01	4.85	NC
3Q20					
Constituent	Mass Removal by Leg (kg)			Total Mass Removed (lbs)	Recovered Volume (bbl)
	Leg 1 (kg)	Leg 2 (kg)	Leg 3 (kg)		
GRO	149.61	120.22	273.22	1194.72	4.43
Benzene	1.86	1.49	3.39	14.82	NC
Toluene	6.68	5.37	12.19	53.32	NC
Ethylbenzene	0.18	0.14	0.33	1.43	NC
Xylene	1.35	1.09	2.47	10.80	NC
Total Mass Removed					
Constituent	Mass Removal by Leg (kg)			Total Mass Removed (lbs)	Recovered Volume (bbl)
	Leg 1 (kg)	Leg 2 (kg)	Leg 3 (kg)		
GRO	282.78	216.59	471.01	2134.84	7.92
Benzene	3.51	2.69	5.84	26.49	NC
Toluene	12.62	9.67	21.02	95.28	NC
Ethylbenzene	0.34	0.26	0.56	2.55	NC
Xylene	2.56	1.96	4.26	19.30	NC

mass (mg) removed equation = ((CFM*volatile*runtime in minutes)/(35.3147)) NC - not calculated

kg - kilogram

lbs - pounds

bbl - barrels

District I
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 Phone:(575) 748-1283 Fax:(575) 748-9720
District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS
 Action 54603

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 54603
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
csmith	Q3 2021 SVE Report Accepted for Record	7/6/2022