

1Q 2020

Status Report

AP-138



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Durango, Colorado 81301
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www.teamtimberwolf.com

April 28, 2020

RCVD via Email 4/30/2020

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

Re: Status Report – 1st Quarter 2020
Kaufman No. 1
San Juan County, New Mexico
OCD No.: AP-0138

Dear Mr. Cory Smith,

On behalf of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) prepared this letter to document 1st Quarter 2020 (1Q20) groundwater monitoring activities at the Kaufman No. 1 (Site). The Site is located approximately 9.1 miles north of Farmington in San Juan County, New Mexico (Figure 1).

Site Description and Environmental Setting

The Site is situated on Federal land (managed by the Bureau of Land Management (BLM)) and is immediately east of the La Plata River (Figures 2 and 3). The Site is comprised of approximately 1 acre, all of which is located within the La Plata River flood plain and adjacent to riparian zones or wetlands.

The Site was temporarily abandoned following a release in November 2018; equipment removed from service included: storage tanks, separators, and a glycol dehydrator. Other surface equipment at the Site includes a well head and gas meter.

The Site is situated in a rural area and surrounding land use is predominantly recreational and oil and gas production. According to the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), the Site soil consists of Walrees loam, 0 to 2 percent slope. This soil series consist of a loam underlain by stratified gravelly sand; native salinity is very slightly saline to moderately saline (2.0 to 8.0 millimhos per centimeter (mmhos/cm)).

An unnamed intermittent stream located approximately 500 ft south of the Site empties into the La Plata River flood plain and has deposited sufficient sand to form a delta-like alluvial sediment deposit over the flood plain. The delta extends north to within 100 ft of the Site and is visible on aerial photographs (e.g., Figure 3) and is characterized by sparse vegetation, with the understory most affected.

The average elevation at the Site is approximately 5,537 feet above mean sea level. Area topography is flat with a slight dip west, toward the La Plata River.

Site History

On 11/16/18, approximately 8 barrels (bbls) of oil and 10 bbls of produced water was released from the storage tank. Enduring Resources was the operator of record at the time of the release; Hilcorp assumed operations of the Site on or about December 1, 2018.

After Hilcorp assumed operations, the well was temporarily abandoned. All surface equipment within the tank battery was removed, and impacted soil within the battery was excavated and disposed. The excavation was primarily along the eastern and southern portion of the tank battery. The excavation was approximately 50 ft by 60 ft; the excavation depth ranged from 1 ft to 5 ft. A safety fence was constructed along the perimeter of the excavation.

Six groundwater monitoring wells (i.e. MW1 – MW6) were installed in January 2019. On 07/02/19 and 07/03/19, Timberwolf conducted a wetland investigation; the purpose of the wetland investigation was to delineate the extent of the wetland features to comply with United States Army Corps of Engineers (USACE) during ongoing remedial activities.

On 11/06/19, Hilcorp contracted with Sierra Oilfield Services of Farmington, New Mexico to excavate impacted soil in and around the initial excavation (i.e. former tank battery). Soil exceeding soil-to-groundwater migration criteria and soil exceeding the ecological PCLs was excavated and removed from the site. All excavation activities were completed on 11/08/19. The excavation was backfilled following confirmation samples.

On 11/19/19, Timberwolf contracted with NCE Surveys, Inc. of Farmington, New Mexico to survey the tops of casings of each monitor well and two steel rods relative to mean sea level. Two riparian wetland features (previously delineated on 07/02/19 and 07/03/19), one approximately 30 ft to the north and one immediately adjacent to the south and east of the site were also surveyed in.

The work conducted is documented in the following reports:

- *Site Characterization Report and Stage 1 Abatement Plan*, dated 06/18/19
- *Wetland Delineation (Revised)*, dated 10/03/19
- *Stage 2 Abatement Plan*, dated 01/03/20

Regulatory Criteria - Groundwater

Human health standards for usable groundwater (i.e., total dissolved solids (TDS) less than 10,000 milligrams per kilograms (mg/L)) have been established under NMAC 20.6.2§3103. Additionally, this statute provides standards for domestic water supply. These criteria provide standards for a variety of constituents, including: metals, anions, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), certain radioactive isotopes, salinity, and pH.

Based on process knowledge, a constituent list prepared for the Site includes: VOCs, SVOCs, arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver (i.e., Resource Conservation and Recovery Act (RCRA)-8 metals), anions, TDS, and pH. The regulatory criteria for human health or domestic water supply for these constituents are provided in Table 1.

Table 1. Groundwater Regulatory Criteria

Constituent	Regulatory Criteria (mg/L)
Metals	
Arsenic	0.10 ¹
Barium	1.00 ¹
Cadmium	0.01 ¹
Chromium	0.05 ¹
Lead	0.05 ¹
Mercury	0.0002 ¹
Selenium	0.05 ¹
Silver	0.05 ¹
VOCs	
Benzene	0.01 ¹
Toluene	0.75 ¹
Ethylbenzene	0.75 ¹
Xylenes	0.62 ¹
PAHs (Total Naphthalene)	0.03 ¹
SVOCs	
Phenols	0.005 ²
General Water Chemistry	
Total Dissolved Solids	1,000 ²
Chloride	250 ²
Sulfate	600 ²
pH (units – s.u.)	6 – 9 ²

¹New Mexico human health standard

²New Mexico Standard for domestic water supply wells

mg/L – milligrams per liter

s.u. – standard units

VOCs – volatile organic compounds

SVOCs – semi-volatile organic compounds

1Q20 Groundwater Sampling Event

On 01/16/20, Timberwolf conducted the 1Q20 groundwater monitoring event at the Site. Groundwater and surface water gauging, groundwater sample collection and analytical results are documented below. Monitor well locations are shown in the attached Figure 4.

River and Well Gauging

River elevations were measured relative to two steel rods by using a 6-ft bubble level and water interface probe capable of measuring to the nearest one-one hundredth of a foot. Depth to water in monitor wells were also measured from the tops of casing using the water interface probe. Prior to well gauging, well caps were removed, and water levels were allowed to equilibrate. Monitoring wells tops of casing and steel rods were surveyed on 11/19/20 and were documented in Section 9 of the *Stage 2 Abatement Plan*.

Gauging data are recorded in Table A-1 (attached). Depth to groundwater measurements were subtracted from the corresponding monitor well elevations to determine the depth of groundwater relative to mean sea level in each well. Likewise, river elevations were calculated by subtracting the measured depth to water from the top of each steel rod. Timberwolf prepared a potentiometric surface elevation (PSE) map as shown in Figure 5. The 1Q20 PSE map revealed that groundwater flow across the Site was west-southwest towards the La Plata River.

Groundwater Sample Collection

The six sampling stations (i.e., MW1 through MW6) were sampled using the EPA low-flow technique. A submersible pump was placed within the screened interval of each well. Water was extracted from each well and pumped through a flow-through cell equipped with a YSI probe. Field water quality parameters were analyzed and recorded, which included: dissolved oxygen, conductivity, pH, temperature, and ORP. Groundwater stabilization parameters are documented in the attached Table A-2. After water quality parameters stabilized, the YSI flow-through cell was bypassed and samples were collected directly into laboratory-provided sample containers.

Samples were labeled, stored on ice, and transported under proper chain-of-custody protocol to Hall Environmental Analytical Laboratories, Inc. in Albuquerque, New Mexico.

Groundwater Analytical Results

Groundwater samples were analyzed for the following constituents: benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260. Cumulative analytical results from each groundwater sampling station is documented in Table A-3 (attached). Analytical results for the 1Q20 groundwater monitoring event are summarized in Table 2 below and shown in Figure 6.

Table 2. Groundwater Analytical Results – 1Q20

Sample Station	Date	Volatile Organic Compounds (mg/L)			
		B	T	E	X
MW1	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW2	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW3	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW4	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW5	01/16/20	0.0012	< 0.001	< 0.001	< 0.002
MW6	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
Regulatory Criteria		0.01	0.75	0.75	0.62

BTEX – benzene, toluene, ethylbenzene, and xylenes

– exceeds regulatory criteria

mg/L – milligrams per liter

Quality Assurance Program

To ensure quality assurance in laboratory data, Timberwolf collected a field duplicate sample and utilized a Trip Blank. The field duplicated (“Dup”) was collected from MW5 to evaluate laboratory reproducibility. The field duplicate was collected immediately after the MW5 sample to ensure homogeneity between the sample and the field duplicate. The acceptable limit for relative percent difference (RPD) between duplicate samples for organic compounds is 30 percent relative percent difference (i.e., 30% RDP) or less. Formula used to calculate RPD is as follows:

$$RPD = \left(\frac{|sample\ result - duplicate\ result|}{\frac{sample\ result + duplicate\ result}{2}} \right) * 100$$

The Trip Blank was maintained with the sampling kit at all times to evaluate the potential for in-field contaminations or contaminants encountered traveling to and from the laboratory. Both the field duplicate and trip blank were analyzed for BTEX. Analytical results are documented in the attached laboratory report and summarized in Table 3.

Table 3. Groundwater Quality Assurance Results – 1Q20

Sample ID	Date	Volatile Organic Compounds (mg/L)			
		B	T	E	X
MW5	01/16/20	0.0012	< 0.001	< 0.001	< 0.002
Dup	01/16/20	0.0016	< 0.001	< 0.001	< 0.002
Trip Blank	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002

mg/L – milligrams per liter

B – benzene

T – toluene

E – ethylbenzene

X –xylenes

The RPD between sample MW5 and the Dup was 28.5%, which demonstrates laboratory reproducibility between samples. The trip blank results were below laboratory detection limits, indicating no measurable contamination was observed.

Conclusions

Based on analytical results of groundwater samples and the regulatory criteria, the following is concluded:

- BTEX concentrations were below regulatory criteria in all samples (i.e., MW1 – MW6)
 - Concentrations of BTEX were below human health criteria and laboratory detection limits in five samples (i.e., MW1 – MW4 and, MW6)
 - Benzene concentration in MW5 exceeded laboratory detection limits but remains below the New Mexico human health criteria for drinking water
- Groundwater flow across the Site is west-southwest towards the La Plata River

Further Actions

Timberwolf will conduct the following activities at the Site during the 2nd quarter of 2020:

- Conduct a quarterly groundwater monitoring event
- Begin a threatened and endangered specie surveys for the *Southwestern willow flycatcher* and *Western yellow-billed cuckoo*
- Contingent upon OCD approval of Stage 2 Abatement Plan, Timberwolf will conduct the following activities at the Site during the 2nd quarter of 2020:
 - Install an additional monitoring well between MW1 and MW5. The proposed well (i.e., MW7) will be installed by a licensed driller and constructed of 2-inch PVC. The well will be permitted as required by the New Mexico Office of State Engineer. The Proposed location of MW7 is shown in (Figure 7)
 - Develop MW7 and sample for BTEX
 - Survey the top of casing elevation for MW7

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

Sincerely,
Timberwolf Environmental, LLC



Michael Morse
Project Scientist



Jim Foster
President

Attachments: Figures
Tables
Laboratory Report and Chain-of-Custody Documents

Cc. Jennifer Deal – Hilcorp Energy Company

Figures

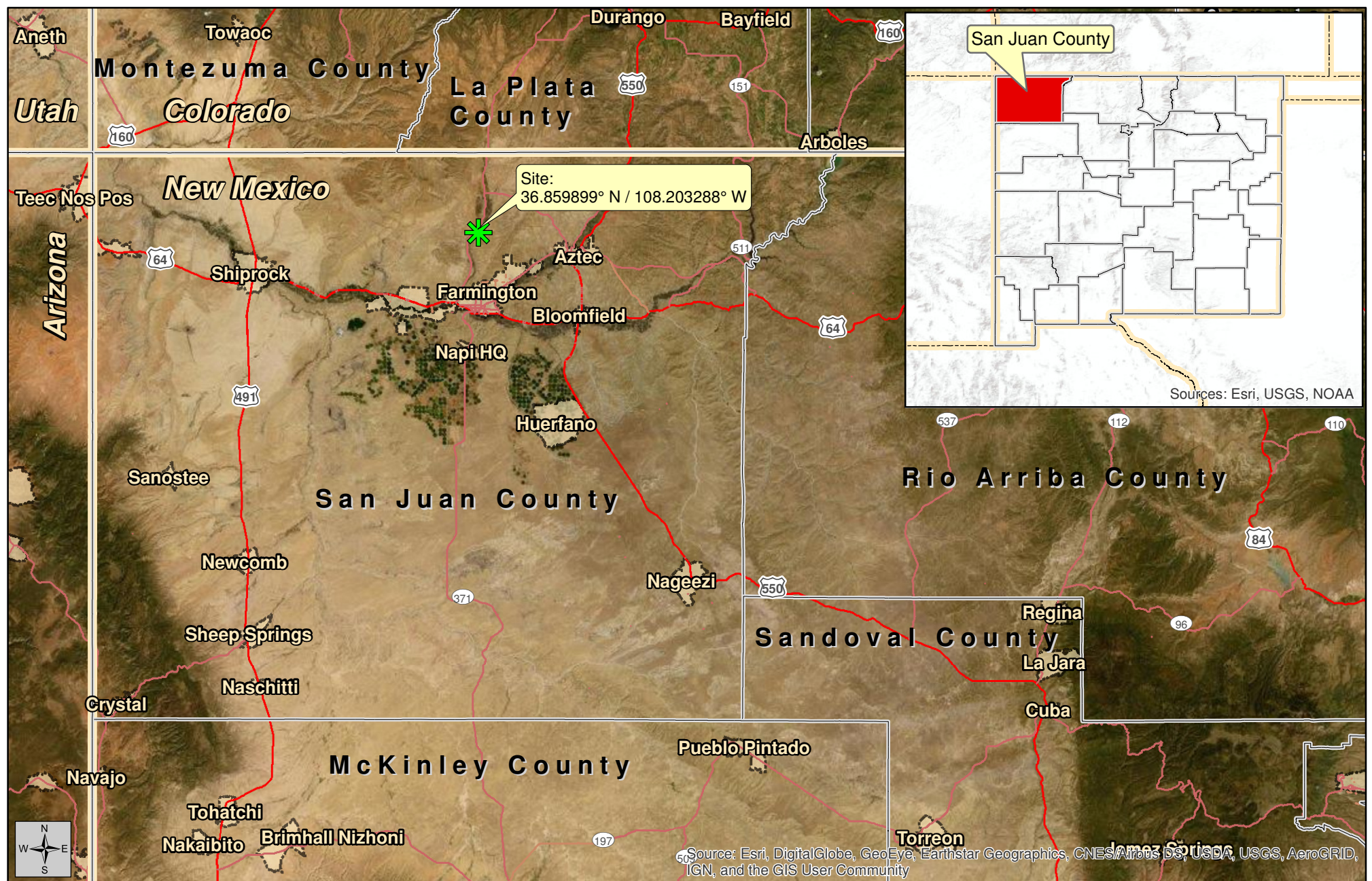


Figure 1
Site Location Map

Status Report - 1st Quarter 2020 (AP-0138)


February 7, 2020



Created By:
Kevin Cole
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

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

 Site

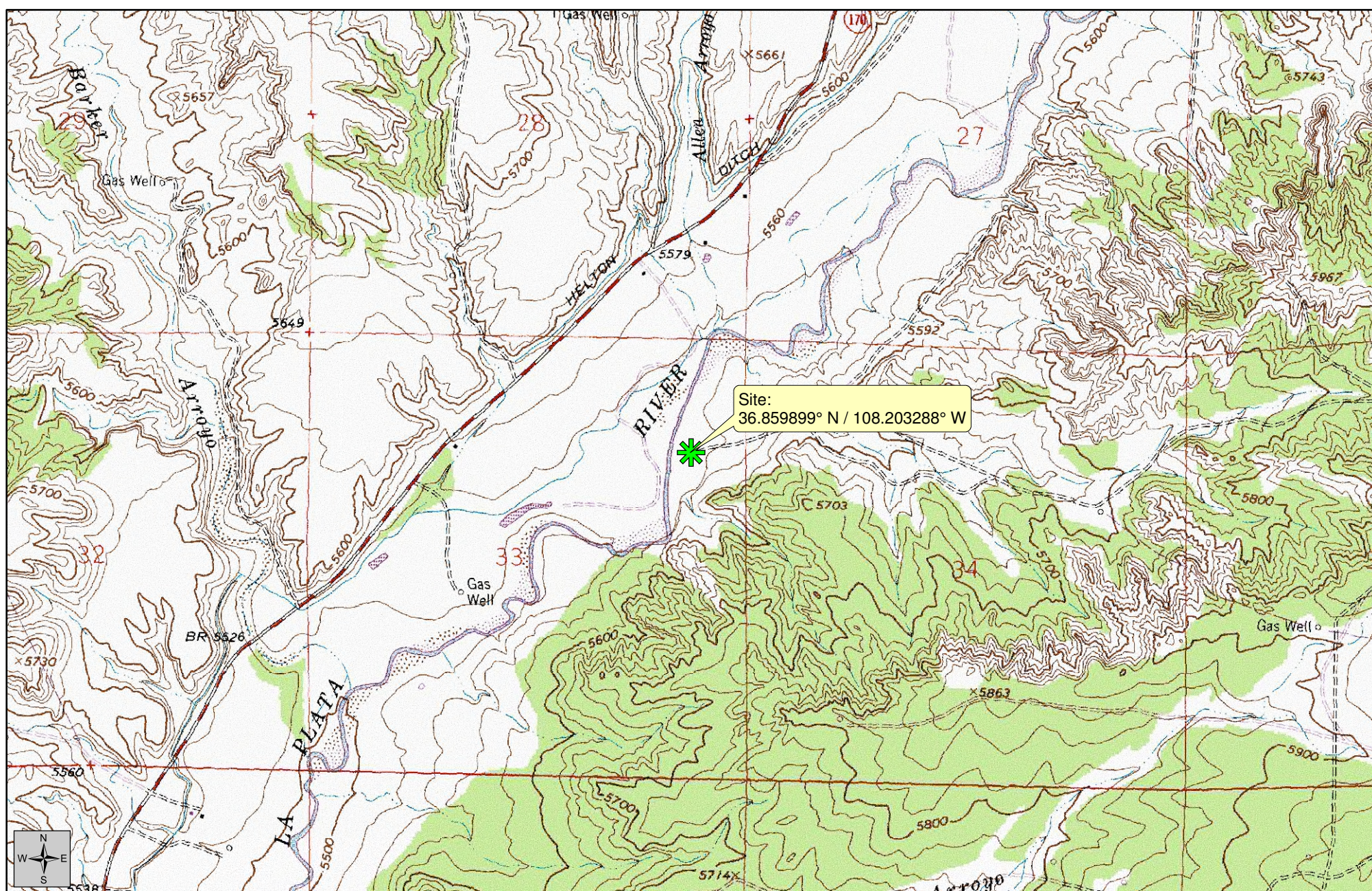


Figure 2
Topographic Map

Status Report - 1st Quarter 2020 (AP-0138)


February 7, 2020



Created By:
Kevin Cole
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: USGS
Quad: Farmington North
Vector Source: TE

 Site

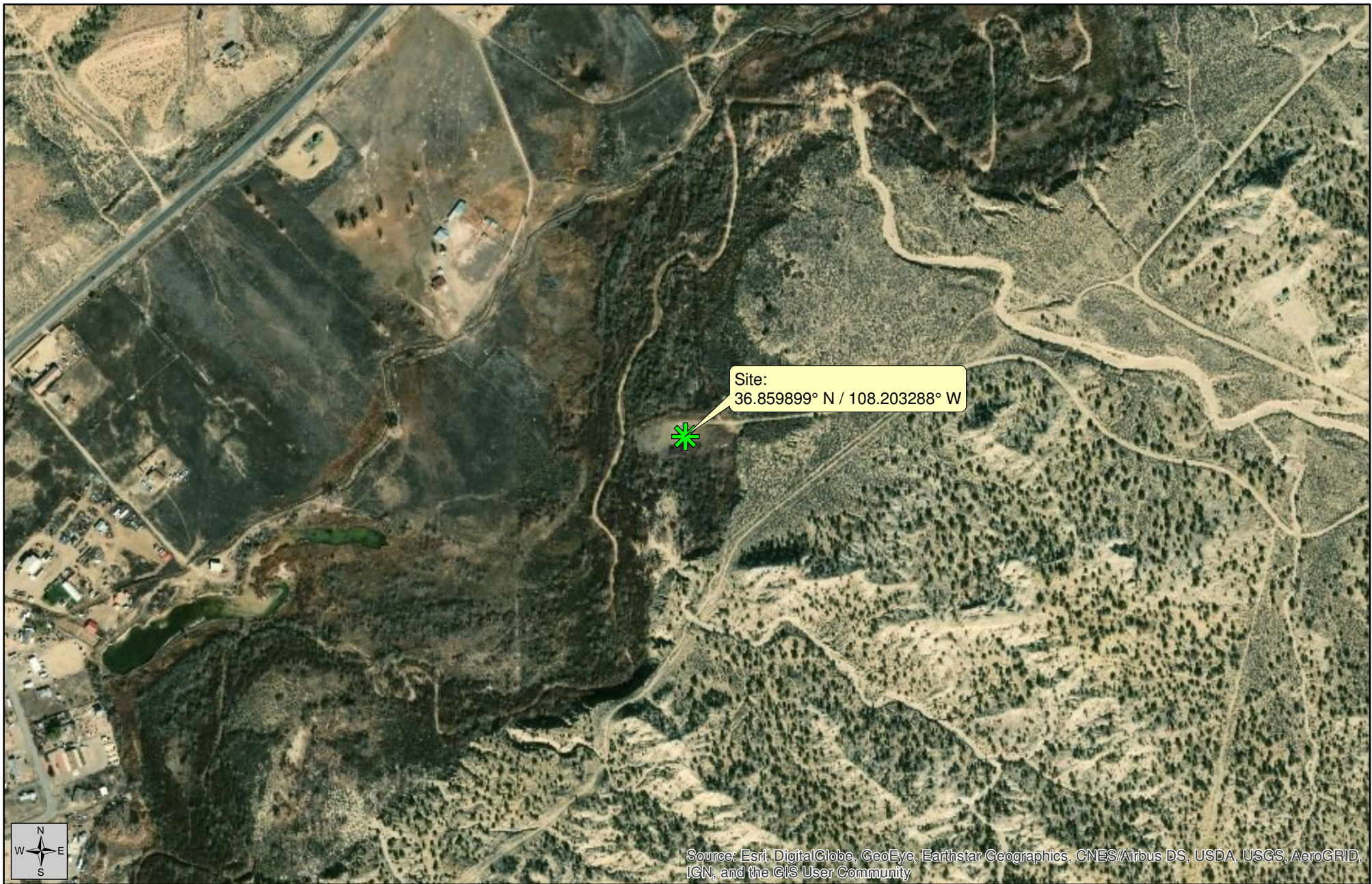


Figure 3
Aerial Map

Status Report - 1st Quarter 2020 (AP-0138)


February 7, 2020



Created By:
Kevin Cole
TE Project No.: HEC-180061

1:8,000
0 1,000 2,000 3,000 4,000 Feet
Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

 **Site**

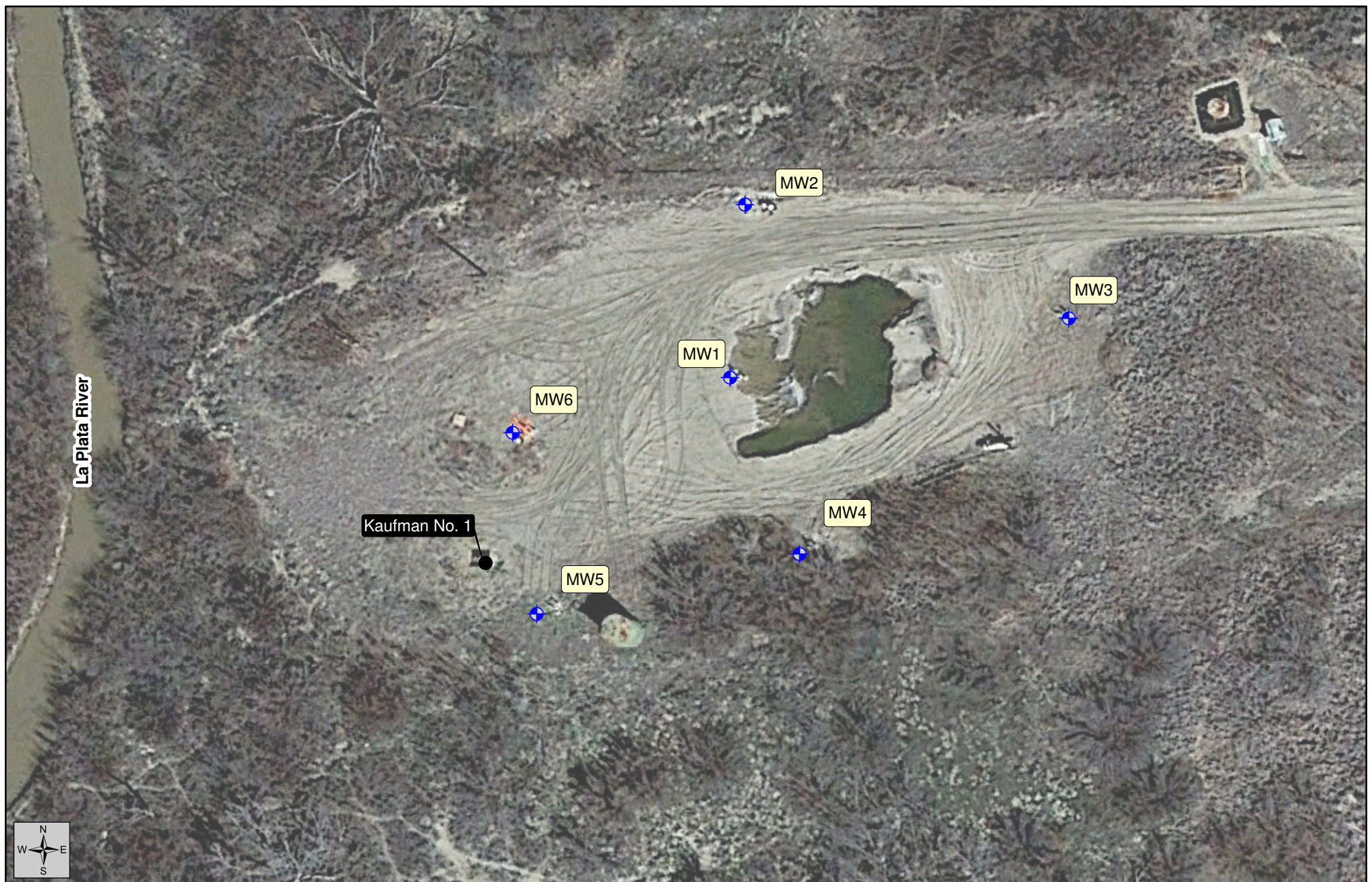


Figure 4
Monitor Well Location Map

Status Report - 1st Quarter 2020 (AP-0138)

February 7, 2020



Created By:
Kevin Cole
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: Google Earth
Vector Source: TE

- ◆ Monitor Well
- Kaufman No. 1 Well Head

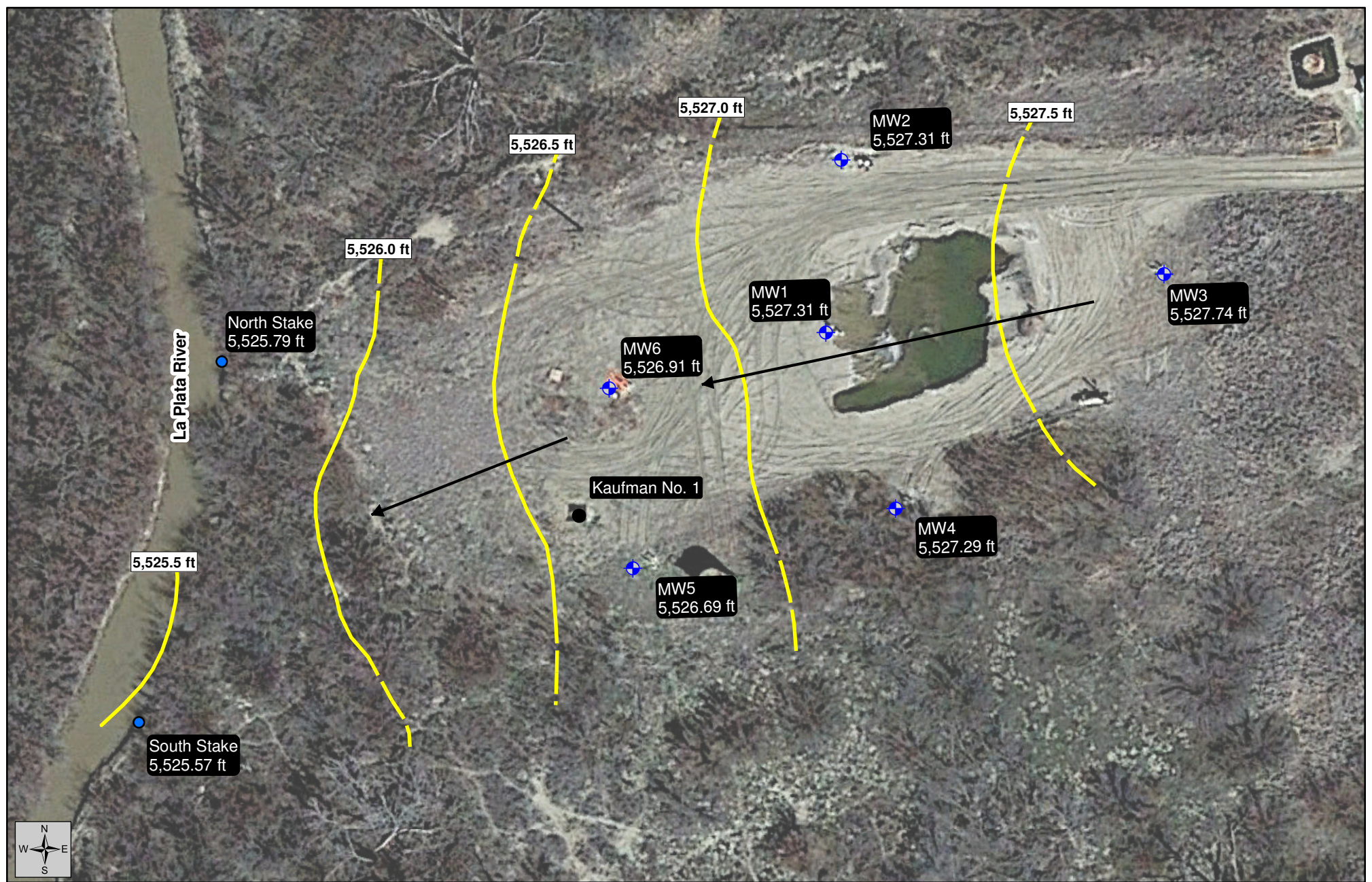


Figure 5
Potentiometric Surface
Elevation Map

Status Report - 1st Quarter 2020 (AP-0138)

Gauging Date:
January 16, 2020



Created By:
Chris Perez
February 7, 2020
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: Google Earth
Vector Source: TE

- Monitor Well
- Surveyed Stake
- Kaufman No. 1 Well Head
- Groundwater Gradient
- Direction of Flow

Sample ID	Date	Volatile Organic Compounds (mg/L)			
		B	T	E	X
MW1	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW2	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW3	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW4	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW5	01/16/20	0.0012	< 0.001	< 0.001	< 0.002
MW6	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
Regulatory Criteria		0.01	0.75	0.75	0.62



Figure 6
BTEX Results - 1Q20

Status Report - 1st Quarter 2020 (AP-0138)

Sample Date:
January 16, 2020



Created By:
Chris Perez
March 4, 2020
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: Google Earth
Vector Source: TE

Monitor Well



Figure 7
Proposed Monitor Well
Location Map

Status Report - 1st Quarter 2020 (AP-0138)

February 7, 2020



Created By:
Kevin Cole
TE Project No.: HEC-180061

Kaufman No. 1 Release (SE1/4 NE1/4, Sec. 33, T31N, R13W)
Hilcorp Energy Company
San Juan County, New Mexico

Datum: NAD83
Imagery Source: Google Earth
Vector Source: TE

- ◆ Monitor Well
- ◆ Proposed Monitor Well
- Kaufman No. 1 Well Head

Attached Tables

**Table A-1. Groundwater Gauging Data
Status Report - 1st Quarter 2020
Kaufman No. 1 Release
San Juan County, New Mexico**

Well ID	TOC (ft ^A)	Date	DTW (ft,btoc ^B)	PSE (ft ^A)	PSH (ft ^C)
MW1	5,529.97	01/16/20	2.66	5,527.31	--
MW2	5,530.64	01/16/20	3.33	5,527.31	--
MW3	5,531.28	01/16/20	3.54	5,527.74	--
MW4	5,531.78	01/16/20	4.49	5,527.29	--
MW5	5,530.79	01/16/20	4.10	5,526.69	--
MW6	5,530.56	01/16/20	3.65	5,526.91	--
North Stake	5,529.98	01/16/20	4.19	5,525.79	--
South Stake	5,529.38	01/16/20	3.81	5,525.57	--

TOC - top of casing

DTW - depth to water

PSE - potentiometric surface elevation

PSH - phase separated hydrocarbons

* - Volume of PSH was unmeasurable

^A ft - feet, referenced to mean sea level

^B ft, btoc - feet below top of casing

^C ft - thickness of PSH was unmeasurable

-- - PSH not detected

**Table A-2. Groundwater Stabilization Parameters
Status Report - 1st Quarter 2020
Kaufman No. 1 Release
San Juan County, New Mexico**

Well ID	Date	Time	Amount Purged (gallons)	Depth to Water (ft bgs)	Temperature (°C)	Dissolved Oxygen (mg/L)	Electric Conductivity (mS/cm)	pH ¹	Oxidation Reduction Potential (mV)
MW1	01/16/20	1210	4	2.82	11.8	0.29	2.90	7.88	-203.6
		1212	5	2.82	11.9	0.27	2.91	7.84	-207.4
		1214	6	2.81	11.9	0.27	2.92	7.81	-212.9
MW2	01/16/20	913	8	4.13	6.3	0.10	2.63	9.54	-202.5
		916	9	4.11	6.3	0.08	2.63	9.56	-205.2
		918	10	4.09	6.3	0.08	2.63	9.57	-206.6
MW3	01/16/20	945	5	3.76	10.9	0.10	2.76	8.18	-146.6
		947	6	3.75	11.0	0.10	2.78	8.16	-150.3
		949	7	3.75	10.9	0.10	2.77	8.13	-155.1
MW4	01/16/20	1017	7	4.89	9.7	0.13	2.81	8.57	-170.9
		1018	8	4.88	9.7	0.13	2.81	8.60	-174.5
		1019	9	4.88	9.7	0.12	2.81	8.60	-177.3
MW5	01/16/20	1130	4	4.85	7.5	0.07	3.00	8.82	-280.3
		1132	5	4.87	7.5	0.08	3.00	8.63	-283.5
		1134	6	4.93	7.4	0.08	2.99	8.69	-287.1
MW6	01/16/20	1053	8	5.41	6.9	0.05	2.70	9.94	-319.3
		1055	9	5.42	6.9	0.05	2.70	9.94	-322.2
		1057	10	5.43	6.9	0.05	2.71	9.97	-326.0

* - 10 gallons were purged prior to low flow to develop the monitor wells

ft bgs - feet below ground surface

°C - degrees celsius

mg/L - milligrams per liter

mS/cm - millisiemens per centimeter

mV - millivolts

¹ - Not recorded. pH probe error

**Table A-3 Cumulative Groundwater Analytical Data
Status Report - 1st Quarter 2020
Kaufman No. 1 Release
San Juan County, New Mexico**

Sample ID	Date	Volatile Organic Compounds (mg/L)			
		B	T	E	X
MW1	01/18/19	0.074	0.35	0.027	0.33
	10/09/19	< 0.001	< 0.001	< 0.001	< 0.001
	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW2	01/17/19	< 0.001	< 0.001	< 0.001	< 0.0015
	10/09/19	< 0.001	< 0.001	< 0.001	< 0.001
	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW3	01/17/19	< 0.001	< 0.001	< 0.001	< 0.0015
	10/09/19	< 0.001	< 0.001	< 0.001	< 0.001
	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW4	01/17/19	< 0.001	< 0.001	< 0.001	< 0.0015
	10/09/19	< 0.001	< 0.001	< 0.001	< 0.001
	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
MW5	01/17/19	< 0.001	< 0.001	< 0.001	< 0.0015
	10/09/19	0.0041	< 0.001	< 0.001	< 0.001
	01/16/20	0.0012	< 0.001	< 0.001	< 0.002
MW6	01/18/19	< 0.001	< 0.001	< 0.001	< 0.0015
	10/09/19	< 0.001	< 0.001	< 0.001	< 0.001
	01/16/20	< 0.001	< 0.001	< 0.001	< 0.002
Regulatory Criteria		0.01	0.75	0.75	0.62

BTEX - benzene, toluene, ethylbenzene, and xylenes

mg/L - milligrams per liter

Laboratory Results and Chain-of-Custody Documents



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

January 24, 2020

Jim Foster

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

RE: Kaufman NO 1

OrderNo.: 2001688

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 8 sample(s) on 1/17/2020 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order: 2001688

Date Reported: 1/24/2020

CLIENT: Timberwolf Environmental

Lab Order: 2001688

Project: Kaufman NO 1

Lab ID: 2001688-001

Collection Date: 1/16/2020 12:15:00 PM

Client Sample ID: MW1

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	1/23/2020 2:18:32 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 2:18:32 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 2:18:32 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 2:18:32 PM	B66017
Surr: 4-Bromofluorobenzene	99.4	80-120		%Rec	1	1/23/2020 2:18:32 PM	B66017

Lab ID: 2001688-002

Collection Date: 1/16/2020 9:19:00 AM

Client Sample ID: MW2

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	1/23/2020 3:05:19 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 3:05:19 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 3:05:19 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 3:05:19 PM	B66017
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	1/23/2020 3:05:19 PM	B66017

Lab ID: 2001688-003

Collection Date: 1/16/2020 9:52:00 AM

Client Sample ID: MW3

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	1/23/2020 3:28:36 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 3:28:36 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 3:28:36 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 3:28:36 PM	B66017
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	1/23/2020 3:28:36 PM	B66017

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Analytical Report

Lab Order: 2001688

Date Reported: 1/24/2020

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Timberwolf Environmental**Lab Order:** 2001688**Project:** Kaufman NO 1**Lab ID:** 2001688-004**Collection Date:** 1/16/2020 10:21:00 AM**Client Sample ID:** MW4**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	1/23/2020 3:52:02 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 3:52:02 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 3:52:02 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 3:52:02 PM	B66017
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	1/23/2020 3:52:02 PM	B66017

Lab ID: 2001688-005**Collection Date:** 1/16/2020 11:37:00 AM**Client Sample ID:** MW5**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	1.2	1.0		µg/L	1	1/23/2020 4:15:32 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 4:15:32 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 4:15:32 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 4:15:32 PM	B66017
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/23/2020 4:15:32 PM	B66017

Lab ID: 2001688-006**Collection Date:** 1/16/2020 10:58:00 AM**Client Sample ID:** MW6**Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	1/23/2020 4:39:01 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 4:39:01 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 4:39:01 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 4:39:01 PM	B66017
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	1/23/2020 4:39:01 PM	B66017

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

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order: 2001688

Date Reported: 1/24/2020

CLIENT: Timberwolf Environmental

Lab Order: 2001688

Project: Kaufman NO 1

Lab ID: 2001688-007

Collection Date: 1/16/2020 11:39:00 AM

Client Sample ID: DUP

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	1.6	1.0		µg/L	1	1/23/2020 5:02:32 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 5:02:32 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 5:02:32 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 5:02:32 PM	B66017
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	1/23/2020 5:02:32 PM	B66017

Lab ID: 2001688-008

Collection Date:

Client Sample ID: Trip Blank

Matrix: TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	1/23/2020 5:25:56 PM	B66017
Benzene	ND	1.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
Toluene	ND	1.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
Ethylbenzene	ND	1.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
Xylenes, Total	ND	2.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/23/2020 5:25:56 PM	B66017
Surr: 4-Bromofluorobenzene	96.5	80-120		%Rec	1	1/23/2020 5:25:56 PM	B66017

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2001688

24-Jan-20

Client: Timberwolf Environmental

Project: Kaufman NO 1

Sample ID: mb-1	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBW	Batch ID: B66017	RunNo: 66017								
Prep Date:	Analysis Date: 1/23/2020	SeqNo: 2267714	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 4-Bromofluorobenzene	23		20.00		116	80	120			

Sample ID: 100ng btex lcs	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSW	Batch ID: B66017	RunNo: 66017								
Prep Date:	Analysis Date: 1/23/2020	SeqNo: 2267715	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	19	2.5	20.00	0	95.6	80	119			
Benzene	20	1.0	20.00	0	101	80	120			
Toluene	20	1.0	20.00	0	100	80	120			
Ethylbenzene	20	1.0	20.00	0	99.7	80	120			
Xylenes, Total	60	2.0	60.00	0	101	80	119			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.1	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.0	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		104	80	120			

Sample ID: 100ng btex lcsd	SampType: LCSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS02	Batch ID: B66017	RunNo: 66017								
Prep Date:	Analysis Date: 1/23/2020	SeqNo: 2267716	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	18	2.5	20.00	0	89.0	80	119	7.11	20	
Benzene	20	1.0	20.00	0	100	80	120	0.608	20	
Toluene	20	1.0	20.00	0	98.9	80	120	1.08	20	
Ethylbenzene	20	1.0	20.00	0	98.4	80	120	1.25	20	
Xylenes, Total	60	2.0	60.00	0	99.2	80	119	1.59	20	
1,2,4-Trimethylbenzene	19	1.0	20.00	0	95.7	80	120	3.51	20	
1,3,5-Trimethylbenzene	19	1.0	20.00	0	94.7	80	120	3.38	20	
Surr: 4-Bromofluorobenzene	19		20.00		94.3	80	120	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Sample Log-In Check List

Client Name: **TIMBERWOLF ENVIRON**

Work Order Number: **2001688**

RcptNo: 1

Received By: **Desiree Dominguez**

1/17/2020 9:30:00 AM

Completed By: **Isaiah Ortiz**

1/17/2020 11:05:05 AM

Reviewed By: **ENM**

1/17/20

ID2
I-0X

Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐

9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☒ No ☐ NA ☐

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: **JR 1/17/20**

Special Handling (if applicable)

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

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

1 VOA for samples 004A Broken. JR 1/17/20

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.0	Good	Not Present			

www.hallenvironmental.com

Tel. 505-345-3975 Fax 505-345-4107

[illegible]

if necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.