VIA ELECTRONIC MAIL

March 17, 2021

Ms. Cory Smith
Environmental Specialist
NMOCD
1000 Rio Brazos Road
Aztec, New Mexico 87410

Subject: **2020 Annual Groundwater Report**
Sullivan Gas Com D#1E
3RP-1035
San Juan County, New Mexico

Dear Mr. Smith:

WSP USA Inc. (WSP) presents this annual report on behalf of Hilcorp Energy Company (Hilcorp) to the New Mexico Oil Conservation Division (NMOCD) to document groundwater monitoring activities conducted at the Sullivan Gas Com D#1E natural gas production well during 2020. Historical impact to soil and groundwater was identified by the former operator, XTO Energy, Inc. (XTO), during replacement of a fiberglass pipeline between the separator and production tanks. Hilcorp acquired the production well in August 2017 from XTO, which previously acquired the well from Amoco Production Company (Amoco) in January 1998. This is a gas producing well in the Dakota Sandstone Formation and is currently active.

The site is located in Unit F of Section 26 within Township 29 North and Range 11 West in San Juan County, New Mexico. The Hammond Ditch is located approximately 300 feet south and upgradient of the location, while the San Juan River is located approximately 1,100 feet north and downgradient of the site. A topographic map is depicted on Figure 1. Currently, there are 14 monitoring wells on site which are monitored quarterly. A limited soil vapor extraction (SVE) system operated from April 2016 until August 2018 to remediate source soils. Product recovery is ongoing and details of 2020 activities are provided in the subsequent sections of this report.

HISTORY

Historical records indicate the natural gas well was drilled and completed in March 1980 by Amoco, which operated the well until the change of operator to XTO occurred in 1998. During facility upgrades in June of 2015, XTO encountered suspected petroleum hydrocarbon impacted soil while replacing a fiberglass pipeline between the separator and production tanks. The analytical results for a grab sample exceeded the remediation action levels defined in the 1993 New Mexico Oil Conservation Division (NMOCD) *Guidelines for Remediation of Leaks, Spills and Releases* and an initial Form C-141 was submitted (Enclosure A).

Following the identification of the impacted soil, further site investigation was completed via hand auger and direct-push soil borings. A total of 14 hand auger borings and nine direct-push soil borings were used to delineate and characterize petroleum hydrocarbon impacts to soil and groundwater (Figure 2). A copy of a summary report of the results and an initial remediation work plan were submitted to the NMOCD in September 2015 (Enclosure B).

In October 2015, XTO conducted additional site characterization to asses impacts to groundwater and monitor groundwater quality (Figure 3). During this investigation six monitoring wells (MW01 through MW06) and one product recovery well (PR-1) were installed. Of the seven wells installed, product recovery well PR-1 and monitoring wells MW-1, MW-2, MW-5, and MW-6 contained phase-separated hydrocarbons (PSH) on the groundwater table. Monitoring wells MW-3 and MW-4 did not contain measurable PSH but dissolved-phase hydrocarbon impacts were identified in the groundwater through laboratory analysis of groundwater samples. XTO

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began PSH recovery from the petroleum hydrocarbon impacted groundwater using both active and passive recovery via vacuum truck and oil-absorbent socks. A total volume of approximately 28 barrels (bbl) of petroleum hydrocarbon impacted groundwater and PSH were recovered through November 2015. Additionally, to investigate viability, XTO conducted dual-phase extraction of groundwater and tested the applicability of limited SVE tests. The purpose of these activities was to investigate the efficacy of an SVE system as a means of *in-situ* remediation by promoting volatilization of petroleum hydrocarbon constituents adsorbed onto soil particles in the vadose zone. Following the additional delineation and remediation recommendations, XTO submitted an updated *Remediation Work Plan* and Form C-141 in November 2015 (Enclosure C), which was approved by the NMOCD.

In April 2016, based on the site lithology, successful dual-phase extraction, and initial SVE testing, XTO installed a limited SVE system to target the source area using existing monitoring wells MW-01, MW-02, MW-05, and MW-06 and product recovery well PR-1. The system was powered by an electric single-phase, 3-horsepower regenerative blower capable of approximately 100 cubic feet per minute (CFM) of flow and an applied vacuum of 50 inches of water column (IWC). The expected area of influence on each SVE well was estimated to be approximately 40 feet. Figure 3 depicts the system layout and approximate area of influence. A PSH recovery tank was installed on the system to capture liquids that accumulated while extracting soil vapors. Based on the volumes and concentrations of the initial air samples in April 2016, XTO filed a Notice of Intent with the New Mexico Environment Department – Air Quality Bureau in anticipation of potential emissions exceeding 10 tons per year of regulated contaminants.

Following installation of the limited SVE system in April 2016, XTO conducted regular operations and maintenance (O&M) and monitored depth to groundwater and PSH thickness (if any) in the monitoring wells. Monitoring wells that contained PSH were manually bailed to recover PSH. XTO continued to conduct quarterly sampling of the monitoring wells that did not contain PSH. A vapor sample was collected in January 2018 and July 2018 for monitoring emissions and observing the decline of petroleum hydrocarbon impacts adsorbed in the subsurface.

Upon receipt of a letter from the NMOCD in June 2017 requesting additional delineation and remediation activities, XTO submitted a Continued Remediation Plan in August 2017 (Enclosure D). This plan proposed continued SVE system operations, semi-annual groundwater monitoring events, and additional delineation of existing petroleum hydrocarbon impacts to groundwater.

In October 2017, XTO conducted an additional site investigation with a hollow-stem auger to further delineate petroleum hydrocarbon impacts to soil and groundwater. Six additional monitoring wells (MW07 through MW12) and one potential product/total fluids recovery well (PR-2) were installed to monitor petroleum hydrocarbon impacts to groundwater. The results of the October 2017 investigation were documented in the *2017 Annual Groundwater Report* and submitted to the NMOCD in March of 2018. Soil analytical results are also included in Figure 2.

On September 5, 2018, the SVE system was shut down due to failure of the blower motor, and the SVE system has not been restarted; however, Hilcorp is investigating replacement options. Hilcorp has installed a product skimmer in well MW-5 that is rotated between wells PR-1, MW-8, and MW-12 to address remaining PSH on the groundwater table.

During 2020, Hilcorp conducted groundwater elevation monitoring, sampling, and PSH recovery via manual bailing and a pneumatic product skimmer.

METHODOLOGY

The following methods were used to monitor and sample groundwater at the site during 2020.

WATER LEVEL MEASUMENTS

Groundwater elevations were measured in March, June, September, and December 2020 from the monitoring wells and the product recovery wells. Static groundwater level monitoring included recording depth to groundwater and total depth of each monitoring well using a Keck® oil/water interface probe. Presence of PSH was investigated using the interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement to prevent cross contamination.

GROUNDWATER SAMPLING

Groundwater samples were collected and submitted for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) in March, June, September, and December 2020 from monitoring wells that did not contain PSH and had sufficient water to sample. Groundwater samples were submitted under strict chain-of-custody (COC) protocol to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico, for analysis of BTEX by United States Environmental Protection Agency (EPA) Method 8021B. Due to an overall increase in sediment within the water and a reduction of available water within the monitoring wells, WSP collected groundwater samples during the March, June, September, and December sampling events using PVC disposal bailers. During these events, WSP purged a minimum of three casing volumes, or until the wells were bailed dry, prior to collecting groundwater samples. WSP used an Oakton® multi-probe water quality field meter to record pH, EC, and temperature of the groundwater during the purging process to monitor for stabilization.

Laboratory reports from the 2020 sampling events are included as Enclosure E, and the 2020 sample collection forms are included as Enclosure F.

GROUNDWATER CONTOUR MAPS

Groundwater elevations and PSH thickness measured in monitoring wells and product recovery wells during the quarterly 2020 monitoring events were used to draft groundwater potentiometric surface maps with isopach representations of product thickness (Figures 4 through Figure 7). Contours were inferred based on groundwater elevations, product thickness, and observations of physical characteristics at the site (topography, proximity to irrigation ditches and significant water courses, etc.).

FLUID RECOVERY

On January 24, 2019, Hilcorp installed a pneumatic product skimmer in MW-05 in order to recover PSH from the groundwater table. The product skimmer was moved to MW-8 on April 3, 2020. Product recovery socks were also installed in monitoring wells MW-05 and MW-12 in April of 2020 to increase product recovery. The product recovery socks were replaced quarterly in 2020. PSH was also manually bailed from wells in 2020 using a PVC bailer during each quarter of 2020.

RESULTS

The following section describe the results from groundwater sampling and product recovery efforts in 2020.

GROUNDWATER MONITORING

Groundwater elevations measured during site monitoring events in 2020 indicated a general northwest-west trending gradient toward the San Juan River, but product recovery and well screen setting cause variations in the overall groundwater gradient at the site. Figures 4 through Figure 7 depict groundwater elevations, groundwater analytical results, and PSH thickness for the 2020 monitoring events. A summary of measured depths to groundwater and PSH thickness is summarized in Table 1. Figure 8 shows the wells in cross-section lines A to A’ and B to B’ and Figures 9 and 10 provide subsurface cross-sections across the site.

During the March sampling event, monitoring wells MW-01 and MW-04 were not sampled due to insufficient groundwater in the wells. Laboratory analytical results from the March groundwater sampling event indicated BTEX concentrations exceeded the New Mexico Water Quality Control Commission (NMWQCC) standards for groundwater sampled from product recovery wells PR-1 and monitoring wells MW-02, MW-05 and MW-06 for at least one BTEX constituent. Monitoring wells MW-03, MW-07, MW-09, MW-10, and MW-11 were compliant with NMWQCC standards.

During the June sampling event, monitoring wells MW-01, MW-02, MW-03 and MW-04 were not sampled due to insufficient groundwater in the wells. Laboratory analytical results from the June groundwater sampling event indicated BTEX concentrations exceeded the NMWQCC standards for groundwater sampled from monitoring well

MW-06 for BTEX. Monitoring wells MW-07, MW-09, MW-10, and MW-11 were all in compliance with NMWQCC standards.

During the September monitoring event, product recovery wells PR-1 and PR-2 and monitoring wells MW-01, MW-02 and MW-04 were not sampled due to insufficient groundwater in the wells. Laboratory analytical results from the September groundwater sampling indicated BTEX concentrations exceeded the NMWQCC standards for BTEX for groundwater sampled from monitoring well MW-06. Monitoring wells MW-07, MW-09, MW-10, and MW-11 were compliant with NMWQCC standards.

During the December sampling event monitoring well MW-02 was dry and not sampled. Monitoring wells MW-01 and MW-04 were not sampled due to insufficient groundwater in the well. Laboratory analytical results from the December groundwater sampling indicated concentrations exceeded the NMWQCC standards for groundwater sampled from monitoring well MW-06 for all BTEX constituents. Monitoring wells MW-03, MW-07, MW-09, MW-10, and MW-11 were compliant with NMWQCC standards.

A summary of the groundwater analytical results is presented in Table 2**.** Complete laboratory analytical reports are included as Enclosure E.

PRODUCT THICKNESS AND RECOVERY

The 2020 monitoring events indicated monitoring wells MW-08 and MW-12 contained PSH during each quarterly monitoring event and, therefore, were not sampled. Monitoring well MW-05 contained PSH during the June, September, and December monitoring events. Product Recovery Well PR-2 contained PSH during the March, June and December monitoring event. Product recovery well PR-1 contained PSH during the June and December sampling events. Monitoring well MW-03 contained PSH during the September sampling event.

PSH thickness generally increased in between March 2020 to June 2020 except for PR-2 decreasing slightly. Between the June 2020 and September 2020 monitoring event PR-1 and PR-2 showed a decrease in PSH thickness while MW-03, MW-05, MW-08, and MW-12 all showed increased thickness of PSH. The December 2020 monitoring event showed decreased product thickness in MW-03, MW-05, MW-08, and MW-12 as compared to the September 2020 monitoring event while PR-1 and PR-2 should slight increases in PSH occurrence.

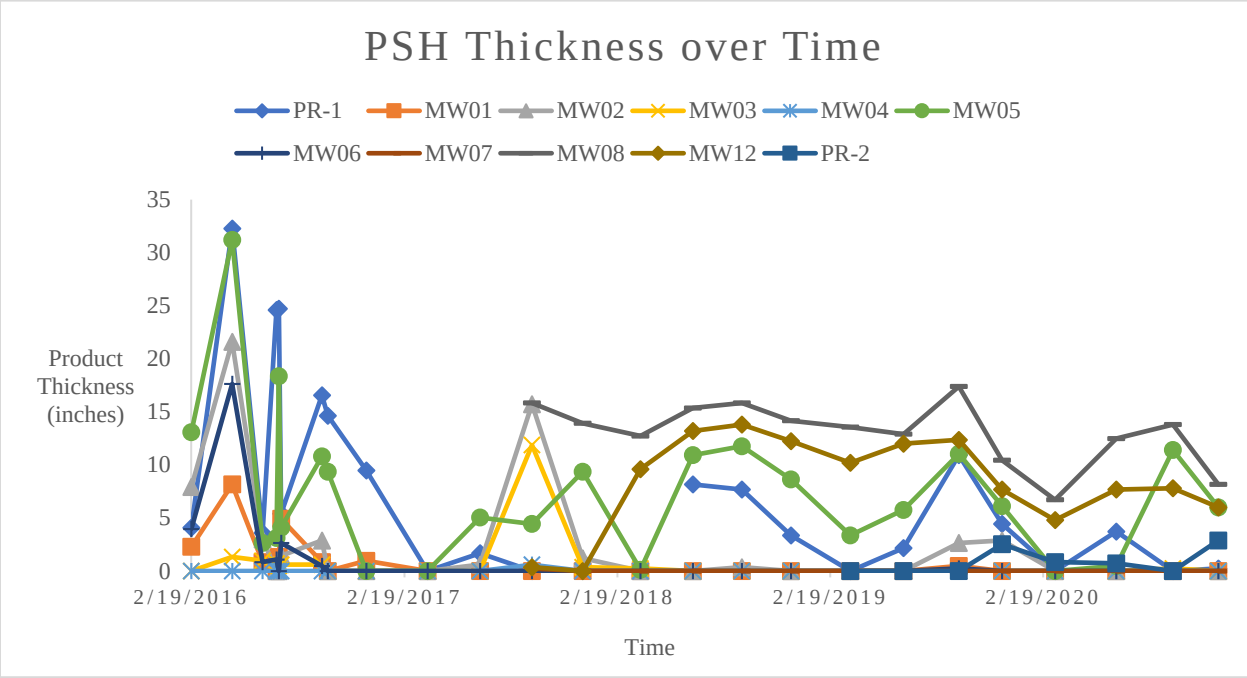
Monitoring wells MW-01, MW-02, MW-04, MW-06, MW-07, MW-09, MW-10, and MW-11 contained no detectable PSH during 2020 monitoring events.

As of August 2018, when the SVE system shut down, a total of 8,110 gallons of impacted groundwater had been recovered from the limited SVE system and via manual removal, of which approximately 1,880 gallons was PSH.

The below table summarizes PSH recovery efforts at the Site since the beginning of 2019. As of December 2020, manual removal activities along with the product skimmer have recovered a total of 1,986 gallons of PSH since product recovery records have been kept.

Well	PSH recovery via product recovery sock (oz)	PSH recover via manual bailing (oz)	PSH recovery via product skimmer (gallons)	Total PSH recovery (gallons)
MW-05	26.35	18	50	50.35
MW-08	NA	228	20	21.78
MW-12	34.85	153	NA	1.47
PR-1	NA	11	NA	0.09
PR-2	NA	12.5	NA	0.10
MW-02	NA	3.25	NA	0.02
TOTAL	61.20	425.75	70	73.81

A graph of the monitoring wells with observed PSH thickness over time is depicted below and, although fluctuations are evident, product recovery efforts have resulted in overall reduction in PSH measured in the monitoring wells.



CONCLUSIONS

Groundwater flow direction and elevation fluctuations at the site appear to be in response to the seasonal volume variations in the groundwater table elevation. Groundwater elevations at MW-01 and MW-06 are considerably different from other wells at the site and the lithological logs indicate MW-01 and MW-06 reached a dry bedrock interval in the bottom few inches of each boring. It is possible that MW-01 and MW-06 are more strongly influenced by groundwater in surrounding bedrock and/or lower hydraulic conductivity for soil surrounding these wells result in a less rapid response to the groundwater elevation changes in MW-01 and MW-06 compared to that observed in the other wells on site. Monitoring wells MW-02, MW-03, and MW-04 were installed to a total depth of 23 feet below ground surface and exhibit different responses to groundwater elevation changes than the other wells due to the limited saturated interval in these monitoring wells. The shallow depths of MW-02, MW-03, and MW-04 have resulted in the absence of groundwater in these wells during different parts of the year and an inconsistent groundwater gradient at the site.

The observed PSH impacts appear to be in contact with the groundwater. Overall product thickness has decreased in monitoring wells installed during the 2017 delineation event. PSH levels in the wells installed prior to the 2017 delineation event (PR-01, MW-01, MW-02, MW-03, MW-04, MW-05) had shown a decrease in PSH while the SVE system was operational. PSH thickness seemed to rebound slightly during the first three quarters of 2019 due to the shut-down of the limited SVE system in October of 2018. The variations in product thickness tend to suggest isolated pockets of PSH were no longer being entrained by the influence of the SVE system. By the end of 2019, a significant decrease in PSH thickness suggested the groundwater and product thicknesses were equilibrating. During the September 2020 monitoring event, PSH thickness spiked in MW-05 after consistent decline in occurrence after the pneumatic product skimmer was installed. This is likely attributed to the product skimmer being removed from this well, allowing for more accumulation of PSH. Conversely, in 2020, PSH thickness in MW-08 consistently declined and reach all-time low levels as the product skimmer was moved to this well. Seasonal fluctuations in groundwater elevations continue to be a dominant factor affecting PSH thickness in 2020. When groundwater elevations are at their highest after the spring melt and fall monsoons, there appears to be a general increase in PSH thickness as groundwater contacts impacted soil in the overlying smear zone.

The groundwater analytical results and PSH measurements indicate that PSH is still in contact with groundwater. Laboratory analytical results indicate groundwater is impacted by BTEX concentrations, which exceed the

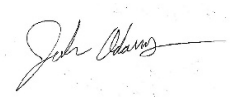
NMWQCC groundwater standards in product recovery well PR-1 and monitoring wells MW-02, MW-05 and MW-06 for at least one BTEX constituent. The full lateral extent of the impacts to groundwater is currently not fully delineated to the west near monitoring well MW-12.

RECOMMENDATIONS

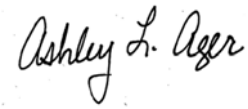
Based on the successful removal of PSH by SVE operation, WSP recommends the following:

- Continue PSH recovery via the product skimmer and manual bailing
- Rotate the skimmer to other wells containing measurable PSH throughout the year
- Continue quarterly fluid elevation measurements and groundwater sampling in all accessible monitoring wells and product recovery wells
- Review the results of the 2020 efforts and evaluate revisions to active remediation of groundwater.

Kind regards,



Josh Adams, PG
Geologist



Ashley Ager, PG
Managing Director

cc: Jenifer Deal

FIGURES

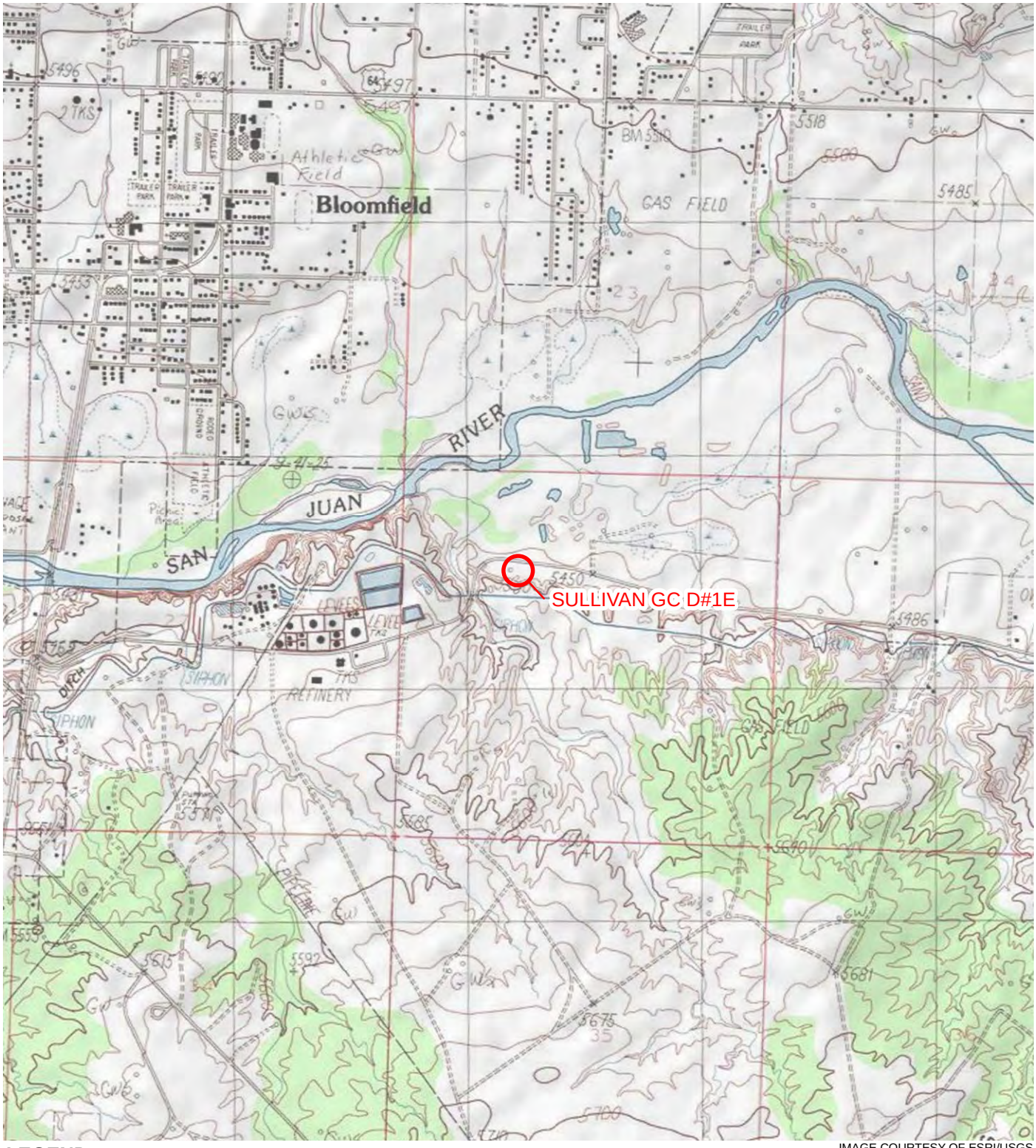


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO

HILCORP ENERGY COMPANY

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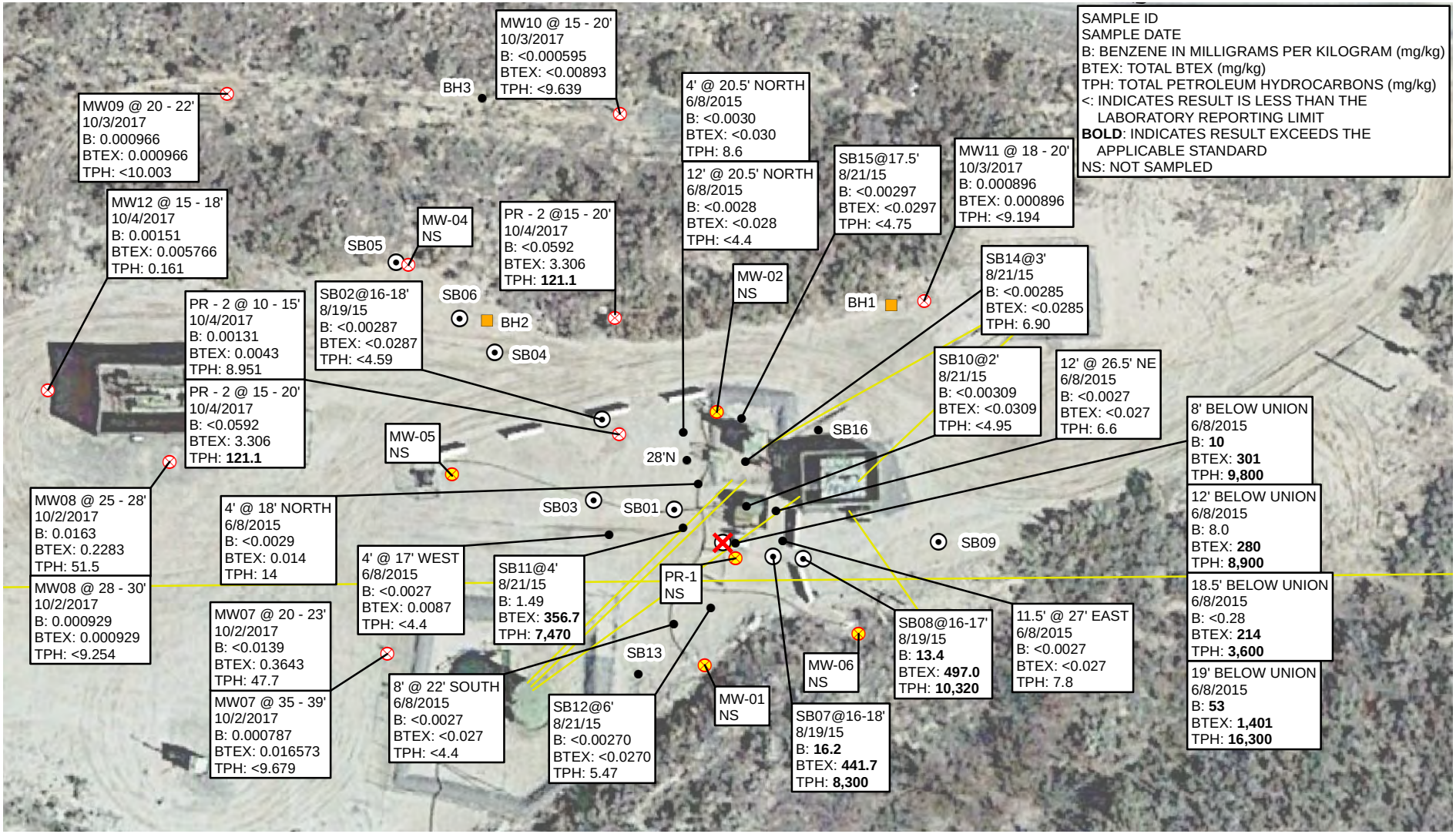

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SVE/MONITORING WELL
- SOIL BORING
- POTHOLE
- HAND AUGER BORING
- GAS LINE

IMAGE COURTESY OF ESRI

0 40 80
Feet

N

FIGURE 2
SOIL ANALYTICAL RESULTS
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

HILCORP ENERGY COMPANY

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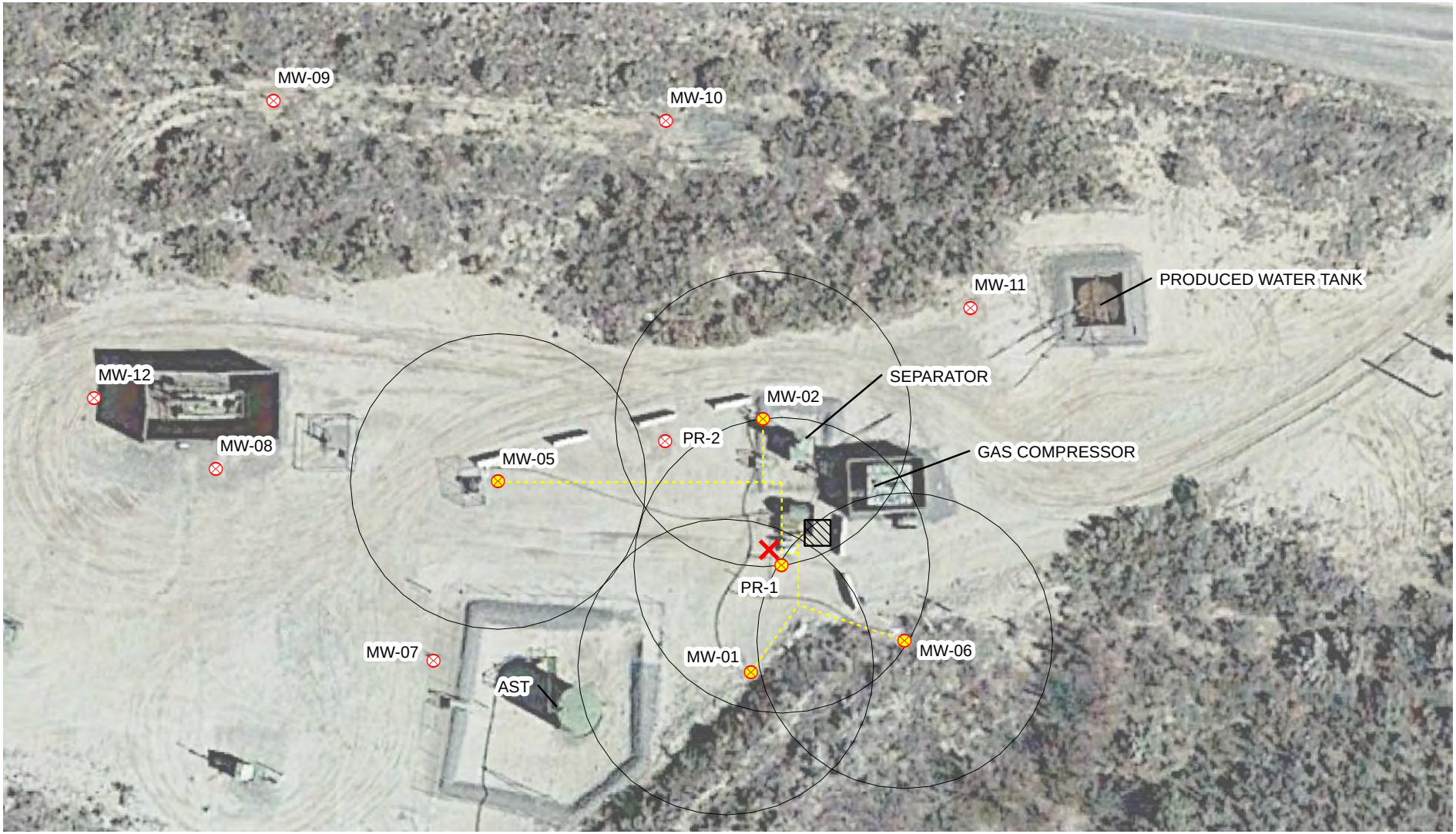

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SVE/MONITORING WELL
- SVE ABOVEGROUND PIPING
- 40-FOOT RADIUS OF INFLUENCE
- SVE SKID
- AST: ABOVEGROUND STORAGE TANK

SVE: SOIL VAPOR EXTRACTION

IMAGE COURTESY OF GOOGLE EARTH 2019

0 40 80

Feet

N

FIGURE 3
GROUNDWATER MONITORING WELLS
AND LIMITED SVE SYSTEM LAYOUT
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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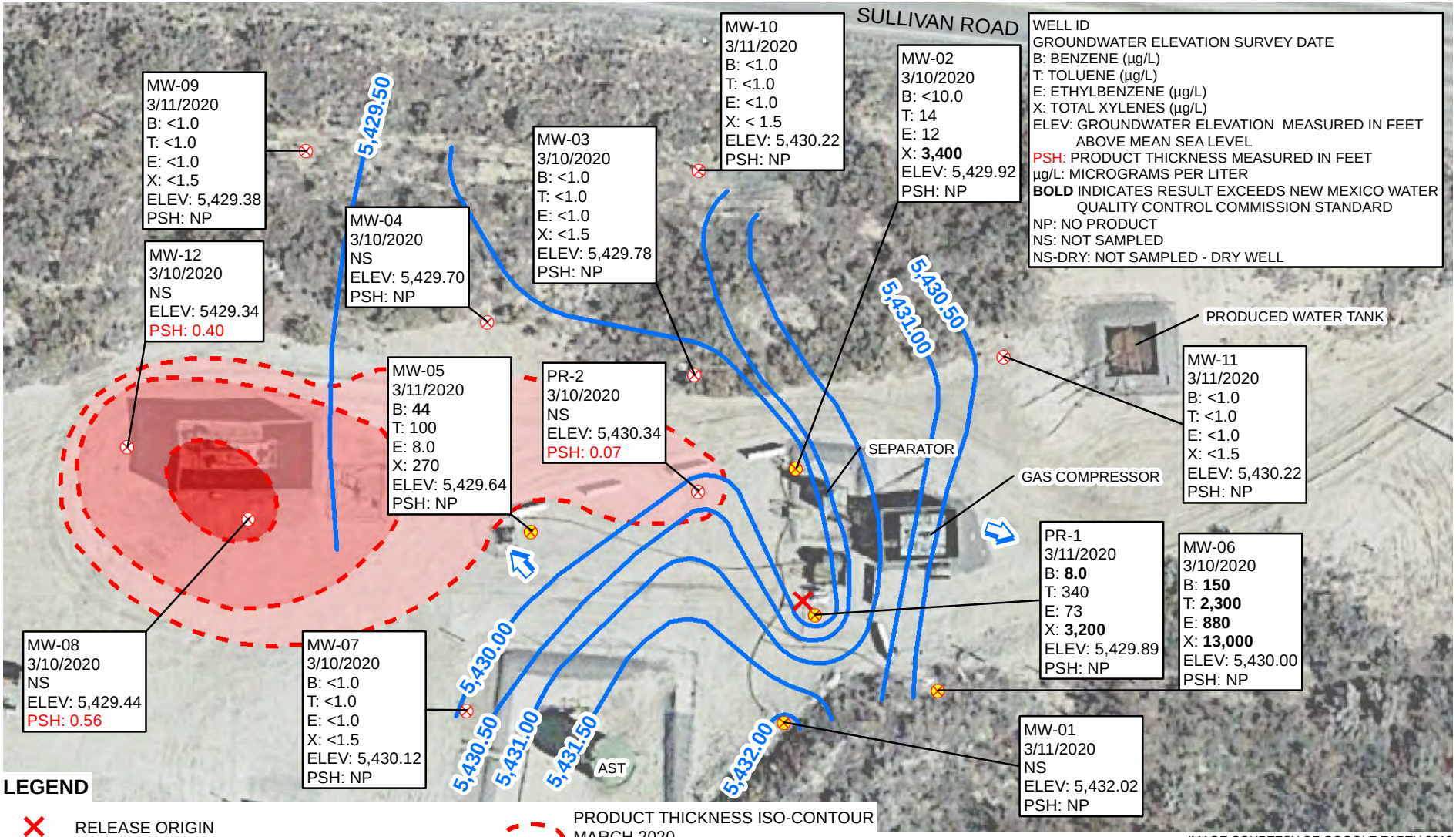

IMAGE COURTESY OF GOOGLE EARTH 2019

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SVE/MONITORING WELL
- SURVEYED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.50 FEET
- PRODUCT THICKNESS ISO-CONTOUR
  MARCH 2020
  CONTOUR INTERVAL = 0.25 FEET

INFERRED PRODUCT THICKNESS (FEET)

- 0.00 - 0.25
- 0.25 - 0.50
- >0.50

AST: ABOVEGROUND STORAGE TANK

NOTE: A PRODUCT DENSITY FACTOR OF 0.7996 IS USED TO ACCOUNT FOR THE PRESENCE OF FREE PRODUCT IN WELLS IN WHICH FREE PRODUCT WAS OBSERVED.

0 40 80
Feet

N

FIGURE 4
GROUNDWATER POTENTIOMETRIC MAP AND ANALYTICAL RESULTS (MARCH 2020)
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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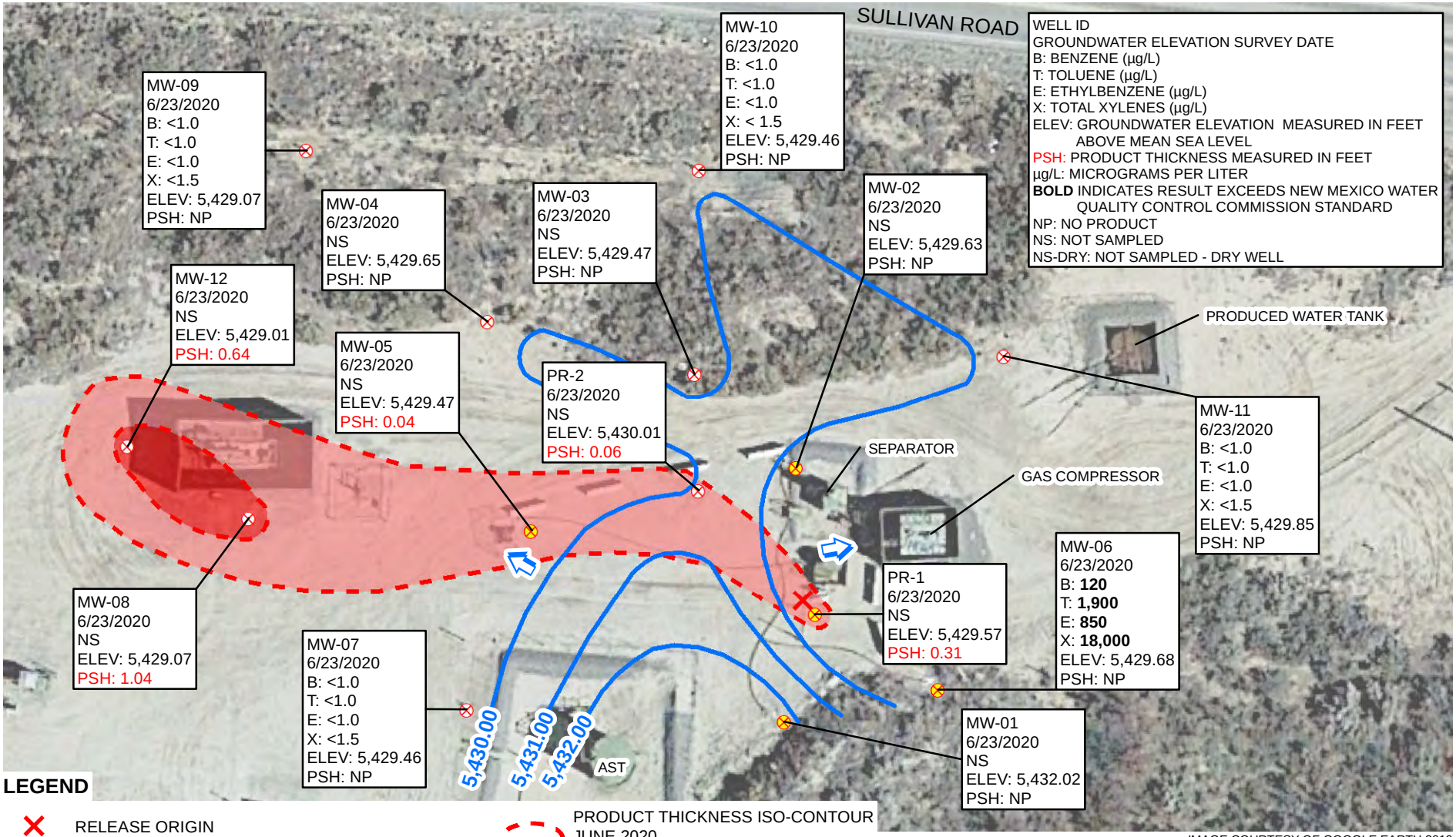

AST: ABOVEGROUND STORAGE TANK

NOTE: A PRODUCT DENSITY FACTOR OF 0.7996 IS USED TO ACCOUNT FOR THE PRESENCE OF FREE PRODUCT IN WELLS IN WHICH FREE PRODUCT WAS OBSERVED.

FIGURE 5
GROUNDWATER POTENTIOMETRIC MAP AND ANALYTICAL RESULTS (JUNE 2020)
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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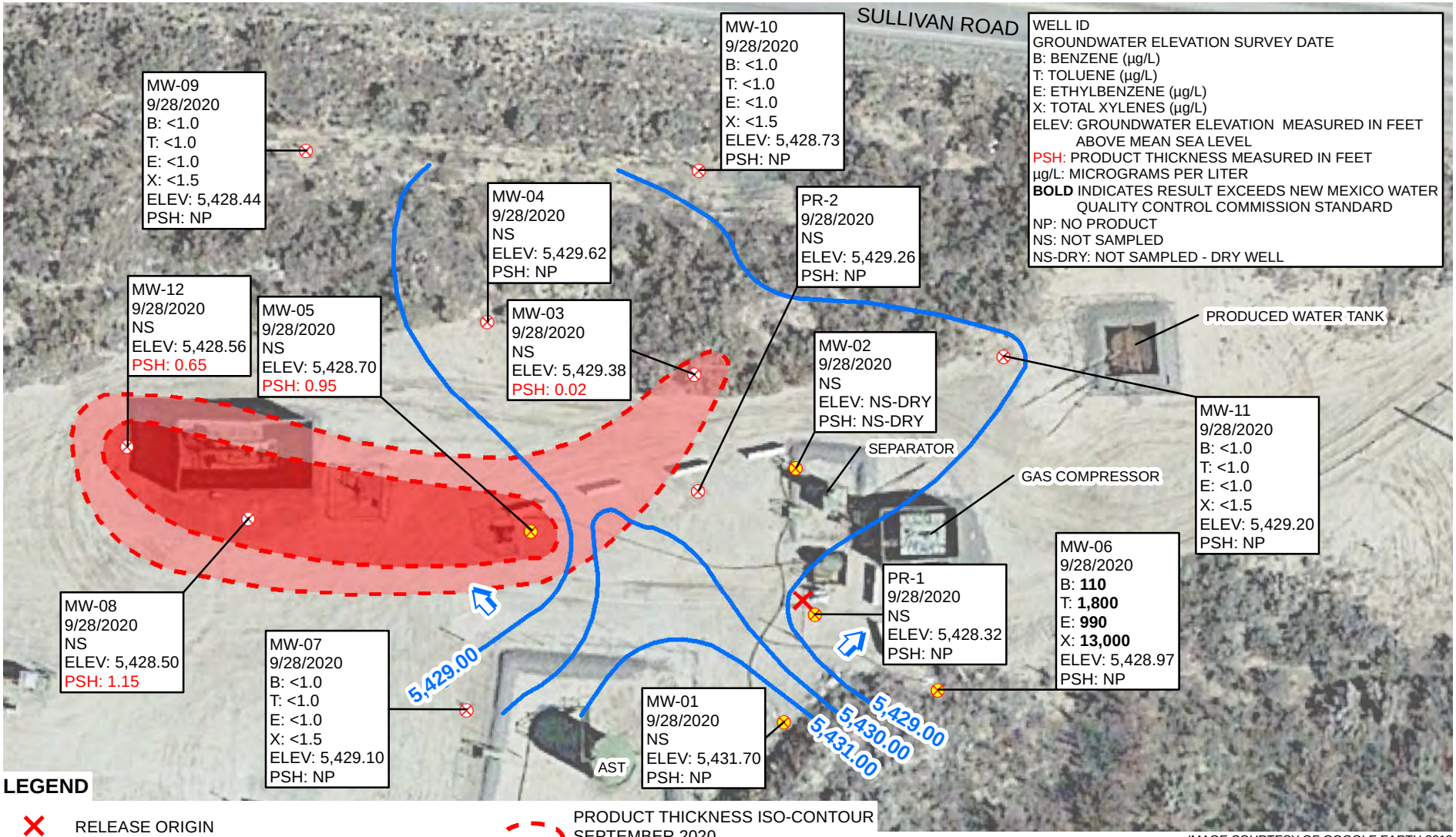

AST: ABOVEGROUND STORAGE TANK

NOTE: A PRODUCT DENSITY FACTOR OF 0.7996 IS USED TO ACCOUNT FOR THE PRESENCE OF FREE PRODUCT IN WELLS IN WHICH FREE PRODUCT WAS OBSERVED.

FIGURE 6
GROUNDWATER POTENTIOMETRIC MAP AND ANALYTICAL RESULTS (SEPTEMBER 2020)
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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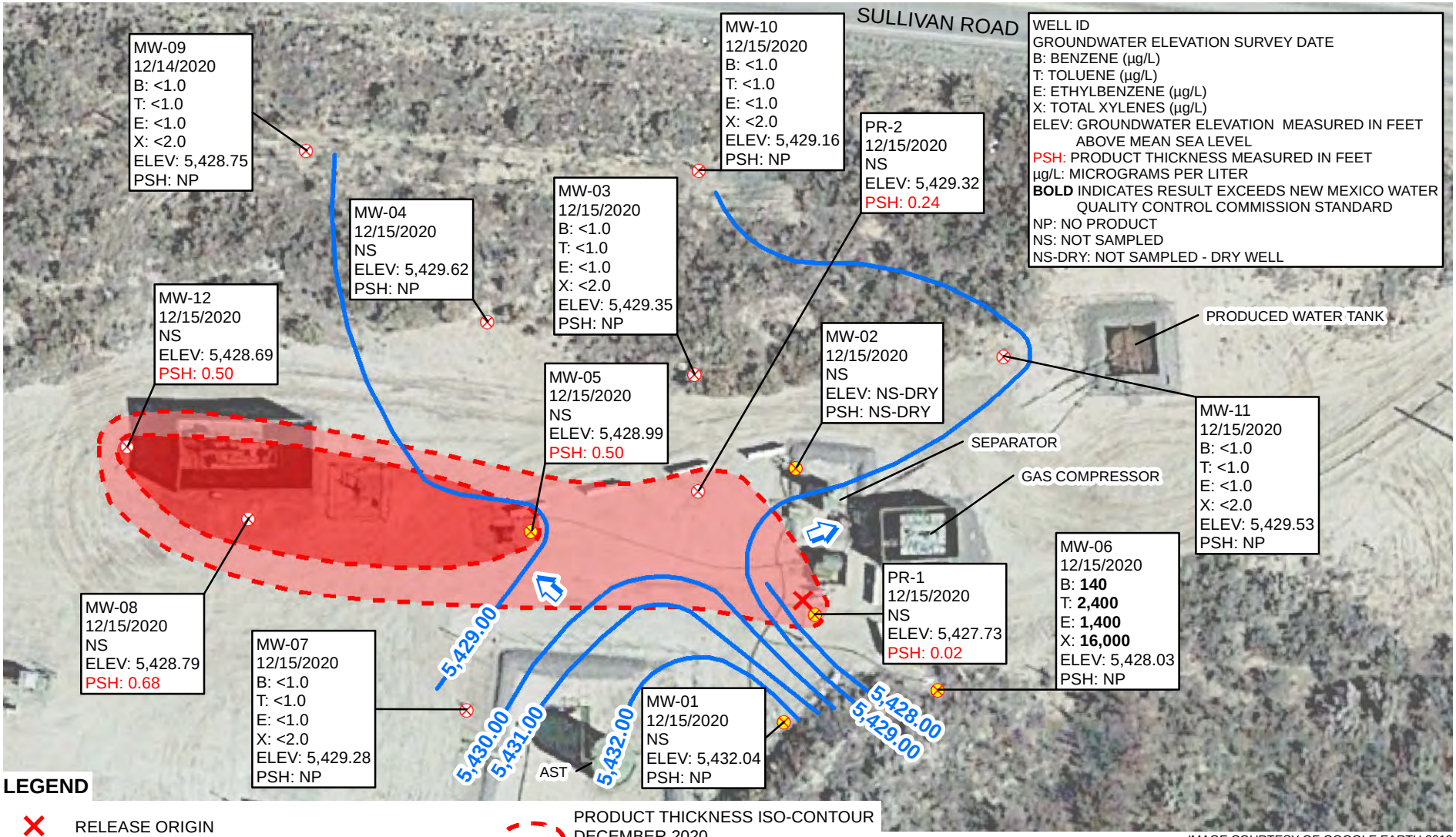

NOTE: A PRODUCT DENSITY FACTOR OF 0.7996 IS USED TO ACCOUNT FOR THE PRESENCE OF FREE PRODUCT IN WELLS IN WHICH FREE PRODUCT WAS OBSERVED.

FIGURE 7
GROUNDWATER POTENTIOMETRIC MAP AND ANALYTICAL RESULTS (DECEMBER 2020)
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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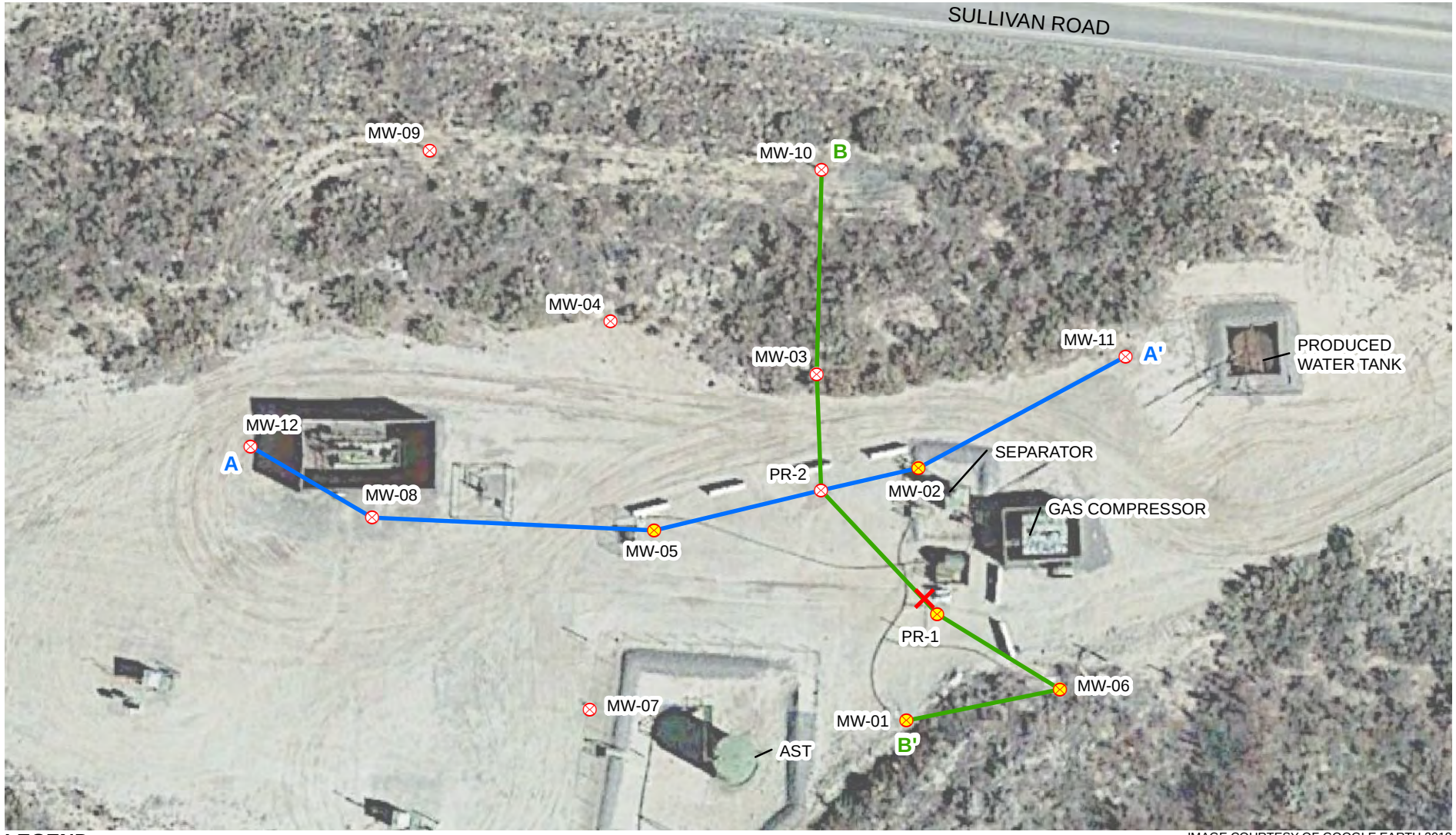

IMAGE COURTESY OF GOOGLE EARTH 2019

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SVE/MONITORING WELL
- CROSS SECTION A-A'
- CROSS SECTION B-B'

AST: ABOVEGROUND STORAGE TANK

0 40 80
Feet

N

FIGURE 8
CROSS SECTION LINES A-A' & B-B'
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO

HILCORP ENERGY COMPANY

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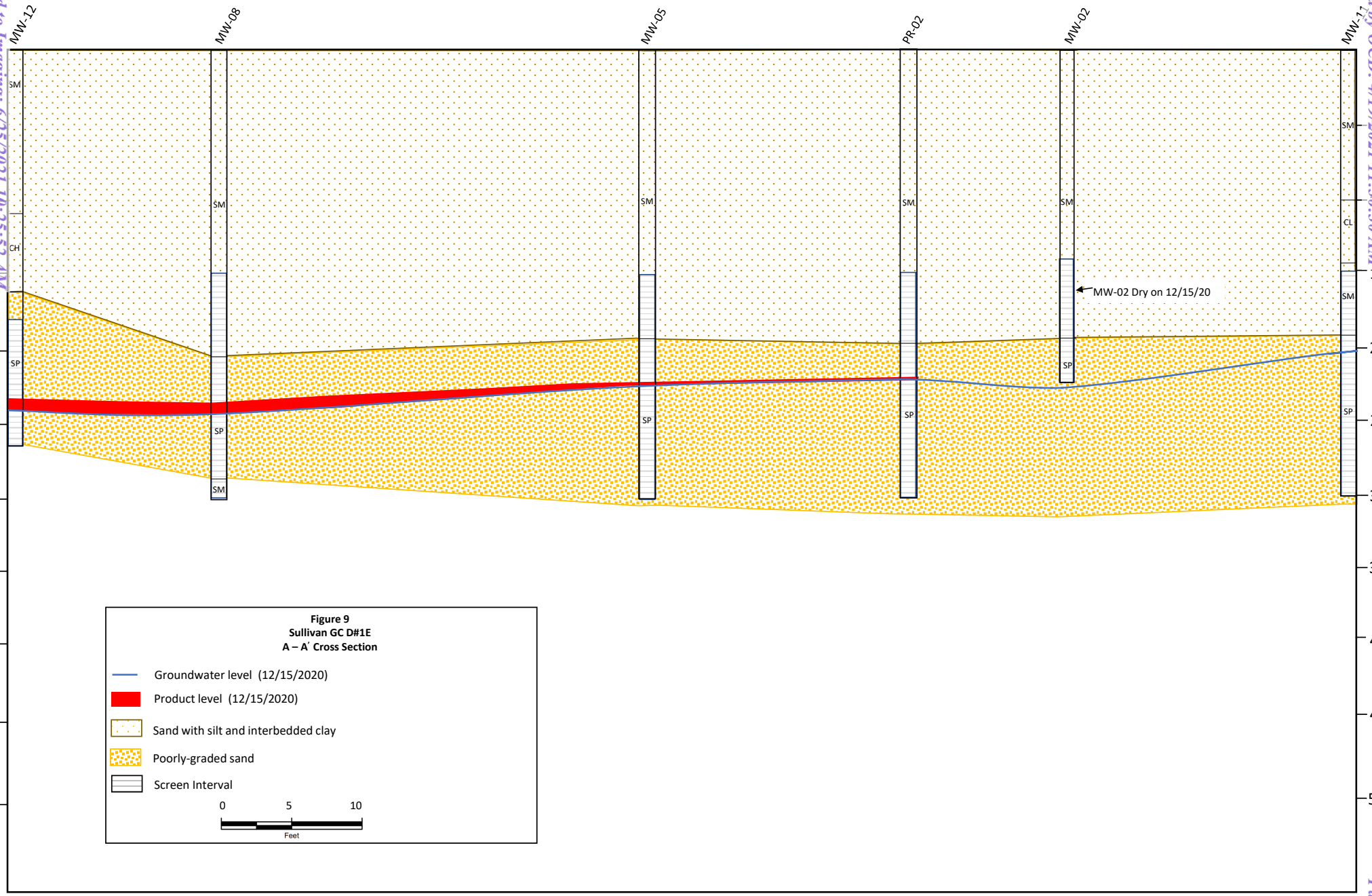

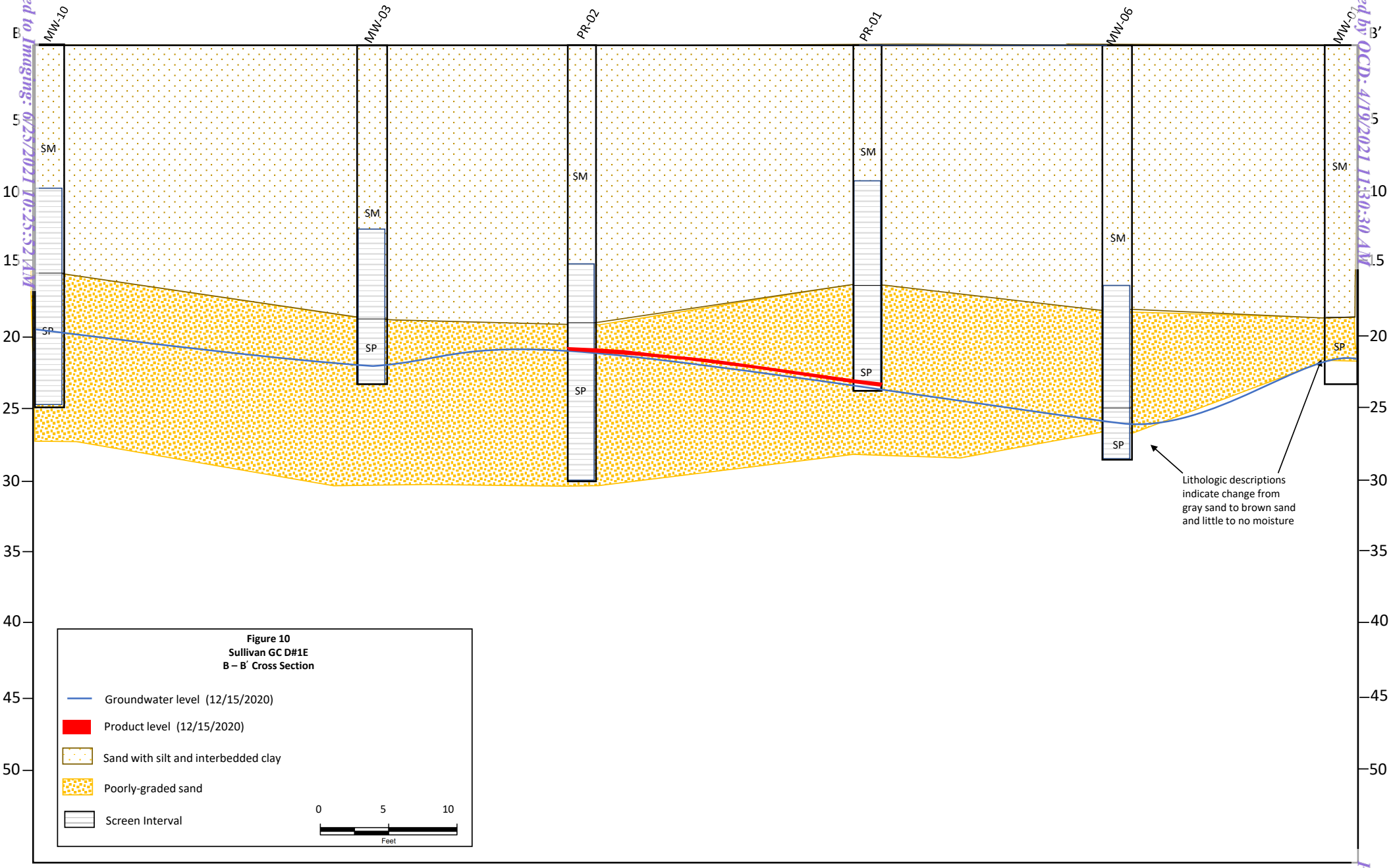

TABLES

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
PR-1A	9/9/2015	5466.00	19.24	19.69	0.45	5.40	5,446.67
PR-1A	9/19/2015		--	--	--	0.08	--
PR-1A	9/25/2015		--	--	--	0.40	--
PR-1A	9/28/2015		19.3	19.83	0.53	6.36	5,446.59
PR-1	9/10/2015	5,452.23	21.55	21.82	0.27	3.24	5,430.63
PR-1	9/19/2015		--	--	--	0.21 **	--
PR-1	9/25/2015		--	--	--	0.19 **	--
PR-1	9/28/2015		20.95	21.51	0.56	6.72	5,431.17
PR-1	11/4/2015		19.09	19.58	0.49	5.88	5,433.04
PR-1	11/11/2015		19.23	19.39	0.16	1.92	5,432.97
PR-1	11/18/2015		19.28	19.44	0.16	1.92	5,432.92
PR-1	2/19/2016		19.97	20.31	0.34	4.08	5,432.19
PR-1	4/29/2016		19.32	22.01	2.69	32.28	5,432.37
PR-1	6/20/2016		20.75	21.05	0.30	3.60	5,431.42
PR-1	7/14/2016		18.86	20.91	2.05	24.60	5,432.96
PR-1	7/18/2016		18.89	20.95	2.06	24.72	5,432.93
PR-1	7/22/2016		19.43	19.88	0.45	5.40	5,432.71
PR-1	9/30/2016		18.72	20.10	1.38	16.56	5,433.23
PR-1	10/10/2016		18.72	19.94	1.22	14.64	5,433.27
PR-1	12/15/2016		19.35	20.14	0.79	9.48	5,432.72
PR-1	3/30/2017		NP	19.90	NP	NP	5,432.33
PR-1	6/28/2017		20.21	20.35	0.14	1.68	5,431.99
PR-1	9/25/2017		NP	21.00	NP	NP	5,431.23
PR-1	12/21/2017		NP	22.46	NP	NP	5,429.77
PR-1	3/30/2018		NP	21.36	NP	NP	5,430.87
PR-1	6/26/2018		21.70	22.38	0.68	8.16	5,430.39
PR-1	9/20/2018		23.44	24.08	0.64	7.68	5,428.66
PR-1	12/13/2018		22.05	22.33	0.28	3.36	5,430.12
PR-1	3/25/2019		NP	21.51	NP	NP	5,430.72
PR-1	6/24/2019		22.11	22.29	0.18	2.16	5,430.08
PR-1	9/27/2019		22.74	23.65	0.91	10.92	5,429.31
PR-1	12/10/2019		22.58	22.95	0.37	4.44	5,429.58
PR-1	3/10/2020		NP	22.34	NP	NP	5,429.89
PR-1	6/23/2020		22.60	22.91	0.31	3.72	5,429.57
PR-1	9/28/2020		NP	23.91	NP	NP	5,428.32
PR-1	12/15/2020		24.50	24.52	0.02	0.24	5,427.73
PR-2	12/21/2017	5,452.08	NP	20.71	NP	NP	5,431.37
PR-2	3/30/2018		NP	20.92	NP	NP	5,431.16
PR-2	6/26/2018		NP	21.38	NP	NP	5,430.70
PR-2	9/20/2018		NP	21.79	NP	NP	5,430.29
PR-2	12/13/2018		NP	21.67	NP	NP	5,430.41
PR-2	3/25/2019		NP	21.99	NP	NP	5,430.09
PR-2	6/24/2019		NP	22.81	NP	NP	5,429.27
PR-2	9/27/2019		NP	22.48	NP	NP	5,429.60
PR-2	12/10/2019		22.15	22.36	0.21	2.52	5,430.04
PR-2	3/10/2020		21.88	21.95	0.07	0.84	5,430.34
PR-2	6/23/2020		22.21	22.27	0.06	0.72	5,430.01
PR-2	9/28/2020		NP	22.82	NP	NP	5,429.26
PR-2	12/15/2020		22.52	22.76	0.24	2.88	5,429.32
MW-01	9/10/2015	5,454.15	21.55	21.82	0.27	3.24	5,432.55
MW-01	9/19/2015		--	--	--	0.21 **	--
MW-01	9/25/2015		--	--	--	0.19 **	--
MW-01	9/28/2015		20.95	21.51	0.56	6.72	5,433.09

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW-01	11/4/2015	5,454.15	20.98	21.60	0.62	7.44	5,433.05
MW-01	11/11/2015		21.05	21.74	0.69	8.28	5,432.96
MW-01	11/18/2015		21.08	21.81	0.73	8.76	5,432.92
MW-01	2/19/2016		21.65	21.84	0.19	2.28	5,432.46
MW-01	4/29/2016		21.11	21.79	0.68	8.16	5,432.90
MW-01	6/20/2016		22.96	23.03	0.07	0.84	5,431.18
MW-01	7/14/2016		NP	20.71	NP	NP	5,433.44
MW-01	7/18/2016		20.80	20.91	0.11	1.32	5,433.33
MW-01	7/22/2016		21.18	21.59	0.41	4.92	5,432.89
MW-01	9/30/2016		20.74	20.81	0.07	0.84	5,433.40
MW-01	10/10/2016		NP	20.69	NP	NP	5,433.46
MW-01	12/15/2016		22.41	22.33	0.08	0.96	5,431.88
MW-01	3/30/2017		NP	21.76	NP	NP	5,432.39
MW-01	6/28/2017		Trace	21.88	NP	NP	5,432.27
MW-01	9/25/2017		NP	21.85	NP	NP	5,432.30
MW-01	12/21/2017		Dry - No Product or Groundwater Observed				
MW-01	3/30/2018		NP	21.85	NP	NP	5,432.30
MW-01	6/26/2018		NP	21.90	NP	NP	5,432.25
MW-01	9/20/2018		Dry - No Product or Groundwater Observed				
MW-01	12/13/2018		Dry @ 22.30' - No Product or Groundwater Observed				
MW-01	3/25/2019		NP	22.03	NP	NP	5,432.12
MW-01	6/24/2019		NP	22.16	NP	NP	5,431.99
MW-01	9/27/2019		22.04	22.00	0.04	0.48	5,432.18
MW-01	12/10/2019		Dry @ 22.40' - No Product or Groundwater Observed				
MW-01	3/10/2020		NP	22.13	NP	NP	5,432.02
MW-01	6/23/2020		NP	22.13	NP	NP	5,432.02
MW-01	9/28/2020		NP	22.45	NP	NP	5,431.70
MW-01	12/15/2020		NP	22.11	NP	NP	5,432.04
MW-02	9/10/2015	5,451.95	NP	18.85	NP	NP	5,433.10
MW-02	9/19/2015		--	--	--	0.05 **	--
MW-02	9/25/2015		--	--	--	0.15 **	--
MW-02	9/28/2015		18.85	19.04	0.19	2.28	5,433.06
MW-02	11/4/2015		18.88	19.21	0.33	3.96	5,433.00
MW-02	11/11/2015		18.97	19.31	0.34	4.08	5,432.91
MW-02	11/18/2015		18.98	19.30	0.32	3.84	5,432.91
MW-02	2/19/2016		19.63	20.29	0.66	7.92	5,432.19
MW-02	4/29/2016		19.47	21.27	1.80	21.60	5,432.12
MW-02	6/20/2016		20.30	20.55	0.25	3.00	5,431.60
MW-02	7/14/2016		NP	19.04	NP	NP	5,432.91
MW-02	7/18/2016		NP	19.05	NP	NP	5,432.90
MW-02	7/22/2016		19.07	19.19	0.12	1.44	5,432.86
MW-02	9/30/2016		18.69	18.93	0.24	2.88	5,433.21
MW-02	10/10/2016		NP	18.64	NP	NP	5,433.31
MW-02	12/15/2016		NP	19.20	NP	NP	5,432.75
MW-02	3/30/2017		NP	19.69	NP	NP	5,432.26
MW-02	6/28/2017		19.90	19.95	0.05	0.60	5,432.04
MW-02	9/25/2017		20.54	21.85	1.31	15.72	5,431.15
MW-02	12/21/2017		22.05	22.15	0.10	1.20	5,429.88
MW-02	3/30/2018		NP	21.10	NP	NP	5,430.85
MW-02	6/26/2018		NP	21.42	NP	NP	5,430.53
MW-02	9/20/2018		23.12	23.15	0.03	0.36	5,428.82
MW-02	12/13/2018		NP	22.47	NP	NP	5,429.48
MW-02	3/25/2019		NP	22.92	NP	NP	5,429.03
MW-02	6/24/2019		NP	23.02	NP	NP	5,428.93
MW-02	9/27/2019		22.56	22.78	0.22	2.64	5,431.55

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW-02	12/10/2019	5,451.95	22.54	22.78	0.24	2.88	5,431.56
MW-02	3/10/2020		NP	22.03	NP	NP	5,429.92
MW-02	6/23/2020		NP	22.32	NP	NP	5,429.63
MW-02	9/28/2020		DRY	DRY	DRY	DRY	DRY
MW-02	12/15/2020		DRY	DRY	DRY	DRY	DRY
MW-03	9/10/2015	5,452.50	NP	19.45	NP	NP	5,433.05
MW-03	9/28/2015		NP	19.49	NP	NP	5,433.01
MW-03	11/4/2015		19.54	19.56	0.02	0.24	5,432.96
MW-03	11/11/2015		NP	19.65	NP	NP	5,432.85
MW-03	11/18/2015		NP	19.67	NP	NP	5,432.83
MW-03	2/19/2016		NP	20.44	NP	NP	5,432.06
MW-03	4/29/2016		20.54	20.65	0.11	1.32	5,431.94
MW-03	6/20/2016		19.70	19.78	0.08	0.96	5,432.78
MW-03	7/14/2016		19.59	19.65	0.06	0.72	5,432.90
MW-03	7/18/2016		19.65	19.69	0.04	0.48	5,432.84
MW-03	7/22/2016		19.61	19.66	0.05	0.60	5,432.88
MW-03	9/30/2016		19.28	19.33	0.05	0.60	5,433.21
MW-03	10/10/2016		NP	19.23	NP	NP	5,433.27
MW-03	12/15/2016		NP	19.82	NP	NP	5,432.68
MW-03	3/30/2017		NP	20.36	NP	NP	5,432.14
MW-03	6/28/2017		NP	20.77	NP	NP	5,431.73
MW-03	9/25/2017		21.14	22.13	0.99	11.88	5,431.16
MW-03	12/21/2017		21.52	21.55	0.03	0.36	5,430.97
MW-03	3/30/2018		21.75	21.77	0.02	0.24	5,430.75
MW-03	6/26/2018		NP	22.20	NP	NP	5,430.30
MW-03	9/20/2018		NP	22.62	NP	NP	5,429.88
MW-03	12/13/2018		NP	22.47	NP	NP	5,430.03
MW-03	3/25/2019		NP	22.35	NP	NP	5,430.15
MW-03	6/24/2019		NP	22.53	NP	NP	5,429.97
MW-03	9/27/2019		NP	22.34	NP	NP	5,430.16
MW-03	12/10/2019		NP	23.01	NP	NP	5,429.49
MW-03	3/10/2020		NP	22.72	NP	NP	5,429.78
MW-03	6/23/2020		NP	23.03	NP	NP	5,429.47
MW-03	9/28/2020		23.12	23.14	0.02	0.24	5,429.38
MW-03	12/15/2020		NP	23.15	NP	NP	5,429.35
MW-04	9/10/2015	5,451.92	NP	18.94	NP	NP	5,432.98
MW-04	9/28/2015		NP	19.98	NP	NP	5,431.94
MW-04	11/4/2015		NP	19.08	NP	NP	5,432.84
MW-04	11/11/2015		NP	19.20	NP	NP	5,432.72
MW-04	11/18/2015		NP	19.21	NP	NP	5,432.71
MW-04	2/19/2016		NP	20.04	NP	NP	5,431.88
MW-04	4/29/2016		NP	20.11	NP	NP	5,431.81
MW-04	6/20/2016		NP	19.10	NP	NP	5,432.82
MW-04	7/14/2016		NP	19.01	NP	NP	5,432.91
MW-04	7/18/2016		NP	19.00	NP	NP	5,432.92
MW-04	7/22/2016		NP	18.99	NP	NP	5,432.93
MW-04	9/30/2016		NP	18.72	NP	NP	5,433.20
MW-04	10/10/2016		NP	18.62	NP	NP	5,433.30
MW-04	12/15/2016		NP	19.36	NP	NP	5,432.56
MW-04	3/30/2017		NP	19.98	NP	NP	5,431.94
MW-04	6/28/2017		NP	20.30	NP	NP	5,431.62
MW-04	9/25/2017		20.86	20.91	0.05	0.60	5,431.05
MW-04	12/21/2017		NP	21.12	NP	NP	5,430.80
MW-04	3/30/2018		NP	21.37	NP	NP	5,430.55

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW-04	6/26/2018	5,451.92	NP	21.78	NP	NP	5,430.14
MW-04	9/20/2018		Dry - No Product or Groundwater Observed				
MW-04	12/13/2018		Dry @ 22.39' - No Product or Groundwater Observed				
MW-04	3/25/2019		NP	22.31	NP	NP	5,429.61
MW-04	6/24/2019		NP	22.11	NP	NP	5,429.81
MW-04	9/27/2019		NP	22.14	NP	NP	5,429.78
MW-04	12/10/2019		NP	22.18	NP	NP	5,429.74
MW-04	3/10/2020		NP	22.22	NP	NP	5,429.70
MW-04	6/23/2020		NP	22.27	NP	NP	5,429.65
MW-04	9/28/2020		NP	22.30	NP	NP	5,429.62
MW-04	12/15/2020		NP	22.26	NP	NP	5,429.66
MW-05	11/4/2015	5,451.89	18.82	19.51	0.69	8.28	5,432.93
MW-05	11/11/2015		18.9	19.69	0.79	9.48	5,432.83
MW-05	11/18/2015		18.93	19.73	0.8	9.60	5,432.80
MW-05	2/19/2016		19.66	20.75	1.09	13.08	5,432.01
MW-05	4/29/2016		19.35	21.95	2.60	31.20	5,432.02
MW-05	6/20/2016		20.18	20.40	0.22	2.64	5,431.67
MW-05	7/14/2016		18.63	18.89	0.26	3.12	5,433.21
MW-05	7/18/2016		18.60	20.13	1.53	18.36	5,432.98
MW-05	7/22/2016		18.84	19.18	0.34	4.08	5,432.98
MW-05	9/30/2016		18.44	19.34	0.90	10.80	5,433.27
MW-05	10/10/2016		18.39	19.17	0.78	9.36	5,433.34
MW-05	12/15/2016		NP	19.24	NP	NP	5,432.65
MW-05	3/30/2017		NP	20.42	NP	NP	5,431.47
MW-05	6/28/2017		19.98	20.40	0.42	5.04	5,431.83
MW-05	9/25/2017		20.57	20.94	0.37	4.44	5,431.25
MW-05	12/21/2017		22.03	22.81	0.78	9.36	5,429.70
MW-05	3/30/2018		21.15	21.16	0.01	0.12	5,430.74
MW-05	6/26/2018		21.48	22.39	0.91	10.92	5,430.23
MW-05	9/20/2018		23.02	24.00	0.98	11.76	5,428.67
MW-05	12/13/2018		21.83	22.55	0.72	8.64	5,429.92
MW-05	3/25/2019		21.79	22.07	0.28	3.36	5,430.04
MW-05	6/24/2019		21.94	22.42	0.48	5.76	5,429.85
MW-05	9/27/2019		22.60	23.52	0.92	11.04	5,429.11
MW-05	12/10/2019		22.46	22.97	0.51	6.12	5,429.33
MW-05	3/10/2020		NP	22.25	NP	NP	5,429.64
MW-05	6/23/2020		22.41	22.45	0.04	0.48	5,429.47
MW-05	9/28/2020		23.00	23.95	0.95	11.40	5,428.70
MW-05	12/15/2020		22.80	23.30	0.50	6.00	5,428.99
MW-06	11/4/2015	5,454.95	21.81	22.12	0.31	3.72	5,433.08
MW-06	11/11/2015		21.88	22.3	0.42	5.04	5,432.99
MW-06	11/11/2015		21.89	22.3	0.41	4.92	5,432.98
MW-06	2/19/2016		22.58	22.91	0.33	3.96	5,432.30
MW-06	4/29/2016		22.02	23.49	1.47	17.64	5,432.64
MW-06	6/20/2016		23.53	23.60	0.07	0.84	5,431.41
MW-06	7/14/2016		21.94	22.03	0.09	1.08	5,432.99
MW-06	7/18/2016		NP	21.79	NP	NP	5,433.16
MW-06	7/22/2016		22.09	22.31	0.22	2.64	5,432.82
MW-06	9/30/2016		21.70	21.74	0.04	0.48	5,433.24
MW-06	10/10/2016		NP	21.64	NP	NP	5,433.31
MW-06	12/15/2016		NP	22.11	NP	NP	5,432.84
MW-06	3/30/2017		NP	22.55	NP	NP	5,432.40
MW-06	6/28/2017		Trace	23.00	NP	NP	5,431.95
MW-06	9/25/2017		NP	23.67	NP	NP	5,431.28

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW-06	12/21/2017	5,454.95	NP	24.92	NP	NP	5,430.03
MW-06	3/30/2018		NP	23.97	NP	NP	5,430.98
MW-06	6/26/2018		NP	24.46	NP	NP	5,430.49
MW-06	9/20/2018		NP	26.18	NP	NP	5,428.77
MW-06	12/13/2018		NP	25.75	NP	NP	5,429.20
MW-06	3/25/2019		NP	24.59	NP	NP	5,430.36
MW-06	6/24/2019		NP	24.76	NP	NP	5,430.19
MW-06	9/27/2019		25.55	25.57	0.02	0.24	5,429.40
MW-06	12/10/2019		NP	26.26	NP	NP	5,428.69
MW-06	3/10/2020		NP	24.95	NP	NP	5,430.00
MW-06	6/23/2020		NP	25.27	NP	NP	5,429.68
MW-06	9/28/2020		NP	25.98	NP	NP	5,428.97
MW-06	12/15/2020		NP	26.92	NP	NP	5,428.03
MW-07	10/13/2017	5,456.00	28.37	28.39	0.02	0.24	5,427.63
MW-07	12/21/2017		NP	24.72	NP	NP	5,431.28
MW-07	3/30/2018		NP	25.26	NP	NP	5,430.74
MW-07	6/26/2018		NP	24.16	NP	NP	5,431.84
MW-07	9/20/2018		NP	25.83	NP	NP	5,430.17
MW-07	12/13/2018		NP	25.87	NP	NP	5,430.13
MW-07	3/25/2019		NP	25.69	NP	NP	5,430.31
MW-07	6/24/2019		NP	26.03	NP	NP	5,429.97
MW-07	9/27/2019		NP	26.48	NP	NP	5,429.52
MW-07	12/10/2019		NP	26.53	NP	NP	5,429.47
MW-07	3/10/2020		NP	25.88	NP	NP	5,430.12
MW-07	6/23/2020		NP	26.54	NP	NP	5,429.46
MW-07	9/28/2020		NP	26.90	NP	NP	5,429.10
MW-07	12/15/2020		NP	26.72	NP	NP	5,429.28
MW-08	10/13/2017	5,452.48	21.21	22.53	1.32	15.84	5,431.01
MW-08	12/21/2017		21.48	22.64	1.16	13.92	5,430.77
MW-08	3/30/2018		21.80	22.86	1.06	12.72	5,430.47
MW-08	6/26/2018		22.11	23.39	1.28	15.36	5,430.11
MW-08	9/20/2018		22.46	23.78	1.32	15.84	5,429.76
MW-08	12/13/2018		22.47	23.65	1.18	14.16	5,429.77
MW-08	3/25/2019		22.43	23.56	1.13	13.56	5,429.82
MW-08	6/24/2019		22.58	23.66	1.08	12.96	5,429.68
MW-08	9/27/2019		23.29	24.74	1.45	17.40	5,428.90
MW-08	12/10/2019		23.17	24.04	0.87	10.44	5,429.14
MW-08	3/10/2020		22.93	23.49	0.56	6.72	5,429.44
MW-08	6/23/2020		23.20	24.24	1.04	12.48	5,429.07
MW-08	9/28/2020		23.75	24.90	1.15	13.80	5,428.50
MW-08	12/15/2020		23.55	24.23	0.68	8.16	5,428.79
MW-09	10/13/2017	5,451.17	NP	20.30	NP	NP	5,430.87
MW-09	12/21/2017		NP	20.52	NP	NP	5,430.65
MW-09	3/30/2018		NP	20.80	NP	NP	5,430.37
MW-09	6/26/2018		NP	21.21	NP	NP	5,429.96
MW-09	9/20/2018		NP	21.51	NP	NP	5,429.66
MW-09	12/13/2018		NP	21.55	NP	NP	5,429.62
MW-09	3/25/2019		NP	21.39	NP	NP	5,429.78
MW-09	6/24/2019		NP	21.59	NP	NP	5,429.58
MW-09	9/27/2019		Dry @ 22.04' - No Product or Groundwater Observed				
MW-09	12/10/2019		NP	22.10	NP	NP	5429.07
MW-09	3/10/2020		NP	21.79	NP	NP	5,429.38
MW-09	6/23/2020		NP	22.10	NP	NP	5,429.07

Table 1

Groundwater Elevations
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW-09	9/28/2020	5,451.17	NP	22.73	NP	NP	5,428.44
MW-09	12/14/2020		NP	22.42	NP	NP	5,428.75
MW-10	10/13/2017	5,448.71	NP	17.62	NP	NP	5,431.09
MW-10	12/21/2017		NP	17.75	NP	NP	5,430.96
MW-10	3/30/2018		NP	17.97	NP	NP	5,430.74
MW-10	6/26/2018		NP	18.42	NP	NP	5,430.29
MW-10	9/20/2018		NP	18.84	NP	NP	5,429.87
MW-10	12/13/2018		NP	18.74	NP	NP	5,429.97
MW-10	3/25/2019		NP	18.54	NP	NP	5,430.17
MW-10	6/24/2019		NP	18.72	NP	NP	5,429.99
MW-10	9/27/2019		NP	19.89	NP	NP	5,428.82
MW-10	12/10/2019		NP	19.19	NP	NP	5,429.52
MW-10	3/10/2020		NP	18.90	NP	NP	5,429.81
MW-10	6/23/2020		NP	19.25	NP	NP	5,429.46
MW-10	9/28/2020		NP	19.98	NP	NP	5,428.73
MW-10	12/15/2020		NP	19.55	NP	NP	5,429.16
MW-11	10/13/2017	5,450.40	NP	19.10	NP	NP	5,431.30
MW-11	12/21/2017		NP	19.18	NP	NP	5,431.22
MW-11	3/30/2018		NP	19.34	NP	NP	5,431.06
MW-11	6/26/2018		NP	19.83	NP	NP	5,430.57
MW-11	9/20/2018		NP	20.31	NP	NP	5,430.09
MW-11	12/13/2018		NP	20.01	NP	NP	5,430.39
MW-11	3/25/2019		NP	19.84	NP	NP	5,430.56
MW-11	6/24/2019		NP	20.82	NP	NP	5,429.58
MW-11	9/27/2019		NP	20.75	NP	NP	5,429.65
MW-11	12/10/2019		NP	20.48	NP	NP	5,429.92
MW-11	3/10/2020		NP	20.18	NP	NP	5,430.22
MW-11	6/23/2020		NP	20.55	NP	NP	5,429.85
MW-11	9/28/2020		NP	21.20	NP	NP	5,429.20
MW-11	12/15/2020		NP	20.87	NP	NP	5,429.53
MW-12	10/13/2017	5,452.44	21.51	21.54	0.03	0.36	5,430.92
MW-12	12/21/2017		NP	21.81	NP	NP	5,430.63
MW-12	3/30/2018		21.91	22.71	0.80	9.60	5,430.37
MW-12	6/26/2018		22.15	23.25	1.10	13.20	5,430.07
MW-12	9/20/20108		22.50	23.65	1.15	13.80	5429.71
MW-12	12/13/2018		22.60	23.62	1.02	12.24	5429.64
MW-12	3/25/2019		22.50	23.35	0.85	10.20	5429.77
MW-12	6/24/2019		22.66	23.66	1.00	12.00	5429.58
MW-12	9/27/2019		23.39	24.42	1.03	12.36	5428.84
MW-12	12/10/2019		23.27	23.91	0.64	7.68	5429.04
MW-12	3/10/2020		23.02	23.42	0.40	4.80	5429.34
MW-12	6/23/2020		23.30	23.94	0.64	7.68	5429.01
MW-12	9/28/2020		23.75	24.40	0.65	7.80	5428.56
MW-12	12/15/2020		23.65	24.15	0.50	6.00	5428.69

BTOC - below top of casing
NP - no product
Trace - visible sheen/product in bailer, but not detected by interface probe
* - survyed using North American Vertical Datum 1988 geoid 12B in U.S. survey feet
** - Estimated based on volume recovered in a bailer
-- - not measured
A product density correction factor of 0.7996 was applied to the groundwater elevation in wells that contained free product.

Table 2

Groundwater Analytical Results
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard		**5**	**1,000**	**700**	**620**
PR-1	9/25/2017	**3,580**	**19,500**	<100	**82,700**
PR-1	3/25/2019	**18**	650	130	**4,200**
PR-1	3/11/2020	**8.0**	340	73	**3,200**
PR-2	10/13/2017	**2,070**	**6,450**	555	**6,900**
PR-2	6/27/2018	**1,100**	810	400	**2,100**
PR-2	9/20/2018	**1,100**	**1,200**	430	**2,100**
PR-2	12/13/2018	**1,900**	**3,600**	**840**	**4,300**
PR-2	3/25/2019	**65**	41	120	270
PR-2	6/24/2019	**170**	180	130	390
PR-2	9/27/2019	**170**	230	180	**690**
MW-01	9/25/2017	**415**	**1,990**	222	**8,270**
MW-02	9/10/2015	**6,500**	**24,200**	**1,770**	**11,400**
MW-02	12/15/2016	**2,730**	**5,960**	440	**9,450**
MW-02	6/27/2018	**220**	820	<100	**5,500**
MW-02	3/25/2019	<10	<10	13	**2,500**
MW-02	3/10/2020	<10	14	12	**3,400**
MW-03	9/10/2015	**2,050**	420	390	**2,890**
MW-03	9/14/2015	**6,800**	**1,800**	**900**	**7,600**
MW-03	2/19/2016	**919**	232	130	**830**
MW-03	12/15/2016	**1,440**	251	283	**2,810**
MW-03	6/28/2017	**334**	146	117	**1,260**
MW-03	6/27/2018	<10	<10	<10	<15
MW-03	9/20/2018	<1.0	<1.0	<1.0	<2.0
MW-03	12/13/2018	<1.0	<1.0	<1.0	<2.0
MW-03	3/25/2019	<1.0	<1.0	<1.0	<1.5
MW-03	6/24/2019	<1.0	<1.0	<1.0	<2.0
MW-03	12/10/2019	<1.0	<1.0	<1.0	<2.0
MW-03	3/10/2020	<1.0	<1.0	<1.0	<1.5
MW-03	12/15/2020	<1.0	<1.0	<1.0	<2.0
MW-04	9/10/2015	**3,480**	30	60	180
MW-04	9/14/2015	**2,900**	25	110	290
MW-04	2/19/2016	<0.5	<5.0	<0.5	<1.50

Table 2

Groundwater Analytical Results
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard		**5**	**1,000**	**700**	**620**
MW-04	6/20/2016	**1,680**	<50.0	297	**2,210**
MW-04	9/30/2016	**630**	72	94	**640**
MW-04	12/15/2016	**1,520**	15.8	17.3	166
MW-04	6/28/2017	**24**	154	67.2	**2,350**
MW-04	6/27/2018	<10	<10	<10	<15
MW-05	12/15/2016	**2,440**	**6,700**	638	**8,470**
MW-05	3/11/2020	**44**	100	8.0	270
MW-06	12/15/2016	**1,810**	**3,640**	**811**	**14,200**
MW-06	9/25/2017	**1,450**	**3,840**	271	**7,970**
MW-06	6/27/2018	<10	93	46	**840**
MW-06	9/20/2018	**170**	**2,200**	**970**	**18,000**
MW-06	12/13/2018	**57**	**1,500**	660	**11,000**
MW-06	3/25/2019	**57**	**1,200**	**750**	**12,000**
MW-06	6/24/2019	**120**	**1,800**	**870**	**14,000**
MW-06	12/10/2019	**76**	**1,200**	620	**11,000**
MW-06	3/10/2020	**150**	**2,300**	**880**	**13,000**
MW-06	6/23/2020	**120**	**1,900**	**850**	**18,000**
MW-06	9/28/2020	**110**	**1,800**	**990**	**13,000**
MW-06	12/15/2020	**140**	**2,400**	**1,400**	**16,000**
MW-07	6/27/2018	<1.0	<1.0	<1.0	<1.5
MW-07	9/20/2018	<2.0	<2.0	<2.0	<4.0
MW-07	12/13/2018	<1.0	<1.0	<1.0	<2.0
MW-07	3/25/2019	<2.0	<2.0	<2.0	<3.0
MW-07	6/24/2019	<2.0	<2.0	<2.0	<4.0
MW-07	9/27/2019	<1.0	<1.0	<1.0	<2.0
MW-07	12/10/2019	<1.0	<1.0	<1.0	<2.0
MW-07	3/11/2020	<1.0	<1.0	<1.0	<1.5
MW-07	6/23/2020	<1.0	<1.0	<1.0	<1.5
MW-07	9/28/2020	<1.0	<1.0	<1.0	<1.5
MW-07	12/15/2020	<1.0	<1.0	<1.0	<2.0
MW-09	10/13/2017	0.9	4.51	<0.5	8.98
MW-09	6/27/2018	<1.0	<1.0	<1.0	<1.5

Table 2

Groundwater Analytical Results
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard		**5**	**1,000**	**700**	**620**
MW-09	9/20/2018	<1.0	<1.0	<1.0	<2.0
MW-09	12/13/2018	<1.0	<1.0	<1.0	<2.0
MW-09	3/25/2019	<1.0	<1.0	<1.0	<1.5
MW-09	6/24/2019	<1.0	<1.0	<1.0	<1.5
MW-09	12/17/2019	<1.0	<1.0	<1.0	<2.0
MW-09	3/11/2020	<1.0	<1.0	<1.0	<1.5
MW-09	6/23/2020	<1.0	<1.0	<1.0	<1.5
MW-09	9/28/2020	<1.0	<1.0	<1.0	<1.5
MW-09	12/14/2020	<1.0	<1.0	<1.0	<2.0
MW-10	10/13/2017	<0.5	2.28	<0.5	3.33
MW-10	6/27/2018	<1.0	<1.0	<1.0	<1.5
MW-10	9/20/2018	<1.0	<1.0	<1.0	<2.0
MW-10	12/13/2018	<1.0	<1.0	<1.0	<2.0
MW-10	3/25/2019	<1.0	<1.0	<1.0	<1.5
MW-10	6/24/2019	<1.0	<1.0	<1.0	<2.0
MW-10	9/27/2019	<1.0	<1.0	<1.0	<2.0
MW-10	12/10/2019	<1.0	<1.0	<1.0	<2.0
MW-10	3/11/2020	<1.0	<1.0	<1.0	<1.5
MW-10	6/23/2020	<1.0	<1.0	<1.0	<1.5
MW-10	9/28/2020	<1.0	<1.0	<1.0	<1.5
MW-10	12/15/2020	<1.0	<1.0	<1.0	<2.0
MW-11	10/13/2017	<0.5	<1.0	<0.5	<1.5
MW-11	6/27/2018	<1.0	<1.0	<1.0	<1.5
MW-11	9/20/2018	<1.0	<1.0	<1.0	<2.0
MW-11	12/13/2018	<1.0	<1.0	<1.0	<2.0
MW-11	3/25/2019	<1.0	<1.0	<1.0	<1.5
MW-11	6/24/2019	<1.0	<1.0	<1.0	<2.0

Table 2

Groundwater Analytical Results
Sullivan Gas Com D#1E
San Juan County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard		**5**	**1,000**	**700**	**620**
MW-11	9/27/2019	<1.0	<1.0	<1.0	<2.0
MW-11	12/10/2019	<1.0	<1.0	<1.0	<2.0
MW-11	3/11/2020	<1.0	<1.0	<1.0	<1.5
MW-11	6/23/2020	<1.0	<1.0	<1.0	<1.5
MW-11	9/28/2020	<1.0	<1.0	<1.0	<1.5
MW-11	12/15/2020	<1.0	<1.0	<1.0	<2.0

µg/L - micrograms per liter
NMWQCC - New Mexico Water Quality Control Commission
BOLD - indicates result exceeds applicable standar
< indicates result is less than the stated laboratory method detection limit

ENCLOSURE A – FORM C-141 RELEASE NOTIFICATION

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

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy, Inc.	Contact: Kurt Hoekstra
Address: 382 Road 3100, Aztec, New Mexico 87410	Telephone No.: (505) 333-3100
Facility Name: Sullivan Gas Com D # 1E	Facility Type: Gas Well (Basin Dakota)

Surface Owner: Private	Mineral Owner	API No.: 30-045-24083

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	26	29N	11W	1475	FNL	1500	FWL	San Juan

Latitude 36.70002 **Longitude** -107. 96414

NATURE OF RELEASE

Type of Release: Condensate	Volume of Release: Unknown	Volume Recovered: None
Source of Release: Fiberglass line from the separator to the production tank.	Date and Hour of Occurrence: Unknown	Date and Hour of Discovery:6-5-2015 10:06 am
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour: N/A	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* On 6-1-2015 while replacing the fiberglass line from the separator to the production tank , dark soil with a hydrocarbon order was discovered. On 6-2-2015 a grab sample was collected six feet below the surface under a pipe union that could be the source of the impacted soil. The sample result was obtained on 6-5-2015, these results were above the standards for the Remediation of Leaks, Spills and Releases at5400 ppm TPH USEPA Method 8015 and Total BTEX of 521.2 ppm USEPA Method 8021. The site was then ranked according to the NMOCD Guidelines for the Remediation of Leaks, Spills and Releases. The site was ranked a 20 due to an estimated depth to groundwater of less than 50 feet, distance to a water well greater than 1000 feet, and distance to surface water greater than 1000 feet. This set the closure standard to 100 ppm TPH, 10 ppm benzene, and 50 ppm total BTEX.

Describe Area Affected and Cleanup Action Taken.*Based on the sample results of 5400 ppm TPH USEPA Method 8015 and Total BTEX of 521.2 ppm USEPA Method 8021, a release has been confirmed at this location. Remediation activities are in progress.

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

OIL CONSERVATION DIVISION

Signature: Kurt Hoekstra

Approved by Environmental Specialist:

Printed Name: Kurt Hoekstra

Title: EHS Coordinator

Approval Date: 7/6/15 Expiration Date:

E-mail Address: Kurt_Hoekstra@xtoenergy.com

Conditions of Approval: Submit Remediation plan

Attached ☐

Date: 6-19-2015 Phone: 505-333-3100

* Attach Additional Sheets If Necessary

#NCS 1518952648

(1)

ENCLOSURE B – INVESTIGATION AND REMEDIATION PLAN

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental Inc.

2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

September 11, 2015

Mr. James McDaniel
XTO Energy, Inc.
382 County Road 3100
Aztec, New Mexico 87410

RE: Subsurface Investigation Results and Remediation Work Plan
XTO Energy, Inc.
Sullivan Gas Com D #1E
API# 30-045-24083
Bloomfield, New Mexico

Dear Mr. McDaniel:

LT Environmental, Inc. (LTE) is pleased to present to XTO Energy, Inc. (XTO) this letter summarizing the results of a subsurface investigation and a remediation work plan to address identified soil and groundwater impacts at the Sullivan GC D #1E (Site). The Site is located south of Sullivan Road in Bloomfield, New Mexico approximately one quarter mile southeast of the San Juan River in Unit F of Section 26 of Township 29 North and Range 11 West (Figure 1). The subsurface investigation consisted of soil and groundwater sampling to delineate hydrocarbon impacts. Based on site conditions, LTE proposes *in situ* remediation consisting of enhanced fluid recovery and an air sparging/soil vapor extraction (AS/SVE) system.

SITE BACKGROUND

XTO identified a release at the Site on June 1, 2015. The source was a failed union in a fiberglass pipeline connecting the separator and aboveground storage tank. XTO responded by collecting subsurface soil samples from potholes and with a hand auger in locations depicted on Figure 2. Soil sampling results are presented on Table 1 and on Figure 3. The laboratory analytical results indicated soil was impacted at the source from approximately 4 feet below ground surface (bgs) to the depth that saturated sediments were observed at approximately 18.5 feet bgs. Concentrations of benzene from samples collected under the source ranged from 10 milligrams per kilogram (mg/kg) at 8 feet bgs to 53 mg/kg at 19 feet bgs. Total petroleum hydrocarbons (TPH) were detected in the soil samples as high as 16,300 mg/kg at 19 feet bgs.

Based on the presence of saturated sediments, XTO attempted to collect groundwater samples from BH-1, BH-2, and BH-3. The sidewalls of BH-1 collapsed and no groundwater was sampled at that location. A groundwater sample was collected from BH-2 and BH-3 for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). The concentrations of benzene, toluene, and total xylenes in the sample collected from BH-2 exceeded New Mexico Water Quality Control Commission (NMWQCC) standards as presented in Table 2. The groundwater sample collected from BH-3 contained no detectable concentrations of benzene, toluene, and ethylbenzene. Although total xylenes were detected, the concentration did not exceed NMWQCC standards.

SOIL INVESTIGATION

On August 19, 2015, LTE utilized a Geoprobe® 6620-DT direct-push drilling rig operated by Earth Worx Environmental Services, LLC to better delineate impacted soil near the source of the release. Soil borings

SB01 through SB09 were advanced to the saturated zone in locations depicted on Figure 2. During the advancement of soil borings, a geologist described soil samples according to the Unified Soil Classification System and evaluated soil for potential signs of environmental impacts by means of visual observations (i.e., inspection for staining/mottling) and olfactory assessment (i.e., odors). LTE conducted field screening for volatile aromatic hydrocarbons using a photoionization detector (PID) with a 10.6 electron-volt lamp on the soil sample collected from the interval immediately beneath the ground surface and every five feet thereafter in addition to any soil that was visibly stained or had a hydrocarbon odor. Field screening was conducted in accordance with the New Mexico Oil Conservation Division's (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases*, dated August 13, 1993. Soil boring logs are included as Attachment A.

Soil samples for laboratory analysis were collected from soil borings SB02, SB07, and SB08 from the unsaturated section of core containing the highest field screening results. Soil samples were not collected from soil borings where volatile organic compounds were not detected above 100 parts per million (ppm) during field screening. To minimize loss of volatile aromatic hydrocarbons, the soil samples were firmly packed into glass soil jars supplied by the laboratory and immediately placed on ice in a cooler. The sample jars were labeled with the date and time of collection, sample identifier, project name, collector's name, and parameters to be analyzed. Samples were shipped on ice to ESC Lab Sciences in Mt. Juliet, Tennessee (ESC) for analysis. Strict chain-of-custody (COC) protocol was followed from sampling through shipment. The date and time sampled, sample identifier, sampler's name, required analyses, and sampler's signatures were included on the COC. Soil samples were analyzed for BTEX and TPH-gasoline range organics (GRO) by United States Environmental Protection Agency (EPA) Method 8021 and TPH-diesel range organics (DRO) by EPA Method 8015.

The number of soil borings advanced by the Geoprobe® near the release origin was limited to maintain a safe distance from subsurface pipelines. On August 21, 2015, LTE personnel returned to the Site to utilize a hand auger due to a high concentration of subsurface utilities and equipment in the vicinity of the source area. Soil borings SB10 through SB16 were advanced to the saturated zone or until refusal (large cobbles). Soil samples were collected from SB10, SB11, SB12, SB14, and SB15 and submitted to ESC for analysis of BTEX and TPH.

GROUNDWATER INVESTIGATION

LTE collected groundwater grab samples from SB03, SB05, and SB06 by advancing Hydropunch™ tooling with the Geoprobe® and using a peristaltic pump with clean disposable tubing to fill three non-preserved 40 milliliter glass vials with zero headspace to prevent degradation of the samples. The groundwater samples were shipped on ice at 4 degrees Celsius under strict chain-of-custody procedures to the laboratory to be analyzed for BTEX according to EPA Method 8021B within the required holding time.

On September 4, 2015, LTE used a hand auger to install a product recovery well near the origin of the release (PR-1). The well is constructed of schedule 40, 2-inch polyvinyl chloride (PVC) and includes 10 feet of 0.01-inch machine slotted flush-threaded PVC well screen. A clean 10-20 grade silica sand pack was placed from the bottom of the boring to two feet above the top of the screen. Above the gravel pack, 3/8-inch natural bentonite chips were set to the ground surface. A completion diagram is included in Appendix A.

During the week of September 7, 2014, LTE utilized a CME-75 drilling rig equipped with hollow stem augers to install four groundwater monitoring wells in locations depicted on Figure 2. The groundwater

monitoring wells were constructed of 2-inch diameter schedule 40 PVC and included 10 feet of 0.01 inch machine slotted flush-threaded PVC well screen. A clean 10-20 grade silica sand gravel pack was placed from the bottom of the soil boring to two feet above the top of the screen. Two feet of three-eighths inch bentonite chips were set above the gravel pack, followed by a neat cement slurry to the surface, containing a minimum of 5 percent powdered bentonite. The wells were set in a flush-mount casing.

Following installation, the locations of the four monitoring wells and the product recovery well were obtained using a Trimble GeoXT global positioning system. The wells were surveyed for top-of casing elevations to an accuracy of plus or minus 0.01 feet so that groundwater flow direction and gradient could be determined. Total depth of each monitoring well was obtained using a Keck oil/water interface probe. The monitoring wells were developed utilizing a new PVC bailer. LTE purged fluid until at least 10 casing volumes had been removed and turbidity was reduced to the greatest possible extent or until the well bailed dry. All purged water was disposed of at a produced water tank on site.

RESULTS

The observed subsurface lithology consisted of a sandy silt to a silty sand that is 13 feet to 17 feet thick underlain by a saturated sand occurring at 13 feet to 17.5 feet. Varying sized cobbles were observed dispersed vertically throughout the subsurface. In MW01, a consolidated silty sand existed under the saturated interval at approximately 22 feet bgs. Although the saturated interval was stained and yielded field screening results suggesting soil and groundwater were impacted, the underlying consolidated layer did not exhibit petroleum hydrocarbon impact. As such, LTE did not advance the borehole further into the subsurface and set the well at 23 feet bgs. Soil boring logs are provided in Attachment A.

Soil Sampling Results

In accordance with the NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993), remediation action levels for soil at the Site were determined to be 10 mg/kg for benzene, 50 mg/kg for BTEX, and 100 mg/kg for TPH because groundwater is less than 50 feet bgs. Soil samples 8’ Below Union, 12’ Below Union, 18.5’ Below Union, 19’ Below Union, SB07@16-18’, SB08@16-17’, and SB11@4’ exceeded the NMOCD action levels for BTEX and TPH. Soil samples 8’ Below Union, 19’ Below Union, SB07@16-18’, and SB08@16-17’ also exceeded the action level for benzene. The soil analytical results are summarized in Table 1 and illustrated on Figure 3. Soil analytical reports are included as Attachment B.

Groundwater Sampling Results

Groundwater samples collected from BH-2, SB03, and SB06 exceeded the NMWQCC standards for BTEX, although BH-2 did not exceed the standard for ethylbenzene. The groundwater analytical results are summarized in Table 2 and illustrated on Figure 4. Groundwater analytical reports are included as Attachment B. Groundwater analytical results for MW02 through MW04 will be provided when final results are available.

Depth to groundwater data are summarized in Table 3. Groundwater flow direction was determined to be to the north-northwest as depicted on Figure 4. Free product was detected in PR-1 and MW01 at a thickness of 0.45 feet and 0.27 feet respectively. LTE installed sorbent product recovery socks in PR-1 and MW01 until additional work can be completed.

DISCUSSION

Analytical laboratory results, field screening results, and field observations of staining and odor indicated petroleum hydrocarbon impact to soil is localized around the release origin. Petroleum hydrocarbon impact to soil was encountered at the shallowest depth of 1.5 feet bgs near the release origin and at SB11 and extended to saturated sediments at 17.5 feet to 18 feet bgs. Depth to impacted soil increases away from the release origin and source material appears to be approximately 35 feet by 40 feet in extent as illustrated on Figure 5. Soil impacted below 15 feet bgs is restricted to the smear zone ranging from approximately 17 feet bgs to 22 feet bgs. As documented in MW01, soil below 22 feet bgs does not appear to be impacted and may be restricting vertical migration to a deeper interval.

Groundwater sampling results and soil staining observed in saturated sediments suggest free product exists near the release location and approximately 30 feet away from the release location. A dissolved phase groundwater plume extends in the downgradient direction to the location of SB06, but is delineated by clean groundwater sampled from SB05. Downgradient monitoring wells MW03 and MW04 do not appear to contain groundwater exceeding NMWQCC standards based on visual observations.

Distribution of the soil impact was likely controlled by the subsurface lithology of loose silty sand and cobbles with limited silty sand that promoted vertical migration. Once the release reached groundwater, horizontal migration resulted in distribution of free product around the source. Dissolved-phase impact migrated downgradient and extends approximately 100 feet to the northwest.

PROPOSED REMEDIATION PLAN

The depth of the impact and current surface use suggests an *in-situ* remedy is most practical and appropriate for the Site. Based on lithology and soil sampling results identified during initial soil sampling by XTO and subsequent sampling efforts accomplished by LTE, interim enhanced free product recovery followed by operation of an air sparging/soil vapor extraction (AS/SVE) mechanical system to treat the impact near the source is proposed. These methods will also promote aerobic biodegradation processes in areas extending beyond the area of direct influence of the proposed remediation wells and restrict potential downgradient migration of free product.

Delineation

LTE will collect groundwater samples from the newly installed monitoring wells immediately. Prior to sampling groundwater monitoring wells, depth to groundwater and total depth of each monitoring well will be measured with a Keck oil/water interface probe. The volume of water in each monitoring well will be calculated, and a minimum of three well casing volumes of water will be purged from each well using a new disposable PVC bailer. Once each monitoring well is purged, groundwater samples will be collected by filling laboratory-supplied bottles, stored on ice, and delivered to a laboratory for analysis of BTEX under strict COC procedures.

Currently, the free product plume is not fully defined. LTE proposes to advance three or more boreholes at the Site in the general locations depicted on Figure 6 and convert the boreholes to product recovery wells depending on the presence or absence of product in the completed wells. LTE may step out from the proposed locations and advance additional boreholes based on the results of field observations. Additional upgradient delineation is restricted by the presence of the steep hillside on the southeastern boundary of the well pad.

Product Recovery

XTO will recover and change the product recovery socks in PR-1 and MW01 weekly until a remediation plan is approved by the NMOCD and implementation begins. The weekly visits will include measuring product thickness and recording the volume of product recovered.

To minimize free product present in the source area, product recovery will be implemented in the recovery wells using a vacuum extraction method applied by a mobile vehicle. The expected volume of recovered fluids is relatively limited based on the saturated interval expected to be affected (18 feet to 23 feet bgs). A stinger will be lowered into the wells and extracted air and fluid will be accumulated in a liquid/air separation tank. The expected duration of each extraction event will be up to 2 hours. The fluid elevations will be measured before and after each event and depending on the observations following two initial extraction events spaced one week apart, one of the following will be implemented as needed:

- Additional events using the mobile vacuum extraction unit;
- Additional events using a bailer to manually remove product;
- Installation of product recovery socks in the wells; and/or
- Product skimming by installation of a mechanical automated skimmer pump and a storage tank.

XTO will document product thickness and track the total volume of product removed throughout the enhanced fluid recovery phase. Product recovery efforts will cease and transition to AS/SVE system described below when less than approximately 1-inch in measured thickness of product is achieved in the product recovery wells. At this measurable level, any additional movement of liquid petroleum impact is expected to be minimal and AS/SVE has typically proven to be effective in mitigating remaining impact.

Soil Vapor Extraction

Because sampling indicates soil is impacted at the source area in the vadose zone and saturated zone, SVE at the source area is recommended. SVE is an industry standard, cost-effective technology for *in-situ* remediation of petroleum hydrocarbons, especially in sandy soils. The observed impacted soil at the Site consists of silty sand with minor amounts of clayey sand. The impact has resulted from a release of natural gas condensate which is comprised mostly of light, readily volatilized petroleum hydrocarbon compounds. SVE will promote volatilization of the hydrocarbon impact distributed within the vadose zone and any remaining liquid free product that has accumulated on top of the groundwater. The SVE system will be designed to optimize extraction in areas where the impact has been observed in the unsaturated soil intervals. The SVE is estimated to provide an influence of approximately 30 feet from the well, and based on this estimate, three SVE wells will be installed as depicted on Figure 7 along with using location PR-1. The SVE wells will be constructed with 2-inch PVC casing and have 0.02-slot PVC screened across the impacted interval.

A blower capable of optimizing vapor recovery from several wells will be selected. An extraction blower capable of operating at approximately 80 cubic feet per minute (cfm) and an applied vacuum of 30 inches of water column will be installed. Operations and maintenance (O&M) of the system will be conducted weekly for the first 2 months, then be reduced based on system performance. O&M will consist of adjusting the SVE air flow distribution and field screening recovered hydrocarbon vapors.

Air Sparging

In addition to the SVE technology, LTE proposes to install six AS wells near the known source area to address impacted groundwater in this area and in the areas where residual free product may be present. The AS system will be designed to volatilize entrained product beneath the saturated interval and strip dissolved hydrocarbons dissolved in the groundwater. The influence from a single AS well is estimated to extend 10 feet from the sparging locations. With this estimate, four AS wells are planned for the source area and two downgradient wells are proposed (Figure 7). The initial row of AS wells will be designed to address the source area, and the second row will be designed to treat downgradient groundwater impact. Biological enhanced degradation and other natural attenuation processes will be relied on to address other areas of impacted groundwater. The well locations will be adjusted as needed to avoid subsurface utilities, surface structures, and to minimize the effect on traffic patterns.

The AS wells will be constructed with 1-inch PVC casing and have one foot of 0.010-slot PVC screen with the top of the screen placed approximately 5.5 feet below the groundwater elevation (immediately on top of a consolidated interval observed at approximately 23 feet bgs). During construction of the AS wells, a soil sample will be collected and if the consolidated interval is not observed, the top of the sparging screen will be set to an optimum depth of 8 feet below the groundwater elevation. A 10-20 silica sand gravel pack will be placed around the screen to 6-inches above the screened interval. Three feet of bentonite pellets will be installed above the screened interval and the well will be completed with neat cement grout to near the ground surface. Concrete will be placed at the surface well completion.

An AS blower capable of providing approximately 30 cfm at 15 pounds per square inch (psi) will be installed and the wells will be connected to the blower via surface or subsurface piping depending on traffic requirements.

Oxygenating the subsurface soil and groundwater through the AS/SVE system operation will promote biodegradation of impacted groundwater beyond the direct influence of the AS well and help address potential migration of free-phase and dissolved phase impact. The effectiveness of the AS and SVE will be evaluated through groundwater monitoring efforts.

Groundwater Monitoring

Groundwater monitoring for BTEX will be conducted quarterly during AS/SVE operation. Once BTEX concentrations have been reduced by the remediation system, XTO will turn off the systems and continue quarterly sampling with the goal of observing eight consecutive quarters with analytical results in compliance with NMWQCC standards.

Reporting

Groundwater monitoring results will be submitted in annual reports to the NMOCD. Reports will additionally include product recovery volumes; AS/SVE data including applied pressure, flow and vacuum with air emission estimates; groundwater elevations; and analytical results. Data will be presented on relevant figures including site location, potentiometric surface maps, product thickness and groundwater analytical results. The initial annual report will include soil borings and monitoring well completion logs and a cross section depicting the subsurface observations.

LTE appreciates the opportunity to provide this remediation work plan to XTO. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970) 385-1096 or via email at aager@ltenv.com.

Sincerely,
LT ENVIRONMENTAL, INC.

Ashley L. Ager
Senior Geologist/Office Manager

Christopher E. Shephard, P.E.
Chief Engineer

Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Soil Analytical Results
Figure 4 – Groundwater Analytical Results
Figure 5 – Estimated Depth to Soil Impact
Figure 6 – Enhance Fluid Recovery Plan
Figure 7 – Remediation System Plan

Table 1 – Soil Analytical Results
Table 2 – Groundwater Analytical Results
Table 3 – Groundwater Elevations

Attachment A – Soil Boring Logs
Attachment B – Laboratory Analytical Reports

FIGURES

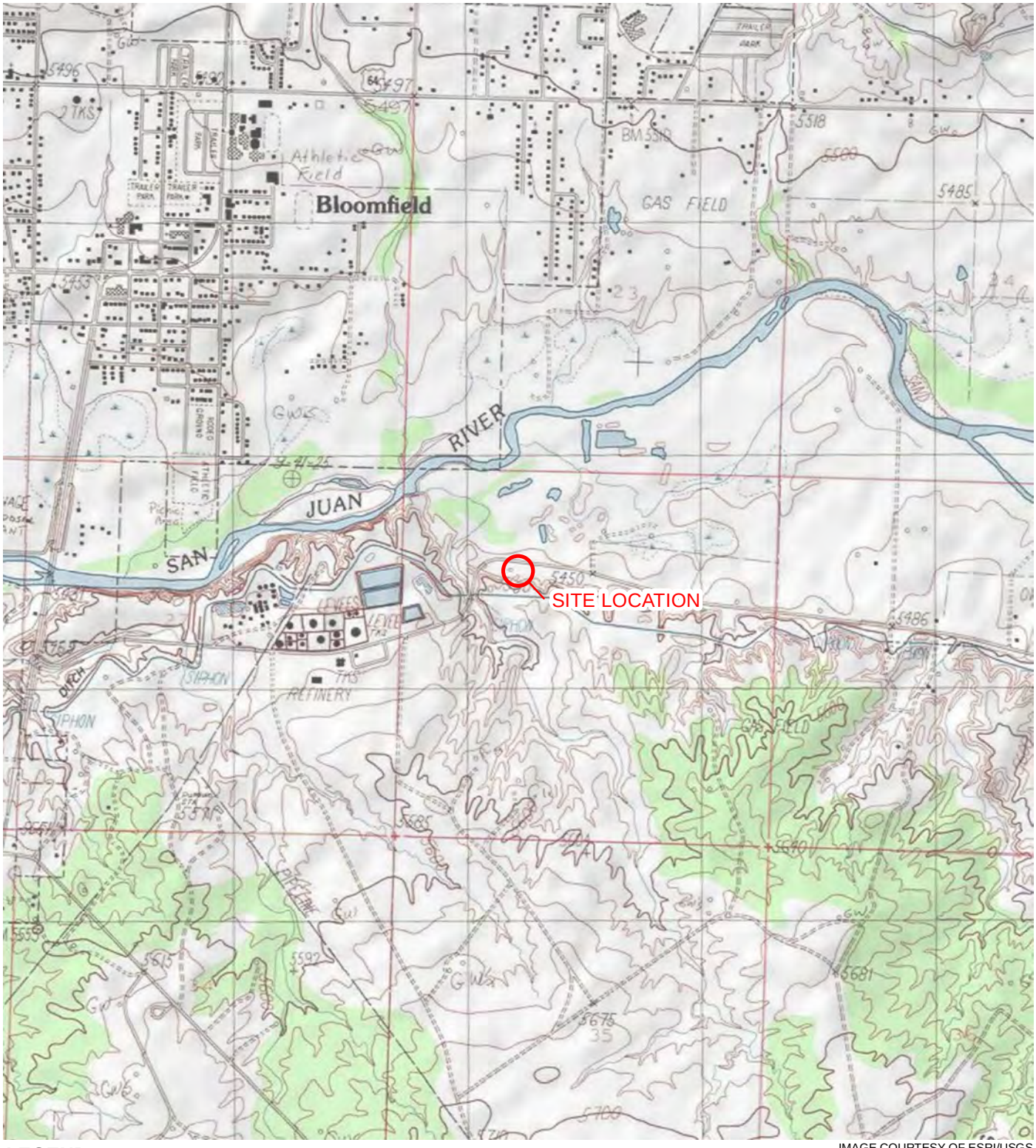

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG01_SL.mxd

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES

AST: ABOVEGROUND STORAGE TANK

IMAGE COURTESY OF ESRI

0 40 80
Feet

N

FIGURE 2
SITE MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG02_SITE.mxd

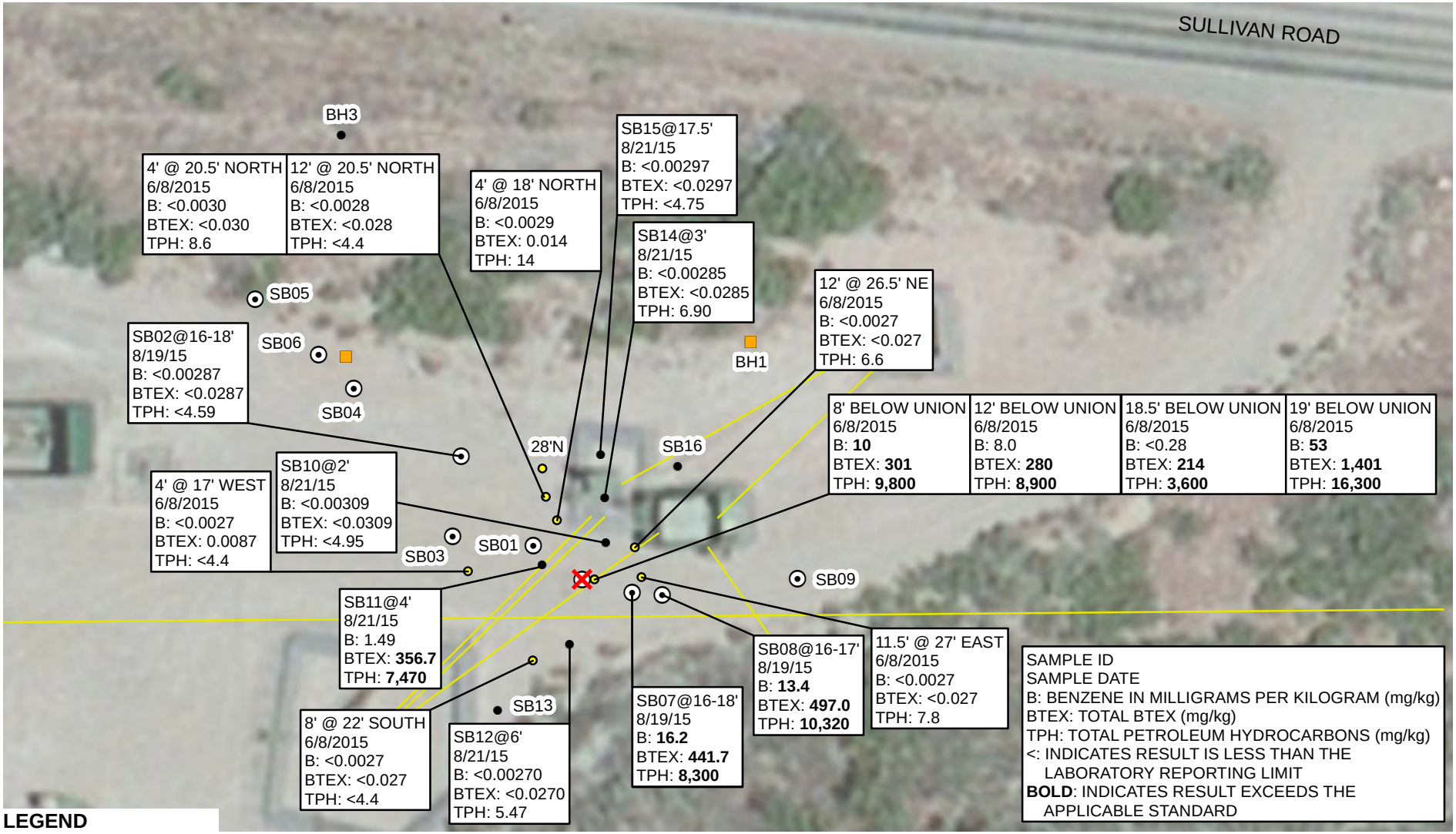

FIGURE 3
SOIL ANALYTICAL RESULTS
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG03_SOIL_ANALY_USE.mxd

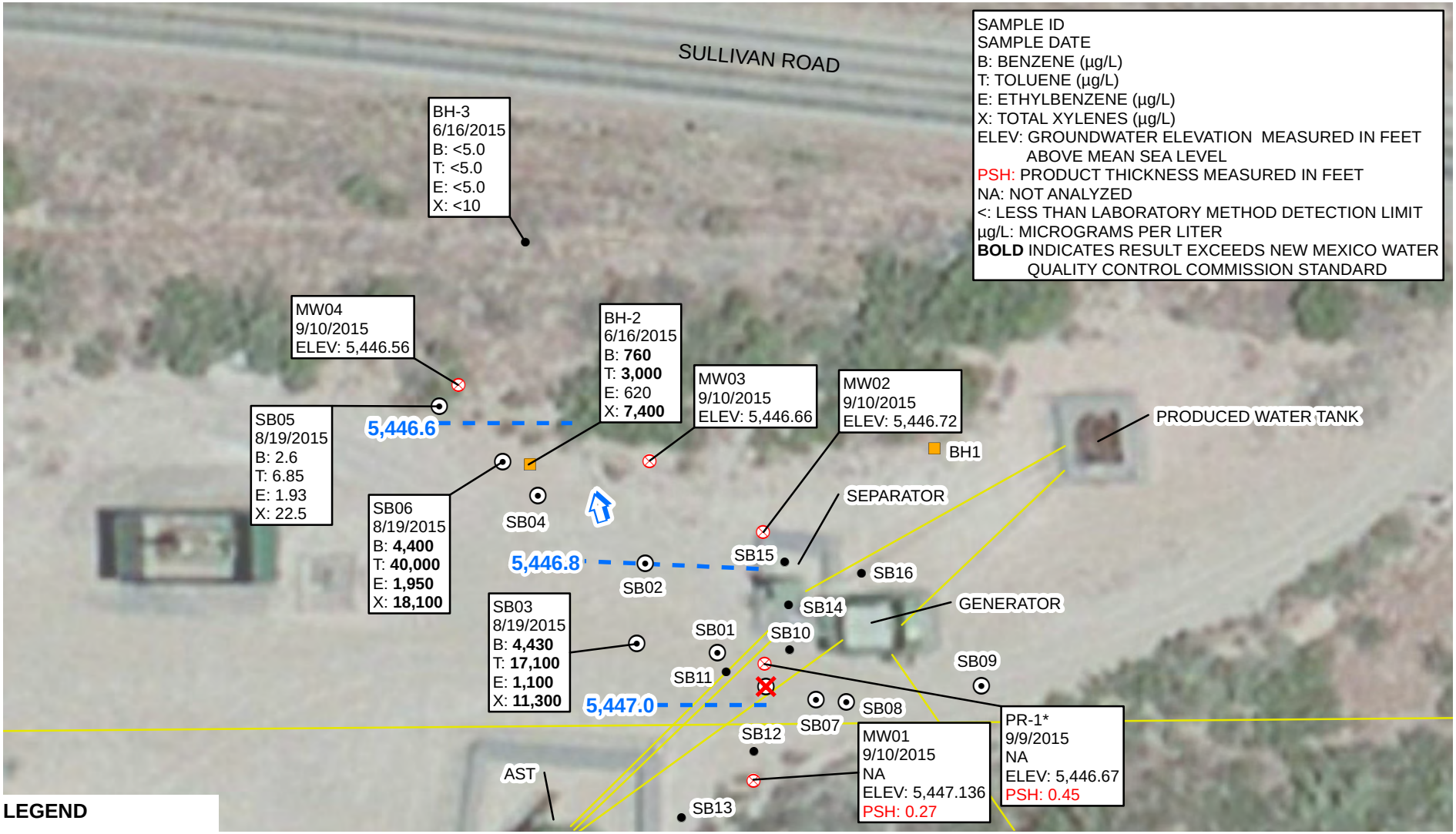

FIGURE 4
GROUNDWATER ELEVATION CONTOUR MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

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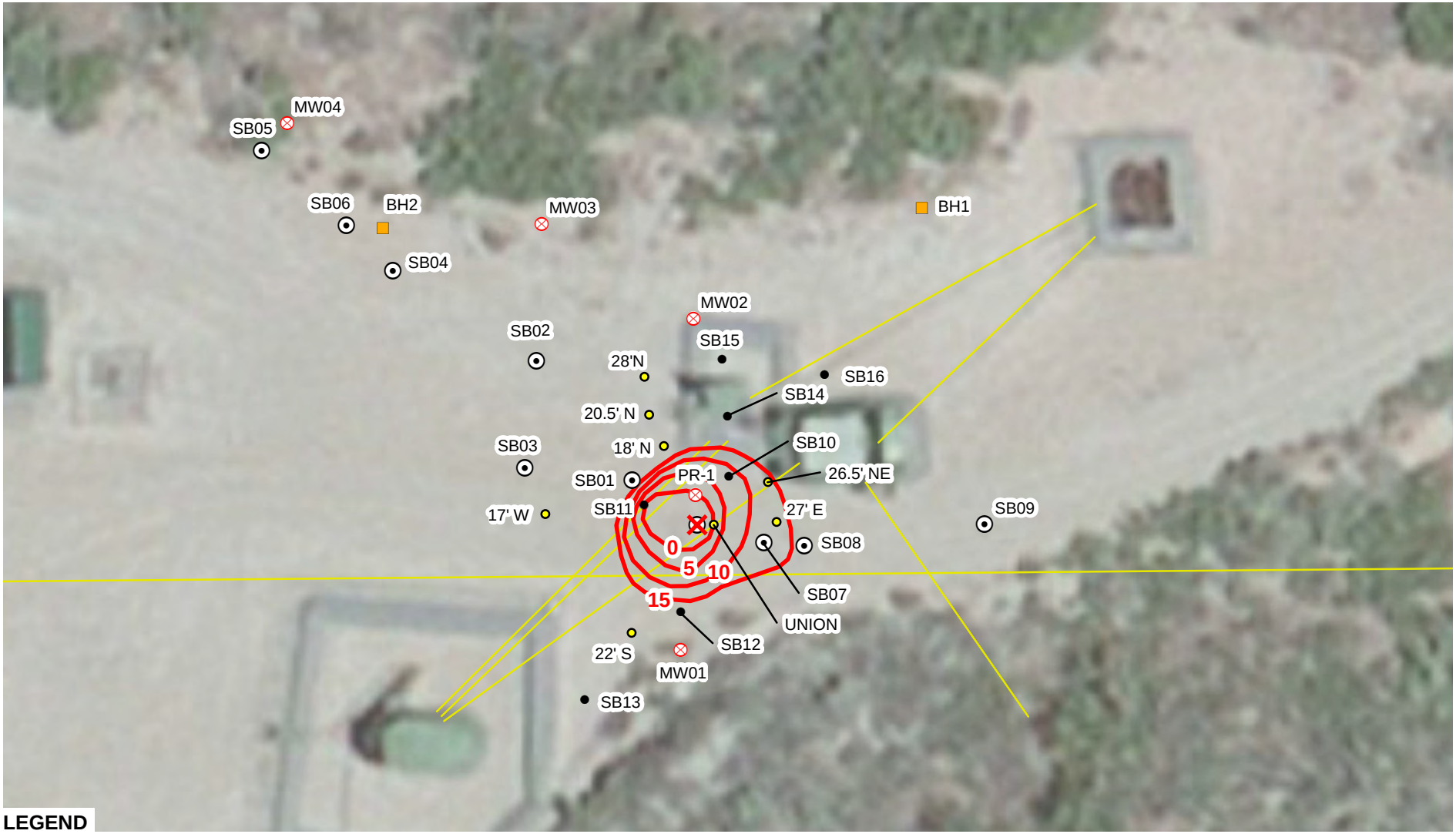

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES
- ESTIMATED DEPTH OF IMPACT ELEVATION CONTOUR
  CONTOUR INTERVAL = 5 FEET

IMAGE COURTESY OF ESRI

0 30 60
Feet

N

FIGURE 5
ESTIMATED DEPTH TO SOIL IMPACT
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

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IMAGE COURTESY OF ESRI

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- PRODUCT RECOVERY LOCATION
- SUBSURFACE UTILITIES

AST: ABOVEGROUND STORAGE TANK

0 40 80

Feet

N

FIGURE 6
ENHANCED FLUID RECOVERY PLAN
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG06_SITE.mxd

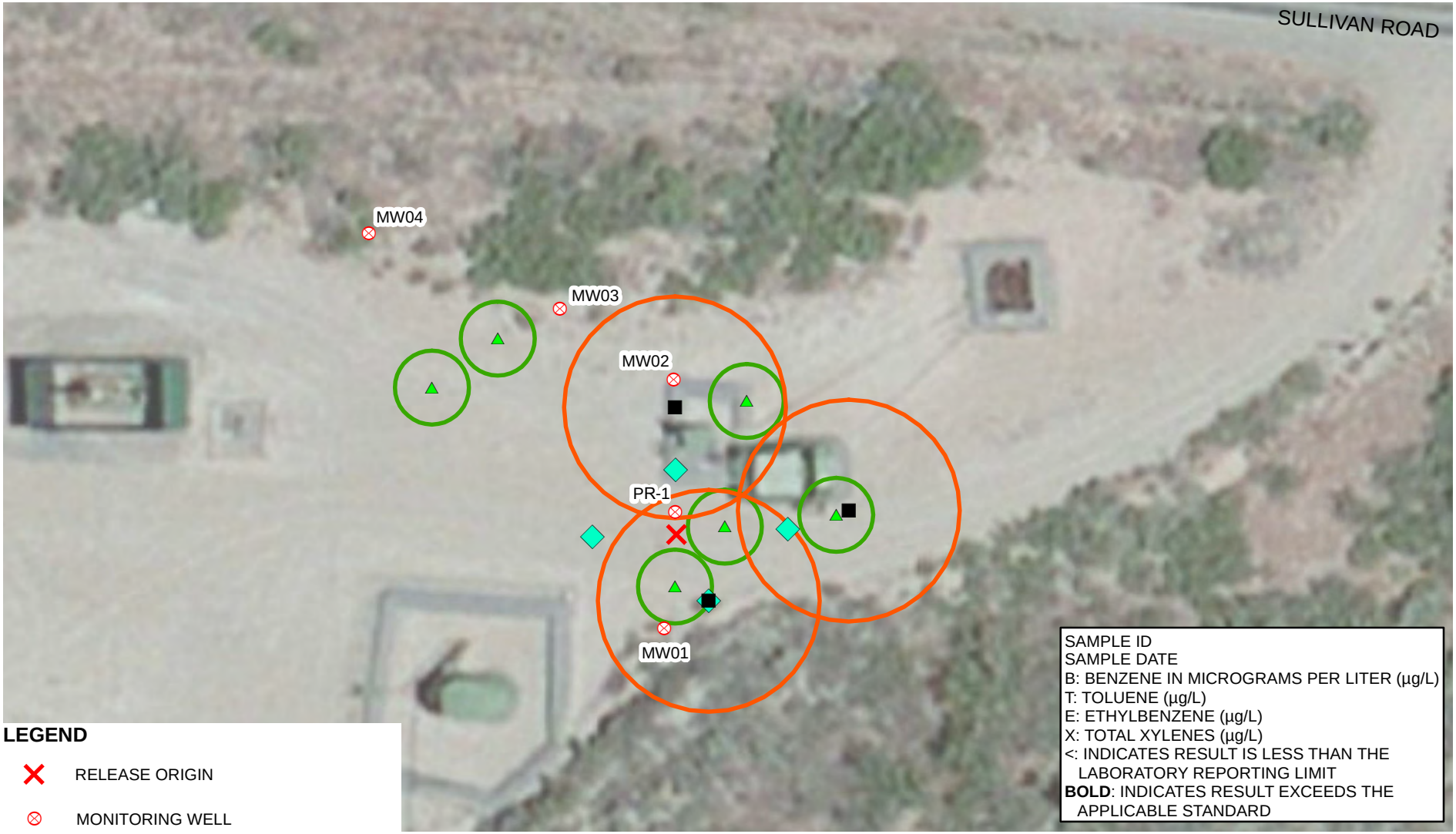


FIGURE 7
REMEDIATION SYSTEM PLAN
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG7_REMEDIATION_PLAN.mxd

TABLES

TABLE 1

SOIL ANALYTICAL RESULTS
SULLIVAN GAS COM D #1E
XTO ENERGY, INC.

Sample ID	Sample Name	Sample Date	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	TPH (mg/kg)
FARRF-060815-1020	8' Below Union	6/8/2015	984	**10**	67	14	210	**301**	6,300	3,500	**9,800**
FARRF-060815-1038	12' Below Union	6/8/2015	1,581	8.0	58	14	200	**280**	5,400	3,500	**8,900**
FARRF-060815-1105	4' @ 17' West	6/8/2015	248	<0.0027	<0.027	<0.0027	0.0087	0.0087	<4.4	<0.55	<4.4
FARRF-060815-1210	4' @ 18' North	6/8/2015	364	<0.0029	<0.029	<0.0029	0.014	0.014	14	<0.58	14
FARRF-060815-0130	4' @ 20.5' North	6/8/2015	66.5	<0.0030	<0.030	<0.0030	<0.0089	<0.030	8.6	<0.59	8.6
FARRF-060815-0215	12' @ 20.5' North	6/8/2015	161	<0.0028	<0.028	<0.0028	<0.0083	<0.028	<4.4	<0.56	<4.4
FARRF-060815-0300	8' @ 22' South	6/8/2015	41	<0.0027	<0.027	<0.0027	<0.0082	<0.027	<4.4	<0.54	<4.4
FARRF-060815-0435	11.5' @ 27' East	6/8/2015	172	<0.0027	<0.027	<0.0027	<0.0080	<0.027	7.8	<0.53	7.8
FARRF-060815-0535	12' @ 26.5' NE	6/8/2015	130	<0.0027	<0.027	<0.0027	<0.0082	<0.027	6.6	<0.54	6.6
FARRF-060815-0930	18.5' Below Union	6/8/2015	1,278	<0.28	3	11	200	**214**	<4.5	3,600	**3,600**
FARRF-060815-0947	19' Below Union	6/8/2015	NM	**53**	420	68	860	**1,401**	3,300	13,000	**16,300**
FARMW-081915-0930	SB02@16-18'	8/19/15	82.1	<0.00287	<0.0287	<0.00287	<0.00861	<0.0287	<4.59	<0.574	<4.59
FARMW-081915-1500	SB07@16-18'	8/19/15	1,913	**16.2**	102	22.5	301	**441.7**	2,780	5,520	**8,300**
FARMW-081915-1540	SB08@16-17'	8/19/15	2,175	**13.4**	105	27.6	351	**497**	3,550	6,770	**10,320**
FARMW-082115-1035	SB10@2'	8/21/15	74.3	<0.00309	<0.0309	<0.00309	<0.00928	<0.0309	<4.95	<0.619	<4.95
FARMW-082115-1100	SB11@4'	8/21/15	2,754	1.49	53	24.2	278	**356.69**	2,720	4,750	**7,470**
FARMW-082115-1145	SB12@6'	8/21/15	91.2	<0.00270	<0.0270	<0.00270	0.0119	0.0119	5.47	<0.541	5.47
FARMW-082115-1425	SB14@3'	8/21/15	41.5	<0.00285	<0.0285	<0.00285	<0.00855	<0.0285	6.90	<0.570	6.90
FARMW-082115-1624	SB15@17.5'	8/21/15	209	<0.00297	<0.0297	<0.00297	0.0186	0.0186	<4.75	<0.593	<4.75
NMOCD Standard			**NE**	**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**100**

Notes:
' - feet below ground surface
< indicates result is less than the stated laboratory method detection limit
Bold - indicates values exceeding NMOCD standards
BTEX - benzene, toluene, ethylbenzene, and total xylenes
DRO - diesel range organics
GRO - gasoline range organics
mg/kg - milligrams per kilogram
NE- not established
NM- not measured
NMOCD - New Mexico Oil Conservation Division
ppm - parts per million
TPH - total petroleum hydrocarbons (sum of DRO and GRO)

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
SULLIVAN GAS COM D #1E
XTO ENERGY, INC.

Sample ID	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
BH-2	6/16/2015	**760**	**3,000**	620	**7,400**
BH-3	6/16/2015	<5.0	<5.0	<5.0	<10
SB03	8/19/2015	**4,430**	**17,100**	**1,100**	**11,300**
SB05	8/19/2015	2.60	6.85	1.93	22.5
SB06	8/19/2015	**4,400**	**40,000**	**1,950**	**18,100**
NMWQCC Standard		**10**	**750**	**750**	**620**

Notes:
< indicates result is less than the stated laboratory method detection limit
NMWQCC - New Mexico Water Quality Control Commission
µg/l - micrograms per liter

TABLE 3

GROUNDWATER ELEVATIONS
SULLIVAN GAS COM D #1E
XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet AMSL)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
PR-1	9/9/2015	5466.00	19.24	19.69	0.45	5,446.67
MW01	9/10/2015	5468.74	21.55	21.82	0.27	5,447.14
MW02	9/10/2015	5465.57	NP	18.85	NP	5,446.72
MW03	9/10/2015	5466.11	NP	19.45	NP	5,446.66
MW04	9/10/2015	5465.50	NP	18.94	NP	5,446.56

Notes:

A product density factor of 0.8 is used to account for the presence of free product in PR-1 and MW01.
AMSL - Above Mean Sea Level
BTOC - Below Top of Casing
NP - No Product

ATTACHMENT A

SOIL BORING LOGS

Compliance M Engineering M Remediation
LT Environmental, Inc.
2243 Main Ave #3
Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW-01	Project: Sullivan GC D#1E
Date: 9/9/2015	Project Number: 012915025
Logged By: David Stainback	Drilled By: Kyvek
Elevation:	Detector: MiniRae 2000
Drilling Method: Hollow Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10/20 Silica Sand	Seal: Bentonite
Grout: NA	
Casing Type: PVC	Diameter: 2" Length: 13'
Hole Diameter: 4.25"	Depth to Liquid: NA
Screen Type: PVC Slot: 0.010	Diameter: 2" Length: 10'
Total Depth: 23'	Depth to Water: 21.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0	No		2				Cuttings not recorded until visual impact observed, attempt to sample at 16' bgs, but cobbles were encountered	
	Dry	0.0	No		4					
	Dry	0.0	No		6					
	Dry	0.0	No		8					
	Dry	0.0	No		10					
	Dry	0.0	No		12					
	Dry	0.0	No		14					
	Dry	0.0	No		16					
	Damp	1,815.0	Yes							
	Damp		Yes		18			SM	Grey 10 yr 5/1, staining, 60% medium grain, 40% fine grain sand, odor	
	Wet		Yes							
	Wet		Yes		20					
	Wet		Yes							
	Wet	1,620.0	Yes	MW-01 @23'	22			SM	Light grey to tan, 10 yr 8/2, silty sand, tight, dry, no odor, no stain	
	Dry		No							
	Dry	0.1			24					
					26					
					28					

Compliance M Engineering M Remediation
LT Environmental, Inc.
2243 Main Ave #3
Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW-02	Project: Sullivan GC D#1E
Date: 9/9/2015	Project Number: 012915025
Logged By: David Stainback	Drilled By: Kyvek
Elevation:	Detector: MiniRae 2000
Drilling Method: Hollow Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10/20 Silica Sand	Seal: Bentonite
Grout: NA	
Casing Type: PVC	Diameter: 2" Length: 13'
Hole Diameter: 4.25"	Depth to Liquid: NA
Screen Type: PVC	Slot: 0.010 Diameter: 2" Length: 10'
Total Depth: 23'	Depth to Water: 19'

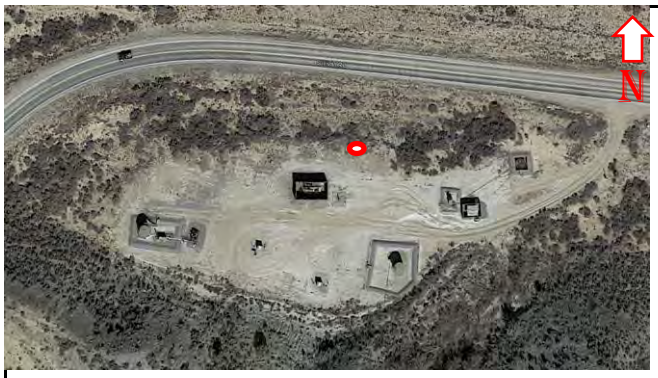
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0	No		2				Cuttings not recorded untilvisual impact observed at 16ft	
	Dry	0.0	No		4					
	Dry	0.0	No		6					
	Dry	0.0	No		8					
	Dry	0.0	No		10					
	Dry	0.0	No		12					
	Dry	0.0	No		14					
	Dry	0.0	No		16					
	Dry	0.0	No		18			SM	Grayish brown, 10 yr 5/6, silty fine-medium grain sand, dry, no stain/odor	
	Wet	1,434.0	Yes							
	Wet	1,434.0	Yes		20			SM	Very dark grey 10 yr 3/1, medium good red silty sand, wet, stain and odor and clay lense at 18-18.5 bgs (above water table)	
	Wet	1,139.0	Yes							
	Wet	1,139.0	Yes		22			SM	Very dark grey 10 yr 3/1, medium grain silty sand, wet, with stain and odor	
	Wet	1,139.0	Yes							
					24					
					26					
					28					
									TD @ 23'	

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
2243 Main Ave #3
Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW-03		Project: Sullivan GC D#1E	
Date: 9/9/2015		Project Number: 012915025	
Logged By: David Stainback		Drilled By: Kyvek	
Elevation:	Detector: MiniRae 2000	Drilling Method: Hollow Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10/20 Silica Sand		Seal: Bentonite	Grout: NA
Casing Type: PVC		Diameter: 2" Length: 13'	Hole Diameter: 4.25" / Depth to Liquid: NA
Screen Type: PVC	Slot: 0.010	Diameter: 2" Length: 10'	Total Depth: 23' / Depth to Water: 19'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	Dry	0.0	No		2				Silty Sand- Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, non-plastic, non-cohesive.	
	Dry	0.0	No		4					
	Dry	0.0	No		6					
	Dry	0.0	No		8					
	Dry	0.0	No		10					
	Dry	0.0	No		12					
	Dry	0.0	No		14					
	Dry	0.0	No		16					
	Dry	0.0	No		18			ML	Brown silt, with fine grained sand, 10 yr 4/4, dry, no stain or odor	
	Moist	0.0	No							
	Wet	73.2	Yes		20			ML-SM	Brown silt, with fine grained sand, 10 yr 4/4, moist, no stair or odor, transition to medium grain silty sand, dark grey, wet with stains and odor	
	Wet	96.4	No							
	Wet	12.3	No		22			SM	Dark grey silty sand, 2.5 yr 4/1, odor and stain, wet, stain and odor, transitions to light grey silty sand with no stain or odor.	
	Wet	12.3	No						**TD @ 23'**	
					24					
					26					
					28					



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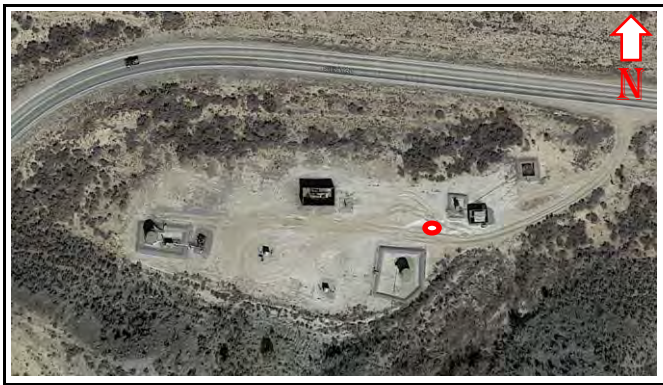
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW-04	Project: Sullivan GC D#1E
Date: 9/9/2015	Project Number: 012915025
Logged By: David Stainback	Drilled By: Kyvek
Elevation:	Detector: MiniRae 2000
Drilling Method: Hollow Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10/20 Silica Sand	Seal: Bentonite
Grout: NA	
Casing Type: PVC	Diameter: 2" Length: 13'
Hole Diameter: 4.25"	Depth to Liquid: NA
Screen Type: PVC Slot: 0.010	Diameter: 2" Length: 10'
Total Depth: 23'	Depth to Water: 17'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	Dry	0.0	No		2				Cuttings not recorded until visual impact observed, attempt to sample at 16' bgs, but cobbles were encountered	
	Dry	0.0	No		4					
	Dry	0.0	No		6					
	Dry	0.0	No		8					
	Dry	0.0	No		10					
	Dry	0.0	No		12					
	Dry	0.0	No		14					
	Dry	0.0	No		16					
	Moist	0.0	No							
	Dry	0.0	No		18			SM	Very silty sand, light brown 10 yr 5/3, moist, 60% fine grain sand, 40% S:H, no stain or odor	
	Wet	9.2	No							
	Wet	6.2	No		20			SM	Light brown silty sand 10 yr 5/3, wet, grading from fine to medium sand, no stain, slight odor	
	Wet		No							
	Wet		No		22			SM	Light brown silty sand 10 yr 5/2, wet, no stain/odor, medium grain sand	
	Wet		No						**TD @ 23'**	
					24					
					26					
					28					



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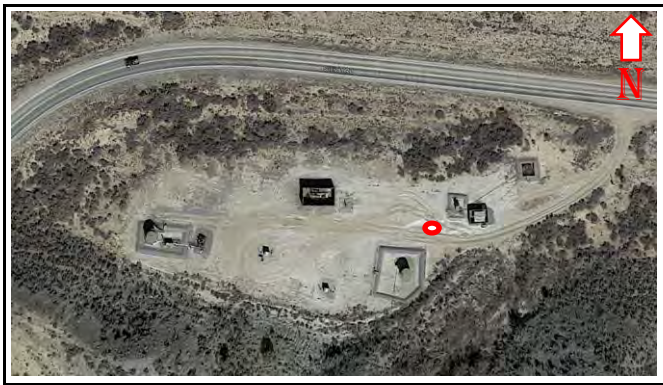
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: PR01	Project: Sullivan GC D#1E
Date: 9/4/2015	Project Number: 012915025
Logged By: Alex Crooks	Drilled By: LT Environmental
Elevation: 5,470'	Detector: None
Drilling Method: Hand Auger	Sampling Method: No samples Taken
Gravel Pack: 10/20 Silica Sand	Seal: Bentonite
Grout: NA	
Casing Type: PVC	Diameter: 2" Length: 10'
Hole Diameter: 2"	Depth to Liquid: NA
Screen Type: PVC Slot: 0.01	Diameter: 2" Length: 10'
Total Depth: 20'	Depth to Water: ~17.0'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry		None		0				Silty Sand- Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, non-plastic, non-cohesive.	
					2					
	Dry		Yes		4				Gray 7.5YR 5/1 staining, slight odor	
	Moist		Yes		6				Very Dark Gray 10YR 3/1 staining, strong odor	
					8					
					10			SM		
					12					
	Moist		Yes		14				Gray 10YR 5/1 staining, odor	
					16					
	Wet				18					
					20					
					22				**TD @ 20'**	
					24					
					26					
					28					
					30					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB01		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 20'	Depth to Water: ~18.0'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, gray 7.5YR 6/1 to black 2.5/1 staining/ slight odor	
	Very Dry	82.7			2					
					3					
					4					
					5				Brown 7.5YR 5/4, no staining/odor	
	Very Dry	16.7			6					
					7					
					8			SM		
					9				Gray 7.5YR 5/1 staining, slight odor	
	Very Dry	100			10					
					11					
					12					
					13					
	Very Dry	57.3			14					
					15					

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Boring/Well #	SB01
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16				*Soil sample unattainable due to insufficient soil recovery	
	Very Dry ▼	77.7			17					
					18			SM		
				SB01 @ 18-20' 0900	19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	3,974			20					
					21				**TD @ 20'**	
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB02		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: 24' / Depth to Water: ~18.0'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Very Dry	1.3			1–4			SM	**Silty Sand** Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, gray 7.5YR 6/1 to black 2.5/1 staining/ slight odor	
	Very Dry	1.5			5–8			CH	**Fat Clay w/ Sand** Strong brown 7.5 4/6, soft, high plasticity, cohesive	
	Very Dry	0.9			9–11			SM	**Silty Sand** Brown 7.5YR 5/3, 80% silt, 20% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/slight odor	
	Very Dry	1.2			12–15			SM		

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Boring/Well #	SB02
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	82.1		SB02 @ 16-18' 0930	17			SM		
					18					
					19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	2,122			20					
					21					
					22				**TD @ 20'**	
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB03	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 20'
Depth to Water: ~18.5'	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** White 7.5YR 8/1, 85% silt, 15% fine grained sand, medium dense, very dry, non-plastic, non-cohesive, no staining/ slight odor	
	Very Dry	31.2			2					
					3					
					4					
					5				Very dark gray 7.5YR 3/1, staining, no odor	
	Very Dry	12.7			6					
					7					
					8			SM		
					9				Brown 7.5YR 5/4, no staining/odor	
	Very Dry	13.7			10					
					11					
					12					
					13					
	Very Dry	11.7			14					
					15					

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Boring/Well #	SB03
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16				*Soil sample unattainable due to insufficient soil recovery	
	Very Dry	14.1			17					
					18			SM		
				SB03 @ 18.5-20' 1030	19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	3,587			20					
					21				**TD @ 20'**	
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB04	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470' / Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite	Grout: NA
Casing Type: NA / Diameter: NA / Length: NA	Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA / Slot: NA / Diameter: NA / Length: NA	Total Depth: 24'	Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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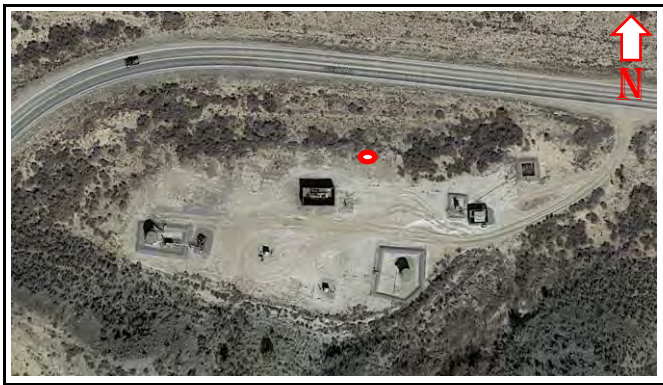
Boring/Well #	SB04
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	12.7			17				**Silty Sand** Brown 7.5YR 5/4, 85% silt, 15% fine grained sand, loose, non-plastic, non-cohesive, very dry, no staining/odor	
					18					
					19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	2,247			20			**SM**		
					21					
	Wet	2,948			22					
					23					
					24					
					25				**TD @ 24'**	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB05		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 24'	Depth to Water: ~17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					12					
					13					
					14					
					15					

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Boring/Well #	SB06
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Very Dry	32.7			16					
					17				**Silty Sand** Brown 7.5YR 4/3, 100% silt, loose, very dry, non-plastic, non-cohesive, no staining/odor	
					18				Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	1,955			19					
					20			**SM**		
					21					
	Wet	2,934			22					
					23					
					24					
					25				**TD @ 24'**	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB06	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470' / Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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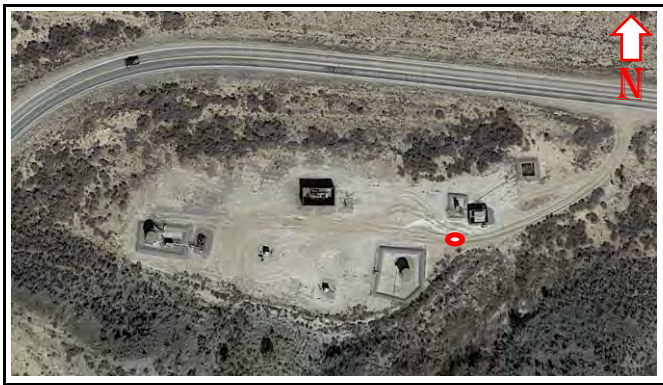
Boring/Well #	SB05
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	1.7			17				**Clayey Sand** Brown 7.5YR 4/4, 70% silt, 30% clay, soft, very dry, high plasticity, cohesive, no	
					18				50% fine grained sand, 50% clay, low plasticty	
	Wet	17.6			19					
					20			**SC**		
					21					
	Wet	32			22					
					23					
					24					
					25				**TD @ 24'**	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB07	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470' / Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** Brown 7.5YR 4/3, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	77.7			2					
					3					
					4					
					5					
	Very Dry	54.2			6					
					7					
					8			SM		
					9				Brown 7.5YR 4/3, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	104			10					
					11					
					12					
					13				Dark gray 7.5YR 4/1 staining, no odor	
	Very Dry	56.0			14					
					15					

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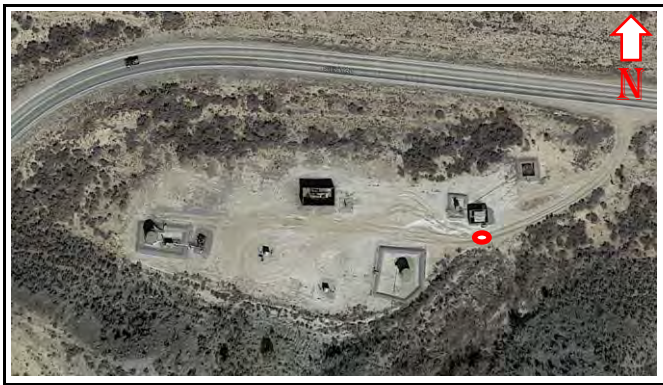
Boring/Well #	SB07
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	1,913		SB07 @ 16-18' 1500	17				Gray 10YR 5/1 and black 10YR 2/1 staining	
					18					
	Wet	2,231			19			SM	Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
					20					
					21					
	Wet	2,589			22					
					23					
					24					
					25				**TD @ 24'**	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB08	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470' / Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silt** Brown 7.5YR 4/3, 85% silt, 15% fine grained snad, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	27.2			2					
					3					
					4					
					5				Very dark brown 7.5YR 2.5/3, no staining/odor	
	Very Dry	8.8			6					
					7					
					8			ML		
					9					
	Very Dry	19.7			10					
					11					
					12					
					13					
					14					
	Very Dry	22.8			15				Black 10 YR 2/1 staining, no odor	

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Boring/Well #	SB08
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
				SB08 @ 16-17' 1540	16			ML	Gray 10YR 5/1 and black 10YR 2/1 staining, strong odor	
	Very Dry	2,175			17					
					18					
					19			SM	**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	1,937			20					
					21					
					22					
	Wet	2,068			23					
					24					
					25				**TD @ 24'**	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB09	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470' / Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite	Grout: NA
Casing Type: NA / Diameter: NA / Length: NA	Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA / Slot: NA / Diameter: NA / Length: NA	Total Depth: 24'	Depth to Water: ~18'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand w/ Gravel** White 7.5YR 8/1, 10% silt, 70% fine-coarse grained sand, 20% gravel, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	6.4			2					
					3					
					4					
					5				**Silty Sand** Light gray 7.5YR 7/1, 70% silt, 20% fine-coarse grained sand, 10% gravel, very dry, non-plastic, non-cohesive	
	Very Dry	11.7			6					
					7					
					8			**SM**		
					9					
	Very Dry	3.2			10					
					11					
					12				Light brown 7.5YR 6/3, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/odor	
					13					
	Very Dry	7.6			14					
					15					

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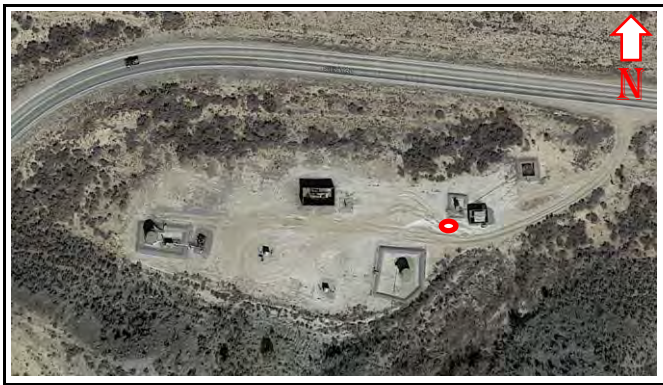
Boring/Well #	SB09
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Very Dry	7.8			16				*Soil sample unattainable due to insufficient soil recovery	
					17					
					18					
	Wet	1,808		SB09 @ 18-20' 1615	19			SM	Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
					20					
					21					
	Wet	2,102			22					
					23					
					24					
					25				TD @ 24'	
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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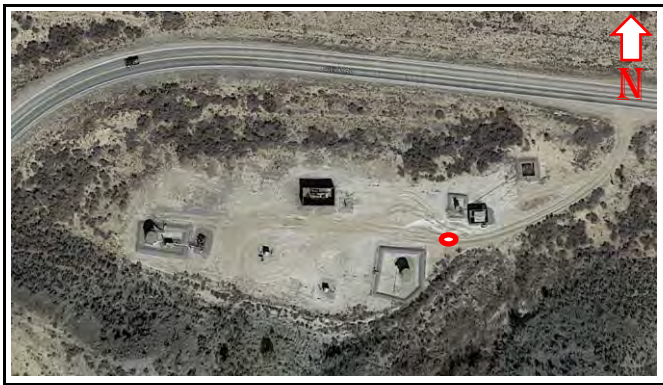
Durango, CO 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB10	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 2.5'
Depth to Water: NA	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	24.7			1			SM	**Silty Sand** Black 7.5YR 2.5/1 to light gray 7/1, dry, non-plastic, non-cohesive,staining/odor @ 5" to deph	
	Dry	74.3		SB10 @ 2' 1035	2					
					3				**Refusal @ 2.5' due to cobble**	
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB11	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Devin Hencmann	Drilled By: Devin Hencmann
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA Diameter: NA Length: NA
Total Depth: 19.5'	Depth to Water: 17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	60.0	None		1			SM	**Silt** Dark brown 7.5YR 3/4, loose, dry, non-plastic, non-cohesive, no staining/odor	
	Dry	1,121	Black		2					
	Dry	2,553	Gray		3				**Silt** Black 7.5YR 2.5/1 to light gray 7/1, loose, dry, non-plastic, non-cohesive, staining/strong odor	
	Dry	2,754	Gray	SB11 @ 4'	4					
	Dry	2,567	Gray	1100	5					
	Dry	1,934	Black		6					
	Dry	1,922	Black		7					
	Dry	2,497	Gray		8					
	Dry	1,522	Gray		9				**9-10'** Brown 7.5 YR 5/4 to Gray 5/1 staining, strong odor	
	Dry	1,608	Gray		10					
	Dry	1,308			11					
	Dry	1,606	Mixed Gray		12					
	Dry	1,904			13					
	Dry	1,685	Gray Brown		14					
	Dry	1,284			15					

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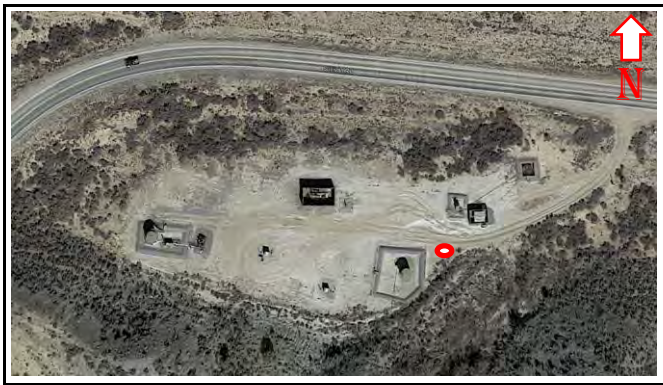
Boring/Well #	SB11
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/21/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Dry	1,634	Black		16					
	Dry	1,258	Black		17					
		1,295	Black		18			SM	50% Sand. 50% Silt	
	Wet		Gray		19					
			Black		20					
					21				**TD @ 19.5**	
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB12	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker

Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 2.5' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0			1				**Silty Sand** Light brown 7.5YR 6/4, dry, non-plastic, non-cohesive,staining/odor @ 1.5' to deph	
	Dry	12.3			2					
	Dry	5.4			3				Dark Gray 7.5YR 4/1 staining	
	Dry	67.8			4			**SM**		
	Dry	72.3			5					
	Dry	91.2		SB12 @ 6' 1145	6					
	Dry	35.4			7					
					8				**Refusal @ 7.5' due to cobble**	
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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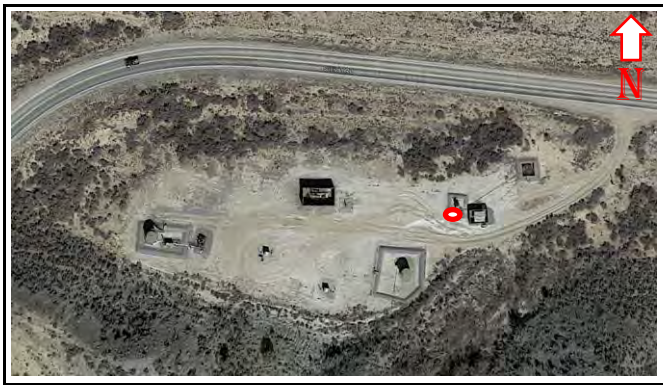
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB13	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Devin Hencmann	Drilled By: Devin Hencmann
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 12.5'
Depth to Water: NA	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0			1			SM	**Silty Sand** Light brown 7.5YR 6/4, 30% silt, 40% fine grained sand, 30% medium grained sand, minor cobbles, dry, non-plastic, non-cohesive	
	Dry	0.0			2					
	Dry	0.0			3					
	Dry	0.0			4					
	Dry	0.0			5					
	Dry	0.0			6					
	Dry	0.0			7					
	Dry	0.0			8					
	Dry	0.0			9					
	Dry	0.0			10					
	Dry	0.0			11					
	Dry	0.0			12					
					13				**Refusal @ 12.5' due to cobble**	
					14					
					15					



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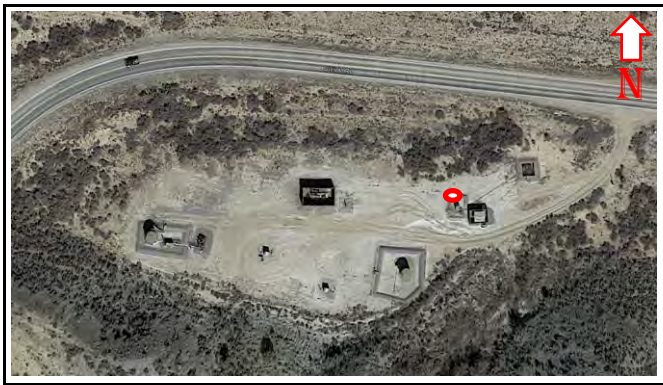
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB14	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 3'
Depth to Water: NA	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	11.1			1			SM	**Silty Sand** White 7.5YR 8/1, dry, non-plastic, non-cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph	
	Dry	37.4			2					
	Dry	41.50		SB14 @ 3' 1425	3					
					4				**Refusal @ 3' due to cobble**	
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB15	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA Diameter: NA Length: NA
Total Depth: 2.5'	Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0			1				**Silty Sand** Gray 6/1, dry, loose, non-plastic, cohesive, no staining/odor	
	Dry	3.1			2					
	Dry	2.3			3					
	Dry	1.1			4					
	Dry	3.6			5					
	Dry	4.3			6					
	Dry	5.1			7					
	Dry	5.0			8			SM	Reddish brown 7.5YR 5/3	
	Dry	3.1			9					
	Dry	2.6			10					
	Dry	1.2			11					
	Dry	1.9			12					
	Dry	0.7			13					
	Dry	0.3			14					
	Dry	0.8			15					

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Boring/Well #	SB15
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/21/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Dry	1.6			16					
	▼	209		SB15 @ 17.5' 1624	17					
					18					
					19				**TD @ 17.5'**	
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB16	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Devin Hecmann	Drilled By: Devin Hencmann
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 9'
Depth to Water: NA	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	0.0			1				**Silty Sand** Light brown 6/4, dry, loose, non-plastic, non-cohesive, no staining/odor	
	Dry	0.0			2					
	Dry	0.0			3				**Silty Sand** Light brown 6/4, dry, soft,medium plasticity, cohesive, no staining/odor	
	Dry	0.0			4					
	Dry	0.0			5			**SM**	**Silty Sand** Light brown 6/4, dry, loose, non-plastic, non-cohesive, no staining/odor	
	Dry	0.0			6					
	Dry	0.0			7					
	Dry	0.0			8					
	Dry	0.0			9					
					10				**TD @ 9'**	
					11					
					12					
					13					
					14					
					15					

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

Report Summary

Sunday June 21, 2015

Report Number: L770289
Samples Received: 06/10/15
Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-01

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-1020

Collected By : Rex Farnsworth
Collection Date : 06/08/15 10:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.9		%	2540 G-2011	06/12/15	1
Benzene	10.	1.1	mg/kg	8021	06/15/15	2000
Toluene	67.	11.	mg/kg	8021	06/15/15	2000
Ethylbenzene	14.	1.1	mg/kg	8021	06/15/15	2000
Total Xylene	210	3.3	mg/kg	8021	06/15/15	2000
TPH (GC/FID) Low Fraction	3500	220	mg/kg	8015	06/15/15	2000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.5		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	6300	440	mg/kg	3546/DRO	06/13/15	100
Surrogate recovery(%)						
o-Terphenyl	88.2		% Rec.	3546/DRO	06/13/15	100

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-02

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-1038

Collected By : Rex Farnsworth
Collection Date : 06/08/15 10:38

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.8		%	2540 G-2011	06/12/15	1
Benzene	8.0	2.8	mg/kg	8021	06/15/15	5000
Toluene	58.	28.	mg/kg	8021	06/15/15	5000
Ethylbenzene	14.	2.8	mg/kg	8021	06/15/15	5000
Total Xylene	200	8.2	mg/kg	8021	06/15/15	5000
TPH (GC/FID) Low Fraction	3500	550	mg/kg	8015	06/15/15	5000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.4		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	105.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	5400	440	mg/kg	3546/DRO	06/13/15	100
Surrogate recovery(%)						
o-Terphenyl	79.5		% Rec.	3546/DRO	06/13/15	100

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-03

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-1105

Collected By : Rex Farnsworth
Collection Date : 06/08/15 11:05

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.2		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Toluene	BDL	0.027	mg/kg	8021	06/15/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Total Xylene	0.0087	0.0082	mg/kg	8021	06/15/15	5
TPH (GC/FID) Low Fraction	BDL	0.55	mg/kg	8015	06/15/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.9		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	60.2		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-04

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-1210

Collected By : Rex Farnsworth
Collection Date : 06/08/15 12:10

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0029	mg/kg	8021	06/15/15	5
Toluene	BDL	0.029	mg/kg	8021	06/15/15	5
Ethylbenzene	BDL	0.0029	mg/kg	8021	06/15/15	5
Total Xylene	0.014	0.0086	mg/kg	8021	06/15/15	5
TPH (GC/FID) Low Fraction	BDL	0.58	mg/kg	8015	06/15/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.7		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	14.	4.6	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	71.3		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-05

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-130

Collected By : Rex Farnsworth
Collection Date : 06/08/15 13:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	84.1		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0030	mg/kg	8021	06/16/15	5
Toluene	BDL	0.030	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0030	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0089	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.59	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.9		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	8.6	4.8	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	63.2		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
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June 21,2015

ESC Sample # : L770289-06

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-215

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 14:15

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	89.9		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0028	mg/kg	8021	06/16/15	5
Toluene	BDL	0.028	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0028	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0083	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.56	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.6		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	78.5		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
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June 21,2015

ESC Sample # : L770289-07

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-300

Collected By : Rex Farnsworth
Collection Date : 06/08/15 15:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0082	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.54	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	79.7		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
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Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-08

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-435

Collected By : Rex Farnsworth
Collection Date : 06/08/15 16:35

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	93.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0080	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.53	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	7.8	4.3	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	94.8		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
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Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-09

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-535

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 17:35

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.6		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0082	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.54	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	6.6	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	97.3		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
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June 21,2015

ESC Sample # : L770289-10

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-930

Collected By : Rex Farnsworth
Collection Date : 06/08/15 09:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	88.4		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.28	mg/kg	8021	06/16/15	500
Toluene	3.0	2.8	mg/kg	8021	06/16/15	500
Ethylbenzene	11.	0.28	mg/kg	8021	06/16/15	500
Total Xylene	200	0.85	mg/kg	8021	06/16/15	500
TPH (GC/FID) Low Fraction	3600	56.	mg/kg	8015	06/16/15	500
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.5	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	75.1		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-11

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-947

Collected By : Rex Farnsworth
Collection Date : 06/09/15 09:47

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.7		%	2540 G-2011	06/12/15	1
Benzene	53.	2.9	mg/kg	8021	06/19/15	5000
Toluene	420	29.	mg/kg	8021	06/19/15	5000
Ethylbenzene	68.	2.9	mg/kg	8021	06/19/15	5000
Total Xylene	860	8.6	mg/kg	8021	06/19/15	5000
TPH (GC/FID) Low Fraction	13000	580	mg/kg	8015	06/19/15	5000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	92.2		% Rec.	8015	06/19/15	1
a,a,a-Trifluorotoluene(PID)	92.4		% Rec.	8021	06/19/15	1
TPH (GC/FID) High Fraction	3300	92.	mg/kg	3546/DRO	06/11/15	20
Surrogate recovery(%)						
o-Terphenyl	78.4		% Rec.	3546/DRO	06/11/15	20

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L770289-01	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-02	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-11	WG794934	SAMP	o-Terphenyl	R3042967	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

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James McDaniel
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Quality Assurance Report
Level II

L770289

June 21, 2015

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Total Solids	< .1	%			WG794915	06/12/15 07:02
Total Solids	< .1	%			WG794917	06/12/15 07:15
TPH (GC/FID) High Fraction	< 4	mg/kg			WG794934	06/11/15 18:18
o-Terphenyl		% Rec.	100.0	50-150	WG794934	06/11/15 18:18
TPH (GC/FID) High Fraction	< 4	mg/kg			WG794936	06/12/15 14:57
o-Terphenyl		% Rec.	100.0	50-150	WG794936	06/12/15 14:57
Benzene	< .0005	mg/kg			WG795391	06/14/15 12:56
Ethylbenzene	< .0005	mg/kg			WG795391	06/14/15 12:56
Toluene	< .005	mg/kg			WG795391	06/14/15 12:56
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG795391	06/14/15 12:56
Total Xylene	< .0015	mg/kg			WG795391	06/14/15 12:56
a,a,a-Trifluorotoluene(FID)		% Rec.	96.30	59-128	WG795391	06/14/15 12:56
a,a,a-Trifluorotoluene(PID)		% Rec.	104.0	54-144	WG795391	06/14/15 12:56
Benzene	< .0005	mg/kg			WG795956	06/16/15 11:49
Ethylbenzene	< .0005	mg/kg			WG795956	06/16/15 11:49
Toluene	< .005	mg/kg			WG795956	06/16/15 11:49
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG795956	06/16/15 11:49
Total Xylene	< .0015	mg/kg			WG795956	06/16/15 11:49
a,a,a-Trifluorotoluene(FID)		% Rec.	91.40	59-128	WG795956	06/16/15 11:49
a,a,a-Trifluorotoluene(PID)		% Rec.	102.0	54-144	WG795956	06/16/15 11:49
Benzene	< .0005	mg/kg			WG796950	06/19/15 17:31
Ethylbenzene	< .0005	mg/kg			WG796950	06/19/15 17:31
Toluene	< .005	mg/kg			WG796950	06/19/15 17:31
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG796950	06/19/15 17:31
Total Xylene	< .0015	mg/kg			WG796950	06/19/15 17:31
a,a,a-Trifluorotoluene(FID)		% Rec.	98.80	59-128	WG796950	06/19/15 17:31
a,a,a-Trifluorotoluene(PID)		% Rec.	92.30	54-144	WG796950	06/19/15 17:31

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	82.0	82.1	0.0334	5	L770280-02	WG794915
Total Solids	%	78.5	78.3	0.254	5	L770294-01	WG794917

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Total Solids	%	50	50.0	100.	85-115	WG794915
Total Solids	%	50	50.0	100.	85-115	WG794917
TPH (GC/FID) High Fraction	mg/kg	60	52.1	86.8	50-150	WG794934
o-Terphenyl				99.20	50-150	WG794934

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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James McDaniel
382 County Road 3100

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Quality Assurance Report
Level II

L770289

June 21, 2015

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	60	50.9	84.8	50-150	WG794936
o-Terphenyl				99.30	50-150	WG794936
Benzene	mg/kg	.05	0.0452	90.5	70-130	WG795391
Ethylbenzene	mg/kg	.05	0.0460	92.0	70-130	WG795391
Toluene	mg/kg	.05	0.0448	89.6	70-130	WG795391
Total Xylene	mg/kg	.15	0.139	92.4	70-130	WG795391
a,a,a-Trifluorotoluene(FID)				95.70	59-128	WG795391
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG795391
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.97	109.	63.5-137	WG795391
a,a,a-Trifluorotoluene(FID)				105.0	59-128	WG795391
a,a,a-Trifluorotoluene(PID)				110.0	54-144	WG795391
Benzene	mg/kg	.05	0.0407	81.4	70-130	WG795956
Ethylbenzene	mg/kg	.05	0.0456	91.3	70-130	WG795956
Toluene	mg/kg	.05	0.0435	87.1	70-130	WG795956
Total Xylene	mg/kg	.15	0.135	90.3	70-130	WG795956
a,a,a-Trifluorotoluene(FID)				90.90	59-128	WG795956
a,a,a-Trifluorotoluene(PID)				101.0	54-144	WG795956
TPH (GC/FID) Low Fraction	mg/kg	5.5	4.89	88.9	63.5-137	WG795956
a,a,a-Trifluorotoluene(FID)				98.30	59-128	WG795956
a,a,a-Trifluorotoluene(PID)				112.0	54-144	WG795956
Benzene	mg/kg	.05	0.0425	84.9	70-130	WG796950
Ethylbenzene	mg/kg	.05	0.0432	86.3	70-130	WG796950
Toluene	mg/kg	.05	0.0431	86.2	70-130	WG796950
Total Xylene	mg/kg	.15	0.129	86.2	70-130	WG796950
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG796950
TPH (GC/FID) Low Fraction	mg/kg	5.5	3.99	72.6	63.5-137	WG796950
a,a,a-Trifluorotoluene(FID)				99.80	59-128	WG796950

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	52.3	52.1	87.0	50-150	0.370	20	WG794934
o-Terphenyl				98.00	50-150			WG794934
TPH (GC/FID) High Fraction	mg/kg	50.0	50.9	83.0	50-150	1.71	20	WG794936
o-Terphenyl				93.80	50-150			WG794936
Benzene	mg/kg	0.0445	0.0452	89.0	70-130	1.74	20	WG795391
Ethylbenzene	mg/kg	0.0452	0.0460	90.0	70-130	1.64	20	WG795391
Toluene	mg/kg	0.0438	0.0448	88.0	70-130	2.28	20	WG795391
Total Xylene	mg/kg	0.136	0.139	91.0	70-130	1.93	20	WG795391
a,a,a-Trifluorotoluene(FID)				96.80	59-128			WG795391
a,a,a-Trifluorotoluene(PID)				103.0	54-144			WG795391
TPH (GC/FID) Low Fraction	mg/kg	6.39	5.97	116.	63.5-137	6.84	20	WG795391
a,a,a-Trifluorotoluene(FID)				104.0	59-128			WG795391
a,a,a-Trifluorotoluene(PID)				110.0	54-144			WG795391
Benzene	mg/kg	0.0403	0.0407	80.0	70-130	1.05	20	WG795956
Ethylbenzene	mg/kg	0.0454	0.0456	91.0	70-130	0.490	20	WG795956
Toluene	mg/kg	0.0427	0.0435	85.0	70-130	1.82	20	WG795956

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James McDaniel
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Aztec, NM 87410

Quality Assurance Report
Level II

L770289

June 21, 2015

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Total Xylene	mg/kg	0.135	0.135	90.0	70-130	0.260	20	WG795956
a,a,a-Trifluorotoluene(FID)				91.00	59-128			WG795956
a,a,a-Trifluorotoluene(PID)				102.0	54-144			WG795956
TPH (GC/FID) Low Fraction	mg/kg	4.86	4.89	88.0	63.5-137	0.670	20	WG795956
a,a,a-Trifluorotoluene(FID)				98.10	59-128			WG795956
a,a,a-Trifluorotoluene(PID)				112.0	54-144			WG795956
Benzene	mg/kg	0.0456	0.0425	91.0	70-130	7.03	20	WG796950
Ethylbenzene	mg/kg	0.0465	0.0432	93.0	70-130	7.52	20	WG796950
Toluene	mg/kg	0.0461	0.0431	92.0	70-130	6.63	20	WG796950
Total Xylene	mg/kg	0.138	0.129	92.0	70-130	6.60	20	WG796950
a,a,a-Trifluorotoluene(PID)				101.0	54-144			WG796950
TPH (GC/FID) Low Fraction	mg/kg	4.15	3.99	76.0	63.5-137	3.95	20	WG796950
a,a,a-Trifluorotoluene(FID)				101.0	59-128			WG796950

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/kg	0.171	0.0	.05	68.0	49.7-127	L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.0	.05	73.0	40.8-141	L769595-01	WG795391
Toluene	mg/kg	0.172	0.0	.05	69.0	49.8-132	L769595-01	WG795391
Total Xylene	mg/kg	0.545	0.00138	.15	72.0	41.2-140	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					95.30	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					102.0	54-144		WG795391
TPH (GC/FID) Low Fraction	mg/kg	19.9	0.0557	5.5	72.0	28.5-138	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					106.0	54-144		WG795391
Benzene	mg/kg	0.175	0.000413	.05	70.0	49.7-127	L770289-05	WG795956
Ethylbenzene	mg/kg	0.179	0.000390	.05	71.0	40.8-141	L770289-05	WG795956
Toluene	mg/kg	0.181	0.00429	.05	71.0	49.8-132	L770289-05	WG795956
Total Xylene	mg/kg	0.531	0.00348	.15	70.0	41.2-140	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					90.60	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					101.0	54-144		WG795956
TPH (GC/FID) Low Fraction	mg/kg	15.0	0.0	5.5	54.0	28.5-138	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					95.10	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG795956
Benzene	mg/kg	0.195	0.0	.05	78.0	49.7-127	L771109-01	WG796950
Ethylbenzene	mg/kg	0.188	0.0	.05	75.0	40.8-141	L771109-01	WG796950
Toluene	mg/kg	0.190	0.0	.05	76.0	49.8-132	L771109-01	WG796950
Total Xylene	mg/kg	0.578	0.000561	.15	77.0	41.2-140	L771109-01	WG796950
a,a,a-Trifluorotoluene(PID)					96.20	54-144		WG796950
TPH (GC/FID) Low Fraction	mg/kg	14.0	0.0	5.5	51.0	28.5-138	L771109-01	WG796950
a,a,a-Trifluorotoluene(FID)					97.50	59-128		WG796950

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/kg	0.170	0.171	68.0	49.7-127	0.510	23.5	L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.182	72.9	40.8-141	0.260	23.8	L769595-01	WG795391
Toluene	mg/kg	0.171	0.172	68.4	49.8-132	0.840	23.5	L769595-01	WG795391
Total Xylene	mg/kg	0.541	0.545	72.0	41.2-140	0.760	23.7	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)				95.50	59-128				WG795391
a,a,a-Trifluorotoluene(PID)				102.0	54-144				WG795391
TPH (GC/FID) Low Fraction	mg/kg	20.5	19.9	74.2	28.5-138	2.56	23.6	L769595-01	WG795391

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Quality Assurance Report
Level II

L770289

June 21, 2015

Analyte	Units	Matrix Spike MSD	Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
a,a,a-Trifluorotoluene(FID)				101.0	59-128				
a,a,a-Trifluorotoluene(PID)				107.0	54-144				
Benzene	mg/kg	0.181	0.175	72.3	49.7-127	3.32	23.5	L770289-05	WG795956
Ethylbenzene	mg/kg	0.182	0.179	72.5	40.8-141	1.69	23.8	L770289-05	WG795956
Toluene	mg/kg	0.185	0.181	72.2	49.8-132	2.21	23.5	L770289-05	WG795956
Total Xylene	mg/kg	0.536	0.531	71.0	41.2-140	0.820	23.7	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)				90.80	59-128				WG795956
a,a,a-Trifluorotoluene(PID)				101.0	54-144				WG795956
TPH (GC/FID) Low Fraction	mg/kg	17.0	15.0	61.8	28.5-138	12.6	23.6	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)				95.80	59-128				WG795956
a,a,a-Trifluorotoluene(PID)				108.0	54-144				WG795956
Benzene	mg/kg	0.187	0.195	74.9	49.7-127	3.84	23.5	L771109-01	WG796950
Ethylbenzene	mg/kg	0.177	0.188	71.0	40.8-141	5.71	23.8	L771109-01	WG796950
Toluene	mg/kg	0.180	0.190	72.1	49.8-132	5.22	23.5	L771109-01	WG796950
Total Xylene	mg/kg	0.541	0.578	72.1	41.2-140	6.56	23.7	L771109-01	WG796950
a,a,a-Trifluorotoluene(PID)				98.90	54-144				WG796950
TPH (GC/FID) Low Fraction	mg/kg	14.7	14.0	53.4	28.5-138	4.53	23.6	L771109-01	WG796950
a,a,a-Trifluorotoluene(FID)				97.20	59-128				WG796950

Batch number /Run number / Sample number cross reference

WG794915: R3042943: L770289-01 02 03 04 05 06 07 08
WG794917: R3042949: L770289-09 10 11
WG794934: R3042967: L770289-11
WG794936: R3043222: L770289-01 02 03 04 05 06 07 08 09 10
WG795391: R3043799: L770289-01 02 03 04
WG795956: R3044022: L770289-05 06 07 08 09 10
WG796950: R3044762: L770289-11

* * Calculations are performed prior to rounding of reported values.
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Quality Assurance Report
Level II

L770289

June 21, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

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ANALYTICAL REPORT

August 26, 2015

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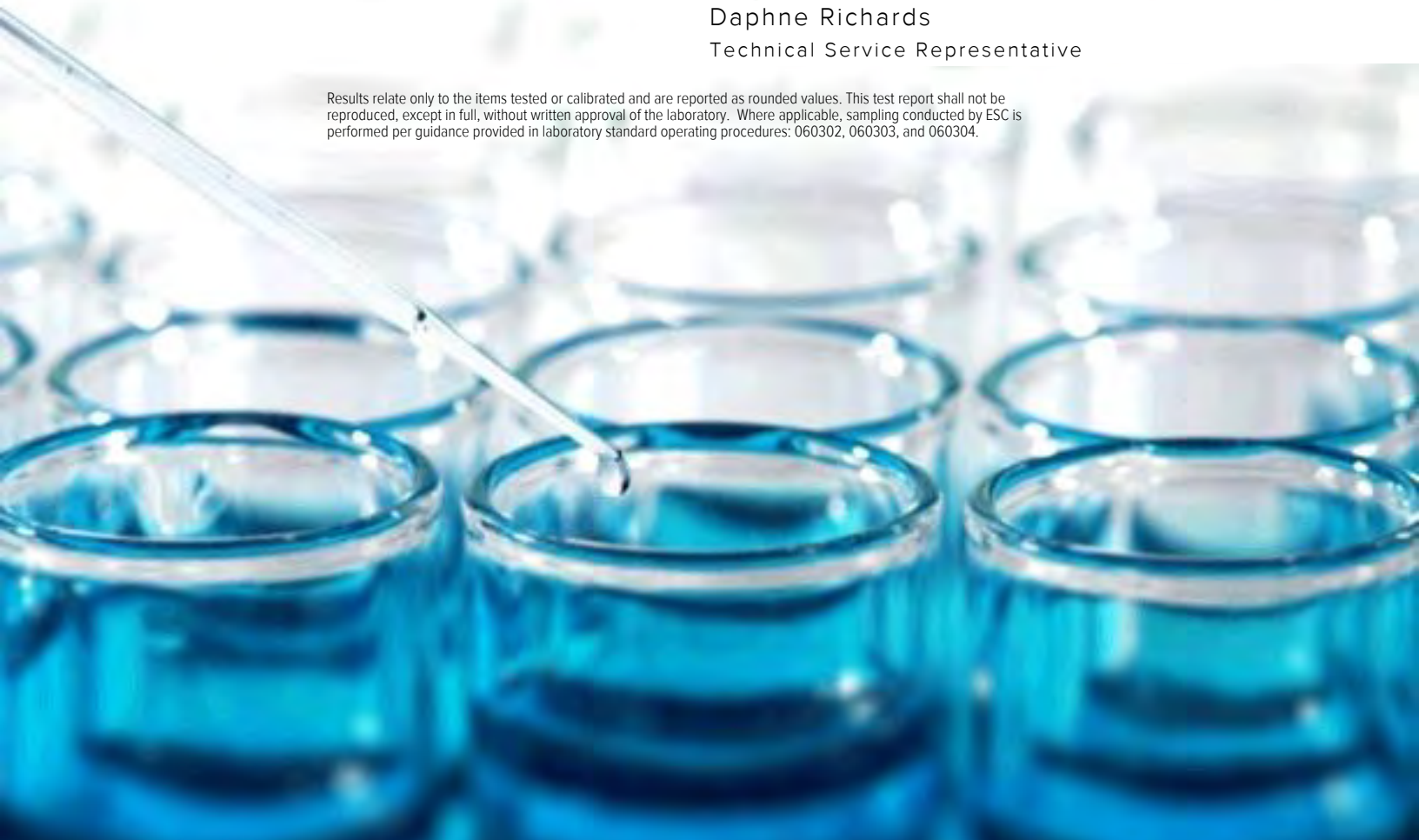
XTO Energy - San Juan Division

Sample Delivery Group:	L784324
Samples Received:	08/21/2015
Project Number:	
Description:	LT Environmental

Report To: James McDaniel
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Technical Service Representative



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FARMW-081915-1100 L784324-04 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 11:00
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:01	08/23/15 09:01	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:36	08/24/15 14:36	MCB

FARMW-081915-1230 L784324-05 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 12:30
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	1	08/23/15 09:24	08/23/15 09:24	MCB

FARMW-081915-1330 L784324-06 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 13:30
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:45	08/23/15 09:45	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:58	08/24/15 14:58	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG811603	2000	08/26/15 13:47	08/26/15 13:47	MCB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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

Daphne R Richards

Daphne Richards
Technical Service Representative

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	4.43		0.0100	20	08/23/2015 09:01	WG810927
Toluene	17.1		1.25	250	08/24/2015 14:36	WG810932
Ethylbenzene	1.10		0.0100	20	08/23/2015 09:01	WG810927
Total Xylene	11.3		0.0300	20	08/23/2015 09:01	WG810927
(S) a,a,a-Trifluorotoluene(PID)	*103*		*55.0-122*		*08/23/2015 09:01*	WG810927

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00260		0.000500	1	08/23/2015 09:24	WG810927
Toluene	0.00685		0.00500	1	08/23/2015 09:24	WG810927
Ethylbenzene	0.00193		0.000500	1	08/23/2015 09:24	WG810927
Total Xylene	0.0225		0.00150	1	08/23/2015 09:24	WG810927
(S) a,a,a-Trifluorotoluene(PID)	*104*		*55.0-122*		*08/23/2015 09:24*	WG810927

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	4.40		0.0100	20	08/23/2015 09:45	WG810927
Toluene	40.0		1.25	250	08/24/2015 14:58	WG810932
Ethylbenzene	1.95		0.0100	20	08/23/2015 09:45	WG810927
Total Xylene	18.1		3.00	2000	08/26/2015 13:47	WG811603
(S) a,a,a-Trifluorotoluene(PID)	*100*		*55.0-122*		*08/23/2015 09:45*	WG810927

Method Blank (MB)

(MB) 08/23/15 06:27

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Benzene	ND		0.000500
Toluene	ND		0.00500
Ethylbenzene	ND		0.000500
Total Xylene	ND		0.00150
(S) a,a,a-Trifluorotoluene(PID)	*105*		*55.0-122*

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

(LCS) 08/23/15 05:21 • (LCSD) 08/23/15 05:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0384	0.0434	76.9	86.8	70.0-130			12.1	20
Toluene	0.0500	0.0405	0.0442	81.0	88.3	70.0-130			8.62	20
Ethylbenzene	0.0500	0.0409	0.0453	81.9	90.5	70.0-130			9.98	20
Total Xylene	0.150	0.126	0.138	84.0	92.1	70.0-130			9.19	20
(S) a,a,a-Trifluorotoluene(PID)				*104*	*104*	*55.0-122*				

L783444-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/23/15 07:55 • (MS) 08/23/15 06:49 • (MSD) 08/23/15 07:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.00727	0.0507	0.0497	86.8	84.9	1	57.2-131			1.89	20
Toluene	0.0500	ND	0.0533	0.0527	107	105	1	63.7-134			1.28	20
Ethylbenzene	0.0500	0.00407	0.0489	0.0482	89.7	88.3	1	67.5-135			1.42	20
Total Xylene	0.150	0.00388	0.143	0.141	92.6	91.5	1	65.9-138			1.23	20
(S) a,a,a-Trifluorotoluene(PID)					*104*	*104*		*55.0-122*				

Method Blank (MB)

(MB) 08/24/15 11:39

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
Toluene	ND		0.00500

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

(LCS) 08/24/15 09:02 • (LCSD) 08/24/15 09:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Toluene	0.0500	0.0448	0.0461	89.6	92.1	70.0-130			2.83	20

L784743-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/24/15 14:14 • (MS) 08/24/15 12:23 • (MSD) 08/24/15 12:45

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Toluene	0.0500	0.000365	0.0471	0.0486	93.4	96.5	1	63.7-134			3.17	20

Method Blank (MB)

(MB) 08/26/15 12:56

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
Total Xylene	ND		0.00150

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

(LCS) 08/26/15 10:50 • (LCSD) 08/26/15 11:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Total Xylene	0.150	0.140	0.132	93.1	87.9	70.0-130			5.80	20

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
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.
(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.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences 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.**

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

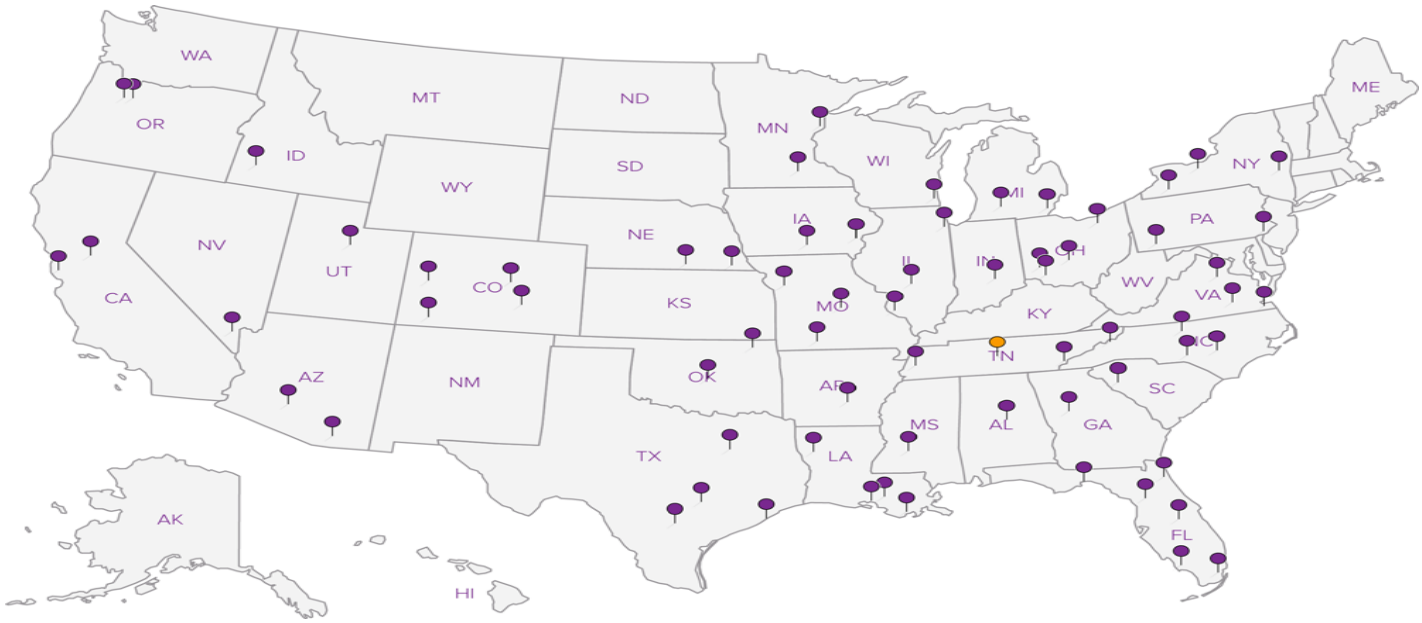
[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

Our Locations

ESC Lab Sciences 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. **ESC Lab Sciences performs all testing at our central laboratory.**



XTO ENERGY
Western Division

Quote Number	Page 1 of 1	
XTO Contact: James McDaniels	XTO Contact Phone #: (505) 333-3701	
Email Results to: AAger@LTEnv.com / DHencmann@LTEnv.com		
Well Site/Location: Sullivan GC D#1E	API Number	Test Reason: Release
Collected By: Michael A Wicker	Samples on Ice: (Y) / N	Turnaround: ___ Standard; ___ Next Day; ___ Two Day; ✓ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: LT Environmental	QA/QC Requested: Standard	
Signature	Gray Areas for Lab Use Only!	

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX (8021)	TPH-GRO/DRO	Sample Number
FARMW-081915-0930	SB02@16-18'	S	8-19-15	0930	Cool	1	X	X	L784324-01
FARMW-081915-1500	SB07@16-18'	S	8-19-15	1500	Cool	2	X	X	02
FARMW-081915-1540	SB08@16-17'	S	8-19-15	1540	Cool	2	X	X	03
FARMW-081915-1100	SB03	GW	8-19-15	1100	Cool	3	X		04
FARMW-081915-1230	SB05	GW	8-19-15	1230	Cool	3	X		05
FARMW-081915-1330	SB06	GW	8-19-15	1330	Cool	3	X		06

Analysis

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV
C157

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	Date: 8-20-15	Time: 1330	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 21°	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 8/21/15 Time: 0900	

Comments: TDL

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

0174

XTO ENERGY
Western Division

Quote Number	Page _1_ of _1_
XTO Contact: Jame McDaniels	XTO Contact Phone #: (505) 333-3701
Email Results to: AAger@ltenv.com; DHencmann@ltenv.com	
Well Site/Location: Sullivan GC D#1E	API Number
Collected By: Michael A Wicker	Samples on Ice (Yes)
Company: LT Environmental, Inc.	QA/QC Requested: Standard
Signature	Gray Areas for Lab Use Only!

Test Reason: Release

Turnaround:
___ 24-Hour
___ Next Day
___ Two Day
_X_ Three Day
___ Std.5 Bus. Days(by contract)
Date Needed _____

Lab Information: A137

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	TPH-GRO/DRO	BTEX (8021)	SAR	EC	CHLORIDE		Sample Number
FARMW-082115-1035	SB10@2'	S	8/21/2015	1035	Cool	1	X	X					78487-01
FARMW-082115-1100	SB11@4'	S	8/21/2015	1100	Cool	1	X	X					02
FARMW-082115-1145	SB12@6'	S	8/21/2015	1145	Cool	1	X	X					03
FARMW-082115-1425	SB14@3'	S	8/21/2015	1425	Cool	1	X	X					04
FARMW-082115-1624	SB15@17.5'	S	8/21/2015	1624	Cool	1	X	X					05

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	Date: 8-24-15	Time: 1345	Received By: (Signature)	Number of Bottles: 5	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 2.4°	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 8/25/15	0900

Comments: 2. TDI

* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200

ENCLOSURE C – UPDATED C-141 AND APPROVED WORK PLAN

OIL CONS. DIV DIST. 3

FEB 10 2016

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

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy, Inc.	Contact: James McDaniel
Address: 382 Road 3100, Aztec, New Mexico 87410	Telephone No.: (505) 333-3701
Facility Name: Sullivan Gas COM D #1E	Facility Type: Gas Well (Dakota)

Surface Owner: Fee	Mineral Owner	API No. 30-045-24083

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	26	29 N	11W	1475	FNL	1500	FWL	San Juan

Latitude: 36.70013 **Longitude:** -108.396484

NATURE OF RELEASE

Type of Release: Produced Oil	Volume of Release: 4 bbls	Volume Recovered: None
Source of Release: Leaking union on oil flow line	Date and Hour of Occurrence: June 1, 2015	Date and Hour of Discovery: June 1, 2015
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☒ Yes ☐ No	If YES, Volume Impacting the Watercourse. Unknown	

If a Watercourse was Impacted, Describe Fully.*
Groundwater Impacts discovered on 6/10/2015. Extent of known groundwater impact is outlined in the attached remediation plan approved by the NMOCD on 1/7/2016; see attached email.

Describe Cause of Problem and Remedial Action Taken.
On June 1, 2015, a small release was discovered at the surface when the separator was manually dumped by the lease operator. The volume of the release was estimated at 4 bbls due to the volume of the separator. Upon investigation, the release was determined to come from a leaking union in the fiberglass flow line beneath the ground. Additional spill assessment activities showed impacted soil beneath the flow line. The site was then ranked a 20 pursuant to the NMOCD Guidelines for the Remediation of Leaks, Spills and Releases due to a depth to groundwater of less than 50 feet. Additional assessment activities also showed that the leak had impacted groundwater. Immediate notification was given to the NMOCD on June 11, 2015, upon the discovery of groundwater impacts.

Describe Area Affected and Cleanup Action Taken.*
XTO proposes to remediate the location pursuant to the attached remediation plan, approved on 1/7/2016 by the NMOCD; see attached email.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: James McDaniel	Approved by Environmental Specialist:	
Title: EHS Supervisor	Approval Date: 2/25/16	Expiration Date:
E-mail Address: james_mcdaniel@xtoenergy.com	Conditions of Approval:	Attached ☐
Date: 2/5/16 Phone: 505-333-3701		

* Attach Additional Sheets If Necessary

#NCS1518952648
Assigned to 3R-1035

McDaniel, James

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, January 07, 2016 9:37 AM
To: McDaniel, James
Cc: Nee, Martin; Hixon, Logan; 'Ashley Ager (aager@ltenv.com)'; Powell, Brandon, EMNRD; Fields, Vanessa, EMNRD
Subject: RE: Sullivan GC D #1E

Categories: External Sender

James,

As per our phone conversation, Santa Fe has no issues with the proposed Work Plan for the Sullivan Gas Com D #1 E. XTO may move forward with the approved work plan.

If you have any 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: McDaniel, James [mailto:James_McDaniel@xtoenergy.com]
Sent: Thursday, December 31, 2015 7:45 AM
To: Smith, Cory, EMNRD; Powell, Brandon, EMNRD
Cc: Nee, Martin; Hixon, Logan; 'Ashley Ager (aager@ltenv.com)'
Subject: Sullivan GC D #1E

Any word on the approval of our workplan for this location?

James McDaniel
EH&S Supervisor
CHMM #15676
CSP #30009
XTO Energy Inc.
382 Road 3100
Aztec, New Mexico 87410
Phone: 505.333.3701 | Mobile: 505.787.0519
james_mcdaniel@xtoenergy.com

An ExxonMobil Subsidiary

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

November 30, 2015

Mr. Brandon Powell
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

RE: Updated Remediation Work Plan
XTO Energy, Inc.
Sullivan GC D #1E, API # 30-045-24083
San Juan County, New Mexico

Dear Mr. Powell:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), presents the following updated remediation work plan to continue addressing soil and groundwater impact at the Sullivan GC D #1E natural gas production well (Site). The Site is located south of Sullivan Road in Bloomfield, New Mexico approximately one quarter mile southeast of the San Juan River in Unit F of Section 26 of Township 29 North and Range 11 West (Figure 1). In June 2015, XTO identified a historical condensate release originating at a union on a fiberglass pipeline between the separator and aboveground storage tank. Following the results of the initial hand auger and pothole investigation, LTE conducted a soil and groundwater investigation utilizing a Geoprobe® direct-push drilling rig. The results of the initial investigations were reported in the letter report *Subsurface Investigation Results and Remediation Work Plan* submitted to the New Mexico Oil Conservation Division (NMOCD) on September 11, 2015. In that report, LTE proposed additional delineation, investigation of product recovery, and active *in situ* remediation at the Site. This report documents groundwater investigation and product recovery conducted since the letter report was submitted, presents the results of a limited soil vapor extraction (SVE) pilot test, and updates the remediation plan proposed for the Site based on these results.

ADDITIONAL DELINEATION

As documented in the September 11, 2015 letter report, XTO and LTE conducted several investigations consisting of soil and groundwater sampling from potholes, hand auger and Geoprobe® boreholes, a product recovery well (PR-1), and three monitoring wells installed via hollow stem auger drill rig (MW01, MW02, MW03, and MW04). The locations of the sampling points are depicted on Figure 2. On October 8, 2015, LTE replaced the original PR-1 with a 4-inch diameter product recovery well and installed monitoring wells MW05 and MW06 in the locations identified on Figure 2.

The wells were installed using a CME-75 drilling rig equipped with hollow stem augers. Product recovery well PR-1 was advanced to approximately 29.5 feet below ground surface (bgs), at which depth, field screening and visual observations indicated the depth of impact could be defined (approximately 26.5 bgs). The monitoring well was constructed with 4-inch diameter schedule 40

polyvinyl chloride (PVC). Blank casing was installed in the bottom three feet of the well and 15 feet of 0.02-inch machine slotted flush-threaded PVC well screen were set from 26.5 feet to 11.5 feet bgs. Monitoring wells MW05 and MW06 were constructed with 2-inch diameter schedule 40 PVC and included 10 feet of 0.01 inch PVC well screen. A clean 10-20 grade silica sand gravel pack was placed from the bottom of the soil borings to two feet above the top of the screen. Two feet of three-eighths inch bentonite chips were set above the gravel pack, followed by a neat cement slurry to the surface, containing a minimum of 5 percent powdered bentonite. The wells were set in a locking flush-mount casing. Borehole logs and well construction diagrams for PR-1, MW05, and MW06 are included in Attachment 1.

The new wells were developed utilizing a new PVC bailer. LTE purged fluid until at least 10 casing volumes had been removed from each well and turbidity was reduced to the greatest possible extent. All purged water was disposed of at a produced water tank on site. New and existing groundwater monitoring wells were professionally surveyed for top-of casing elevations to an accuracy of plus or minus 0.01 feet so that groundwater flow direction and gradient could be determined.

The groundwater elevations and product thickness were periodically gauged in the groundwater monitoring wells and results are provided in Table 1. The most recent groundwater elevations and product thickness results were obtained on November 18, 2015 and depicted on Figure 3. Groundwater flow direction is north-northwest. Free-phase product is present in PR-1, MW01, MW02, MW05, and MW06. Product is thickest at MW05, which contains 0.8 feet of product.

Groundwater samples were collected and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) from monitoring wells where product was not observed (MW03 and MW04). Results from the most recent samples collected on September 14, 2015 indicated all BTEX constituents exceeded New Mexico Water Quality Control Commission (NMWQCC) standards in the groundwater sample collected from MW03 and benzene exceeded NMWQCC standards in the groundwater sample collected from MW04. Groundwater analytical results are summarized in Table 2 and results from September 14, 2015 are provided on Figure 3.

PRODUCT RECOVERY

XTO and LTE have conducted active and passive product recovery at the Site. Product was removed with disposable bailers and a vacuum truck and by utilizing oil-absorbent socks in monitoring wells between site visits. The total volume of fluids (groundwater plus product) recovered from the Site is approximately 1,213 gallons to date.

LTE performed a dual phase extraction (DPE) test with a mobile vacuum truck on October 19, 2015. A stinger was lowered into the monitoring wells PR-1, MW01, MW02, MW05, and MW06 to extract air and fluid. The fluid elevations were measured before and after each event. Test results indicated a relatively stable extraction rate of 8.5 gallons per minute, a drawdown of approximately 4.5 feet was achieved in the 4-inch diameter extraction well PR-1. Fluid recovery from the 2-inch monitoring wells was less, averaging 2.3 gallons per minute.

A combination fluid extraction and vapor extraction test (dual phase extraction) was accomplished on November 4, 2015. During the test, the top of the extraction well PR-1 was sealed and an applied vacuum of 15 inches of mercury was measured at the well. The fluid recovery rate was slowly increased during the test as drop pipe was lowered within the well. The short duration test primarily provided an estimated flow rate of 10.5 gallons per minute. During the pilot test, approximately 15 barrels of impacted groundwater were removed with an estimated 13 gallons of free product recovered.

LIMITED SVE PILOT TEST

Based on the subsurface site lithology and potential hydrocarbon impact footprint, *in-situ* remediation of the soil and groundwater was recommended in the September 11, 2015 letter report. In order to test the efficacy of a SVE system as a potential means of remediation at the Site, LTE conducted a pilot test on November 4, 2015. Using a mobile vacuum truck to apply vacuum to the product recovery well PR-1, several different flow rates were tested to evaluate the effective area of influence at the different flow rates. The influence was evaluated by monitoring the vacuum observed in monitoring wells MW01, MW02, MW05 and MW06. An effective area of influence of 40 feet using 30 inches of water column (IWC) on PR-1 was achieved during the pilot test at a flow rate of 12 cubic feet per minute. The observed vacuum was higher in monitoring wells located closer to the upgradient hillside and this is likely caused by less permeable soil in the unsaturated zone closer to the hillside. Petroleum vapor concentrations were monitored in the extraction piping during the test and elevated concentrations were observed indicating SVE was effectively removing petroleum impact.

UPDATED REMEDIATION WORK PLAN

Delineation

Soil and groundwater sampling observations and laboratory analytical results suggest soil is impacted near the source and a groundwater plume extends downgradient from the source to the northwest at MW04. Since additional monitoring wells did not fully define the areas affected by free product or the groundwater plume extent, LTE proposes installing five monitoring wells in locations depicted on Figure 3. LTE may step out from the proposed locations and advance additional boreholes should field screening, visual, and olfactory observations indicate groundwater is impacted. The installation of additional monitoring wells will define the extent of the impacted groundwater footprint and ensure that impacts are not migrating off location.

Soil Sampling

LTE will provide a geologist trained in conducting groundwater investigations to oversee drilling activities at the Site and collect soil samples from the borehole with a split spoon hammer sampler. Samples from immediately beneath the ground surface and then every five feet thereafter will be field screened for volatile aromatic hydrocarbons. Samples with the highest field screening result will be shipped on ice via overnight courier under strict chain-of-custody protocol to Environmental Science Corporation (ESC) to be analyzed for BTEX and total petroleum

hydrocarbon (TPH) – gasoline range organics (GRO) and diesel range organics (DRO) according to USEPA Method 8021B and 8015M, respectively. Samples that field screen less than 100 parts per million (ppm) using a photoionization detector for hydrocarbons will not be analyzed.

Groundwater Monitoring Well Installation and Sampling

LTE will convert the soil borings to monitoring wells. Monitoring wells will be constructed of schedule 40 polyvinyl chloride (PVC) and will include 0.01-inch machine slotted flush-threaded PVC well screen. The groundwater monitoring wells will be 2-inches in diameter. LTE will set at least 5 feet of screen beneath the groundwater elevation and approximately 5 feet above the groundwater elevation to allow for seasonal fluctuations and a proper seal for the 2-inch diameter wells. A clean 10-20 grade silica sand gravel pack will be placed from the bottom of the borings to two feet above the top of the screen. A total of 2 feet of 3/8-inch bentonite chips will be set above the gravel pack, followed by a neat cement slurry, containing a minimum of 5 percent (%) powdered bentonite to the surface. LTE will install a concrete surface completion and a steel well protector with locking cap around the PVC stick-up. For any monitoring wells within or near vehicle right-of-ways, surface completions will include a flush-mounted locking vault. All monitoring wells will be surveyed after construction using a Trimble GeoXT Global Positioning System (GPS) and surveyor's level. The top-of-casing elevation will be measured to an accuracy of no less than plus or minus 0.01 feet.

After installation, the newly constructed monitoring wells will be developed by removing a minimum of 10 saturated well casing volumes of water while monitoring pH, specific conductivity, and temperature. LTE will then allow the monitoring wells to recharge a minimum of 24 hours prior to sampling. Groundwater samples will be analyzed for BTEX according to USEPA Method 8021B.

Soil Vapor Extraction

Because free product has been observed in five monitoring points (PR-1, MW01, MW02, MW05, and MW06), LTE recommends implementation of SVE operations immediately followed by a remedy to address impacted groundwater based on SVE results. The impact has resulted from a release of natural gas condensate which is comprised mostly of light, readily volatilized petroleum hydrocarbon compounds. SVE will promote volatilization of the hydrocarbon impact distributed within the vadose zone and any remaining liquid free product that has accumulated on top of the groundwater. The SVE system will be designed to optimize extraction in areas where the impact has been observed in the unsaturated soil intervals.

The SVE is estimated to provide an influence of approximately 40 feet from the well, and based on this estimate, four existing monitoring well locations (MW01, MW02, MW05, and MW06) will be utilized as SVE wells along with a new SVE well near PR-1 (Figure 4). LTE will install a 2-inch diameter SVE well near PR-1. The well will include 0.02-inch screen from approximately 3 feet bgs to 26.5 feet bgs to include the entire impacted soil column for effective vapor extraction.

An extraction blower capable of operating at approximately 100 cubic feet per minute (cfm) and an applied vacuum of 30 IWC will be installed. Operations and maintenance (O&M) of the system will be conducted weekly for the first 2 months, then be reduced based on system performance. O&M will consist of adjusting the SVE air flow distribution and field screening recovered hydrocarbon vapors. The design will be further evaluated based on results from additional monitoring wells, and if the extent of free product is greater than current estimates, an additional SVE well will be included.

Air samples of recovered vapors will be collected and analyzed for total volatile petroleum hydrocarbons (TVPH) and BTEX by modified United States Environmental Protection Agency (EPA) Method TO-15M to calculate the hydrocarbon recovery rate during system operation. The recovery rate will be compared to NMAQB air emissions regulations.

Groundwater Monitoring/Product Gauging and Recovery

Depth to groundwater and product thickness in all monitoring wells will be gauged monthly. At the same time, any wells containing free product will be manually bailed for product removal. Groundwater will be sampled from all wells that do not contain free product twice during an initial 6-month SVE operation to be analyzed for BTEX. Six months after installing the SVE system, or once product thickness and BTEX concentrations have been reduced significantly by the SVE system, XTO will reassess the remediation scope and propose future remediation designs, such as air sparging or enhanced fluid recovery, with the ultimate goal of observing eight consecutive quarters with analytical results in compliance with NMWQCC standards. If product thickness does not decrease or the groundwater impact plume exhibits signs of migration, additional investigation and installation of more active product recovery will occur.

Reporting

Groundwater monitoring results will be submitted in monthly reports to the NMOCD Aztec field office. Data will be presented on relevant figures including potentiometric surface maps, and tabular groundwater elevations and analytical results. More complete details including product recovery volumes, SVE data (applied pressure, flow, and vacuum with air emission estimates), groundwater elevations, and analytical results will be provided in annual reports to the NMOCD Santa Fe office. The initial annual report will include soil borings and monitoring well completion logs and a cross section depicting the subsurface observations.

XTO has requested land use access to install the off-site monitoring wells from the private property owner, Western Refining Southwest, Inc. Once the landowner grants access, XTO will initiate the delineation as described in this work plan. Implementation of the SVE system will begin once an electrical drop is installed at the Site. XTO is currently working with the City of Bloomfield to determine cost and schedule the installation.

LTE appreciates the opportunity to provide this remediation work plan to the NMOCD. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970)

385-1096 or via email at aager@ltenv.com or James McDaniel at (505) 787-0519 or at james_mcdaniel@xtoenergy.com.

Sincerely,

LT ENVIRONMENTAL, INC.

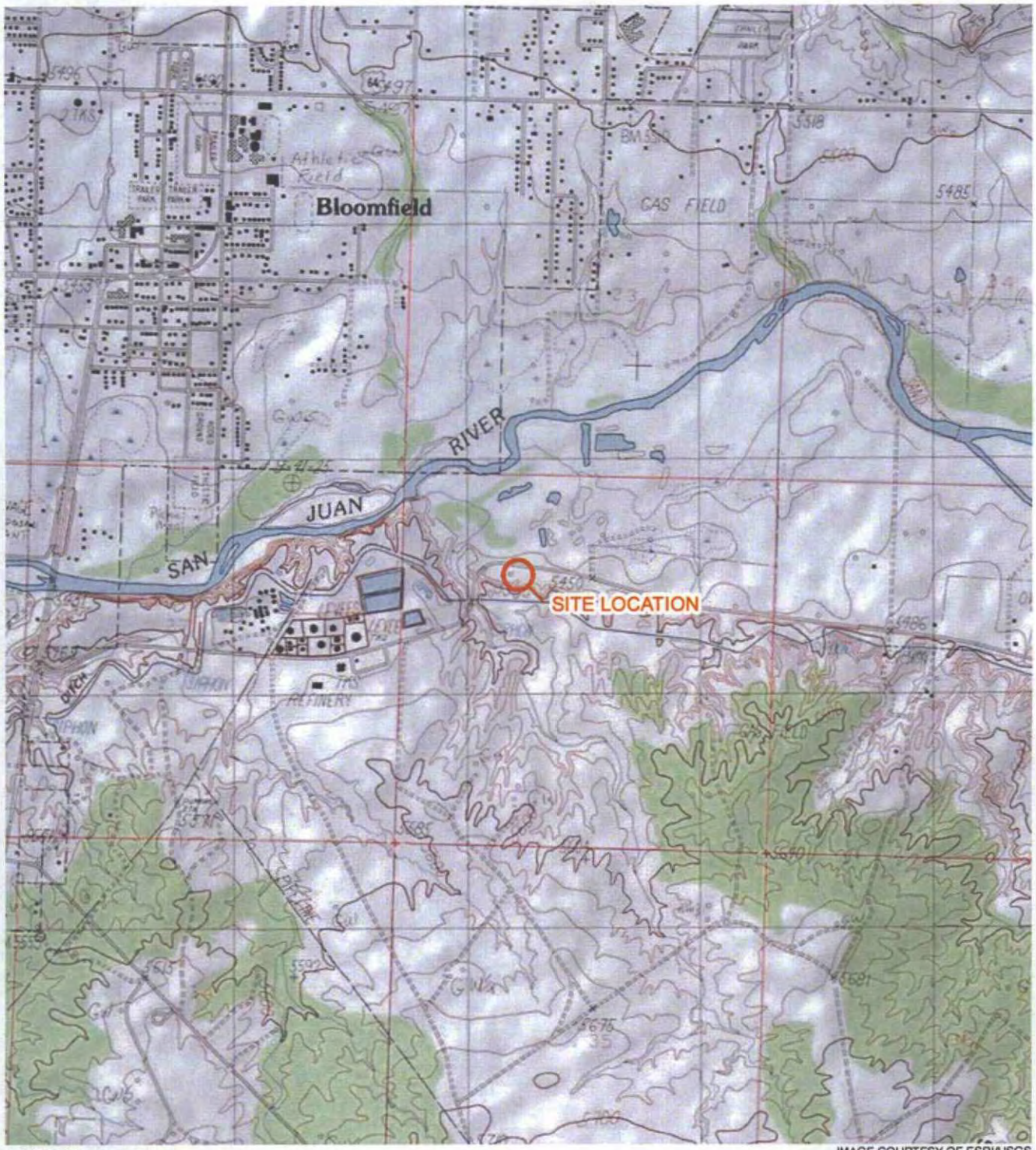
Ashley L. Ager

Ashley L. Ager, M.S.
Senior Geologist

Attachments

Cc: James McDaniel, XTO
Martin Nee, XTO

FIGURES



LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG01_SL.mxd

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- SOIL BORING (PERFORMED BY LTE)
- ESTIMATED GROUNDWATER FLOW DIRECTION
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)

AST: ABOVEGROUND STORAGE TANK

0 40 80
Feet

N

FIGURE 2
SITE MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG02_SITE.mxd

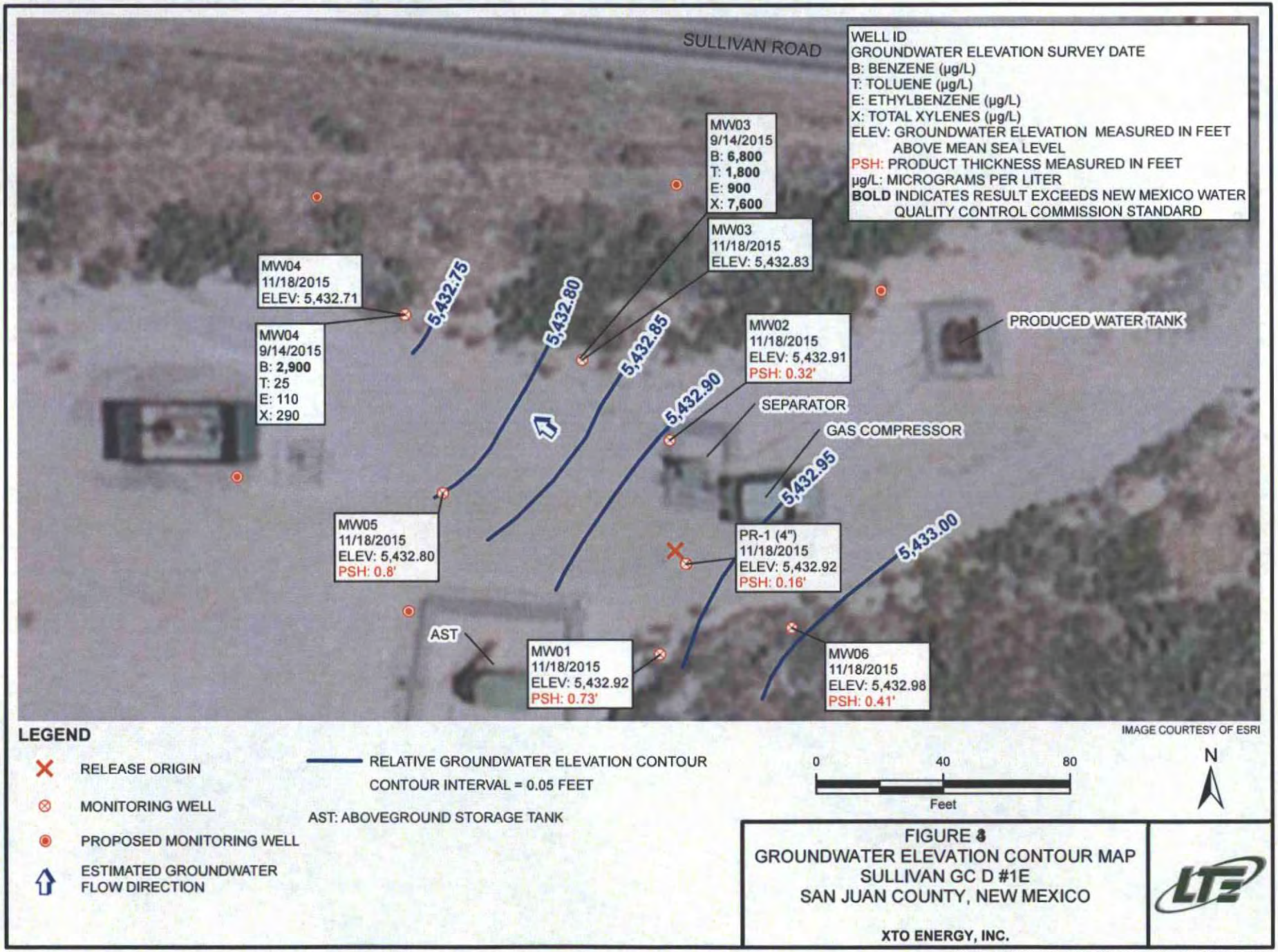


FIGURE 3
GROUNDWATER ELEVATION CONTOUR MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

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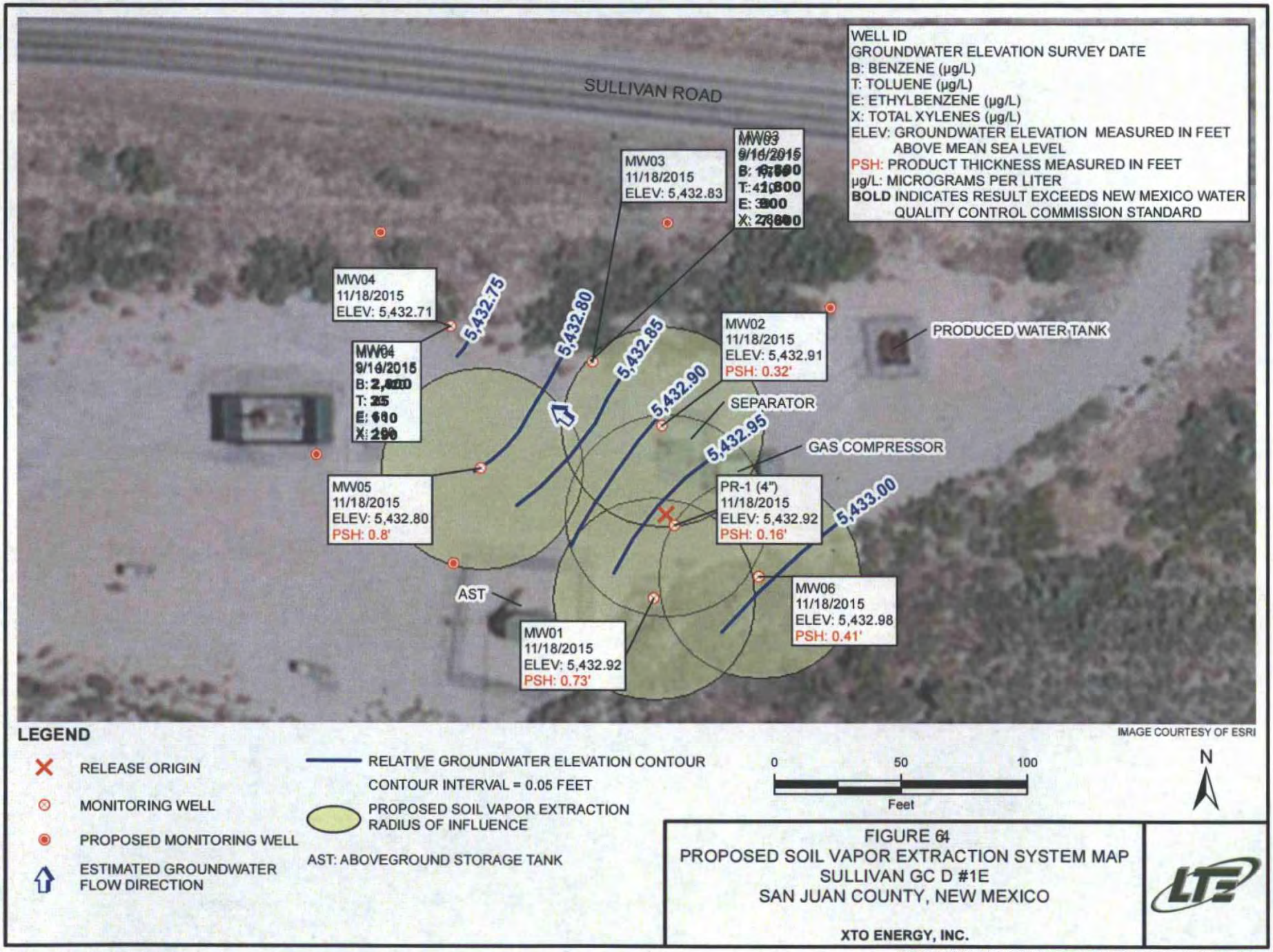

FIGURE 6
PROPOSED SOIL VAPOR EXTRACTION SYSTEM MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

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TABLES

TABLE 1

GROUNDWATER ELEVATIONS
SULLIVAN GAS COM D #1E
XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
PR-1	9/10/2015	5,452.23	21.55	21.82	0.27	3.24	5,430.63
	9/19/2015		--	--	--	0.21	--
	9/25/2015		--	--	--	0.19	--
	9/28/2015		20.95	21.51	0.56	6.72	5,431.17
	11/4/2015		19.09	19.58	0.49	5.88	5,433.04
	11/11/2015		19.23	19.39	0.16	1.92	5,432.97
	11/18/2015		19.28	19.44	0.16	1.92	5,432.92
MW01	9/10/2015	5,454.15	21.55	21.82	0.27	3.24	5,432.55
	9/19/2015		--	--	--	0.21	--
	9/25/2015		--	--	--	0.19	--
	9/28/2015		20.95	21.51	0.56	6.72	5,433.09
	11/4/2015		20.98	21.60	0.62	7.44	5,433.05
	11/11/2015		21.05	21.74	0.69	8.28	5,432.96
	11/18/2015		21.08	21.81	0.73	8.76	5,432.92
MW02	9/10/2015	5,451.95	NP	18.85	NP	NP	5,433.10
	9/19/2015		--	--	--	0.05	--
	9/25/2015		--	--	--	0.15	--
	9/28/2015		18.85	19.04	0.19	2.28	5,433.06
	11/4/2015		18.88	19.21	0.33	3.96	5,433.00
	11/11/2015		18.97	19.31	0.34	4.08	5,432.91
	11/18/2015		18.98	19.30	0.32	3.84	5,432.91
MW03	9/10/2015	5,452.50	NP	19.45	NP	NP	5,433.05
	9/28/2015		NP	19.49	NP	NP	5,433.01
	11/4/2015		19.54	19.56	0.02	0.24	5,432.96
	11/11/2015		NP	19.65	NP	NP	5,432.85
	11/18/2015		NP	19.67	NP	NP	5,432.83
MW04	9/10/2015	5,451.92	NP	18.94	NP	NP	5,432.98
	9/28/2015		NP	19.98	NP	NP	5,431.94
	11/4/2015		NP	19.08	NP	NP	5,432.84
	11/11/2015		NP	19.2	NP	NP	5,432.72
	11/18/2015		NP	19.21	NP	NP	5,432.71
MW05	11/4/2015	5,451.89	18.82	19.51	0.69	8.28	5,432.93
	11/11/2015		18.90	19.69	0.79	9.48	5,432.83
	11/18/2015		18.93	19.73	0.80	9.60	5,432.80
MW06	11/4/2015	5,454.95	21.81	22.12	0.31	3.72	5,433.08
	11/11/2015		21.88	22.30	0.42	5.04	5,432.99
	11/11/2015		21.89	22.30	0.41	4.92	5,432.98

Notes:
A product density factor of 0.7996 is used to account for the presence of free product in wells in which free product was observed
* - survyed using North American Vertical Datum 1988 geoid 12B in U.S. survey feet
BTOC - Below Top of Casing
NP - No Product

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
SULLIVAN GAS COM D #1E
XTO ENERGY, INC.

Sample ID	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
BH-2	6/16/2015	**760**	**3,000**	620	**7,400**
BH-3	6/16/2015	<5.0	<5.0	<5.0	<10
SB03	8/19/2015	**4,430**	**17,100**	**1,100**	**11,300**
SB05	8/19/2015	2.60	6.85	1.93	22.5
SB06	8/19/2015	**4,400**	**40,000**	**1,950**	**18,100**
MW02	9/10/2015	**6,500**	**24,200**	**1,770**	**11,400**
MW03	9/10/2015	**2,050**	420	390	**2,890**
	9/14/2015	**6,800**	**1,800**	**900**	**7,600**
MW04	9/10/2015	**3,480**	30	60	180
	9/14/2015	**2,900**	25	110	290
NMWQCC Standard		**10**	**750**	**750**	**620**

Notes:
< indicates result is less than the stated laboratory method detection limit
NMWQCC - New Mexico Water Quality Control Commission
µg/l - micrograms per liter

ATTACHMENTS

Compliance . Engineering . Remediation
LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301

Boring/Well Number:	Date:
MW-5	10/8/15
Project:	**Project Number:**
Sullivan GCD #1E	
Logged By:	**Drilled By:**
TC	Kyle K

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Lat/Long:	Elevation:	Detector:	Drilling Method:	Sampling Method:	Hole Diameter:	Total Depth:
		MiniRae	Auger	Split Spoon	4.25	
Casing Type:	**Casing Diameter:**	**Casing Length:**	**Slot Size:**	**Slot Length:**	**Depth to Water:**	
PVC	2"	30.00 ft	0.01			
Gravel Pack:	**Seal:**	**Grout:**	**Comments:**			
10/20 Silica		3/8" chips				

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks
					0			Cuttings not Recorded until visual impact observed
	Dry	0.0	NO		4			
	Dry	0.0	NO		10			
	Moist	0.0	yes		16			
	Wet	2802.5	yes		18		SM	2.5Y 2.5/1 Staining, odor, Black Silty Sand. Coarse medium to fine 60% Silt 40%
					22			
	Wet	2315	NO		24			WL @ 19 ft
					26		SM	2.5Y 6/2 Light brownish gray Coarse, No odor large to fine 80% Silt 20%
	Wet	0.0	NO		30			TD 30 ft

Sand: 3.5 bags 50 lb colorado Silica

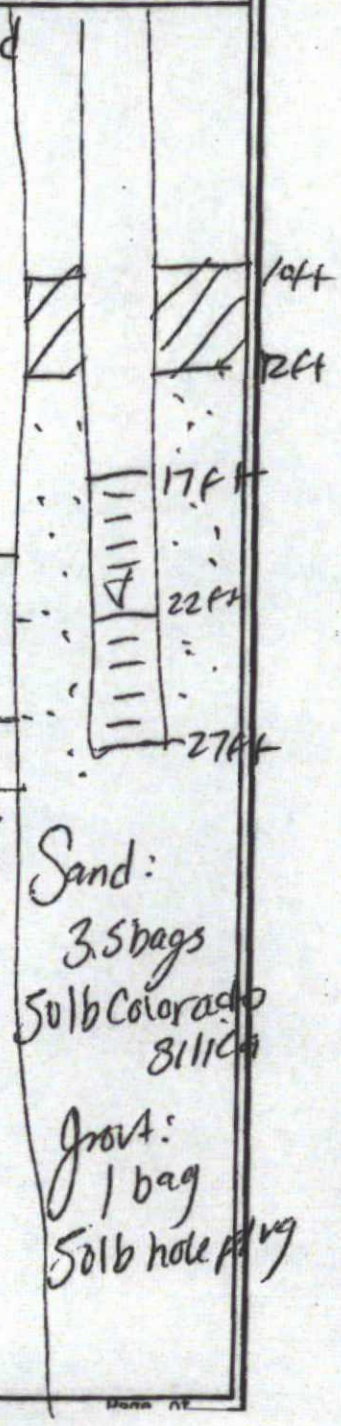
Grout: 1 bag 50 lb Hole plug

Compliance . Engineering . Remediation
LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301

Boring/Well Number: MW-6			Date: 10/8/15
Project: Sullivan GC D#1E			Project Number:
Logged By: AC			Drilled By: Kyle
Lat/Long:	Elevation:	Detector: MiniRae	Drilling Method: Auger
Sampling Method: Split Spoon	Hole Diameter: 4.25	Total Depth:	
Casing Type: PVC	Casing Diameter: 2"	Casing Length: 27ft	Slot Size: 0.01
Slot Length:	Depth to Water:		
Gravel Pack: 10/20 Silica	Seal:	Grout: 3/8" chips	Comments:

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks
					0			Cuttings not recorded until observed
					2			
					4			
	Dry		NO		6			
					8			
	Dry		NO		10			
					12			
					14			
	Dry		no		16			
					18			
	Moist	230.6	yes		20			2.5y 2.5/1 Black Strong odor/staining
	wet	230.5	yes		22		SM	Silty Sand med to fine 75% Silt 25%
	wet	89.1	NO	MW-6 @26' 1045	24			2.5y 4/1 dark gray
	Dry				26		SM	Silty Sand, SAA
					28			2.5y 6/2 light brownish gray coarse, medium to fine grain 65% Silt 35%
					30			



Compliance . Engineering . Remediation
LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301

Boring/Well Number: PP-1 | Date: 10/9/15
Project: Sullivan GLD#1E | Project Number:
Logged By: AZ | Drilled By: Cuvelk

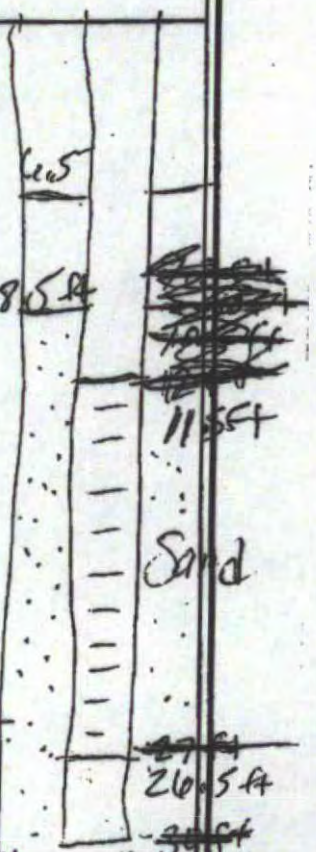
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Lat/Long:	Elevation:	Detector: Mini Rae	Drilling Method: Auger	Sampling Method: Split Spoon 12.25	Hole Diameter: ~~12.25~~	Total Depth: ~~29.5~~
Casing Type: PVC	Casing Diameter: 4"	Casing Length: 29.5	Slot Size: 0.01	Slot Length:	Depth to Water:	
Gravel Pack: 10/20 Silica	Seal:	Grout: 3/8" Chips	Comments:			

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks
					0			PP-1 was pulled Borehole was drilled out to ~25 ft
					2			
					4			
					6			
					8			
					10			* Took reading from Augured Material @ 25ft Doughly 1958 ppm
					12			
					14			
					16			
					18			
					20			WL @ 19.5 ft
					22			
					24			~~Dry layer~~ Hard ~~Rock~~ layer
	DRY	189.0	NO		26		SM	Very pale brown 10yr 8/2 Silty Sand Coarse Medium to fine 60% Silt 40% Dry! No odor or staining
	DRY	20.4	NO	221 @ 30 1100	28			
					30			TD 29.5

Sand = ~~IIII~~ IIII
5lb Colorado Silica Sand

Grout = 11
50lb Hole plug



ENCLOSURE D – XTO CONTINUED REMEDIATION PLAN

August, 2017

Mr. Randy Bayliss
New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: August 2017 – Continued Remediation Plan
XTO Energy, Inc.
Sullivan GC D #1E, API # 30-045-24083
San Juan County, New Mexico
3RP – 1035

Dear Mr. Bayliss:

XTO Energy Inc. (XTO) is submitting the following ***Continued Remediation Plan*** for the Sullivan Gas COM D #1E groundwater site, 3RP-1035, in response to a letter received on June 15, 2017 requesting a work plan for continued remediation at this location; see ***June 15, 2017 Letter***.

BACKGROUND

The Sullivan Gas COM D #1E is located in Unit F of Section 26, Township 29N, Range 11W, San Juan County, New Mexico, API 30-045-24083; see attached ***Aerial Photograph***. A release was identified at the Site on June 8, 2015. The source was a failed union in a fiberglass flow line connecting the separator and aboveground storage tank. The site was ranked a 30 pursuant to the *NMOCD Guidelines for the Remediation of Leaks, Spills and Releases* due to a depth to groundwater of less than 50 feet, and surface water features existing less than 1,000 feet from the Site. XTO responded by collecting subsurface soil samples from potholes and with a hand auger in locations depicted on the attached ***Figure 2 Diagram***, created by LT Environmental. The observed subsurface lithology consisted of a silty to clayey sand that is 13 feet to 17 feet thick underlain by saturated gravel occurring at 13 feet to 17.5 feet bgs. The laboratory analytical results indicated soil is impacted at the source from approximately 4 feet bgs to the saturated sediments at approximately 18.5 feet bgs. Concentrations of benzene from samples collected under the source ranged from 10 mg/kg at 8 feet bgs to 53 mg/kg at 19 feet bgs. TPH was detected in the soil samples as high as 16,300 mg/kg at 19 feet bgs.

Based on the presence of saturated sediments, XTO attempted to collect groundwater samples from BH-1, BH-2, and BH-3. The sidewalls of BH-1 collapsed and no groundwater was sampled at that location. A sample was collected from BH-2 and BH-3 for BTEX analysis. The concentrations of benzene, toluene, and total xylenes in the sample collected from BH-2 exceeded New Mexico Water Quality Control Commission (NMWQCC) standards. The sample collected from BH-3 contained no detectable concentrations of benzene, toluene, and ethyl-benzene. Although total xylenes were detected, the concentration did not exceed NMWQCC standards.

REMEDIATION WORK TO DATE

On August 19, 2015, additional delineation was performed by LT Environmental using a Geoprobe push rig. A report detailing the delineation findings is attached; see attached ***Subsurface Investigation Results***, dated September 1, 2015.

Monitoring wells MW-1, 2, 3, 4, 5 and 6 were installed, as well as a product recovery well, PR-1 in September of 2015. The locations of these wells can be referenced on the attached ***Figure 2 Diagram***, created by LT Environmental. Monitoring wells MW-1, 2, 5 and 6, as well as product recovery well PR-1, were modified to act as soil vapor extraction (SVE) wells beginning in April of 2016. The system has been monitored weekly since its installation, and has removed a total of 12.91 bbls of liquid product from the groundwater table through a liquid knockout attached to the SVE system piping. An estimated additional 275 bbls of hydrocarbons have been removed through the SVE system exhaust based on calculations of the total volatile petroleum hydrocarbons released through the system exhaust since it began operation in April of 2016.

Since the installation of the monitoring wells on location in September of 2015, product levels have shown a decreasing trend across all wells. Product recovery well PR-1 has shown a decrease in measured product level from a maximum of 32.28 inches in April of 2016, to current measurable levels of 1.68 inches, measured in June of 2017. Monitoring well MW-1 did not have any measurable product in June of 2017. This is a decrease from a maximum measurable product of 8.76 inches in November of 2015. Monitoring well MW-2 has shown a decrease from a maximum measured product level of 21.6 inches in April of 2016, to 0.6 inches in June of 2017. Monitoring well MW-3 and MW-4 showed no measurable product in June of 2017, a decrease in MW-3 from a maximum measured product thickness of 1.32 inches in April of 2016. Monitoring well MW-4 has never shown measurable product. Monitoring well MW-5 has shown a decrease in product levels to 5.05 inches, measured in June of 2017, a decrease from a maximum measured product thickness of 31.2 inches in April of 2016. Monitoring well MW-6 had a trace of product in June of 2017, but not enough to be measured. The total product thickness in this well has shown a decrease from the maximum measured product thickness of 17.64 inches in April of 2016. All product thickness values can be referenced on ***Table 1 – Groundwater Elevations***, created by LT Environmental and attached to this report for reference.

Since installation of the monitoring wells on location, periodic groundwater monitoring has taken place. Groundwater levels have been measured, and water samples have been collected and analyzed for BTEX via USEPA Method 8021. Monitoring wells that have free product are not sampled during monitoring events. Monitoring wells MW-3 and MW-4 have had the most frequent samples collected since their installation, and have shown an overall decrease in BTEX concentrations since their first sample was collected in September of 2015. Monitoring well MW-3 has shown a decrease in benzene concentrations from 6,500 ug/l in September of 2015, to current levels of 334 ug/l, from samples collected in June of 2017. Levels of toluene, ethyl-benzene and total xylenes have decreased during this time period as well. Monitoring well MW-4 has shown a sharp decline in benzene levels as well from initial levels of 3,480 ug/l measured in September of 2015. The most recent sampling event took place in June of 2017, and the water sample collected from MW-4 returned benzene results of 24 ug/l. During the same time period, toluene and ethyl-benzene levels have remained constant, but levels of total xylenes have shown an overall increase from levels of 180 ug/l in September of 2015, to levels of 2,350 ug/l in June

of 2017. Sampling results for all wells can be referenced on ***Table 2 – Groundwater Analytical Results***, completed by LT Environmental and attached to this report.

CONTINUED REMEDIATION PLAN

Soil Vapor Extraction

PID readings collected from the SVE exhaust have shown continued removal of volatile organic vapors from the oil and groundwater over the operating period. Due to volatile organic vapor results of 1,711 ppm collected from the exhaust during the most recent SVE system check, XTO proposes the continued operation of the SVE system to continue removal of volatile hydrocarbons at this site.

Groundwater Monitoring

Additional monitoring wells will be installed at locations as previously approved by the NMOCD. Approved monitoring well locations are outlined on the attached ***Figure 6***, created by LT Environmental. The additional monitoring wells will be installed and completed as temporary monitoring wells, and may be plugged based on results of BTEX sampling collected after the well's installation. Should a temporary well return groundwater results below WQCC standards for two (2) consecutive sampling events after initial installation. Assessment of the necessity of the well will take place at that time. Groundwater monitoring will be conducted semi-annually moving forward, and will include water level monitoring in all monitoring wells, the documentation of product thickness, if applicable, in all monitoring wells, and the sampling of monitoring wells that do not have measurable product. Samples will be analyzed for BTEX via USEPA Method 8021. Sample collection will continue in monitoring wells which have shown BTEX results in groundwater above WQCC standards until eight (8) consecutive quarters of sampling results indicate BTEX levels are below WQCC standards. The temporary monitoring wells will be installed off pad once approval is received from the landowner, Andeavor. XTO has been in discussion with Andeavor regarding the off-pad monitoring wells, and a revised lease agreement has been submitted to them and is pending approval.

Product Recovery

XTO proposes to continue product recovery utilizing the SVE system in place. The need to convert the newly installed temporary monitoring wells into SVE wells will be based on conditions observed once the temporary monitoring wells have been installed.

Reporting

Semi-annual groundwater monitoring will be submitted in annual reports to the NMOCD. Reports will additionally include product recovery volumes; SVE data including applied pressure, flow and vacuum with air emission estimates; groundwater elevations and analytical results.

James McDaniel
XTO Energy Inc.
EH&S Supervisor
Rockies District, Central Division

State of New Mexico
Energy, Minerals and Natural Resources Department

15 June 2017

James McDaniel
EH&S Supervisor
XTO Energy
382 Road 3100
Aztec, NM 87410

Subject: Work Plans Needed for 2017

Re:	3RP	Site Name
	1035	Sullivan GC D#1E
	106	Bruington GC #1

Mr. McDaniel:

I have reviewed the six 2016 Annual Groundwater Monitoring Reports you submitted on 05Apr17. OCD comments on the two AGWMRs referenced above follow. At this time, we have no comments on the other 3RPs.

RP-1035 SVE recovered 15,000 lbs of TPH and 800 lbs BTEX in about 60 days of operation in 2016. NAPL thickness reduced in several wells. You've proposed four new monitoring wells but, even so, delineation of NAPL plumes have yet to be defined as follows. Recall the WQCC standard for NAPL is non-detect.

MW6	North, East, South	(0.33 ft NAPL)
MW1	South, Southwest	(0.19 ft NAPL)
MW2	East	(0.66 ft NAPL)

Your 2016 AGWMR indicates the preliminary SVE system will continue to operate so long as NAPL is reduced and vapor is present. Your OCD-approved Work Plan covered the 2016 monitoring and recovery operations. On or before 14Aug17, please submit a Work Plan for 2017 monitoring and recovery operations. Please include details on further delineation (see above) and specifics of SVE operations (timing, duration, notifications to District III staff, monitoring, equipment used, and so forth). OCD appreciates your aggressive and successful remediation work in 2016 and encourages the same for the future. Please keep us informed on negotiations with Western for access for more MWs.

3RP-106 Test results indicate source material is still in contact with ground water. Delineation of groundwater plumes of BTEX has yet to be defined as follows. Recall the WQCC standard for benzene is 10 ppb.

MW6	North	(21,300 ppb benzene)
MW7	North, South	(7,520 ppb benzene)
MW8	North, East, South	(15,300 ppb benzene)
MW2R	South	(14,000 ppb benzene)

We note a history of a) proposed remediation schemes, b) attempts to involve EPFS in investigation and cleanup efforts and c) attempts to elicit responses from OCD on proposals and assistance. This monitoring project has been going on since 1996 and the levels of benzene in the groundwater have remained about the same. We appreciate your long-standing efforts to get resolution on this project. Let's get together and start some movement. Meanwhile, be thinking about more MWs to fill the gaps above and about remediation strategies to a) find and remove any remaining source material, and b) to get the BTEX out of the groundwater.

Once we have the strategies worked out, OCD will want you to a) submit a remediation plan approved by us ("us" meaning jointly by the District III staff and by the Santa Fe Environmental Bureau) pursuant to 19.15.29.11 NMAC, or b) submit an abatement plan proposal to the OCD director for approval pursuant to 19.15.30 NMAC.

In the recent past, OCD in District III has used option a) above to handle groundwater contamination cases. In the future, OCD will handle new District III groundwater cases using option b). In the transition mode, existing cases may be handled using either option, depending on circumstances and the histories of cases.

After you have reviewed this letter, give me a call (505-476-3084) and we can discuss details. Or if you're in Aztec on my next trip (now scheduled 27-29Jun17), maybe we can talk face-to-face.

Respectfully,

P.E., Hydrologist, District III

cc: Jim Griswold, Charlie Perrin, Brandon Powell, Cory Smith, Vanessa Fields, Jeff Blagg


AERIAL PHOTO
SITE
© 2017 Google
Google

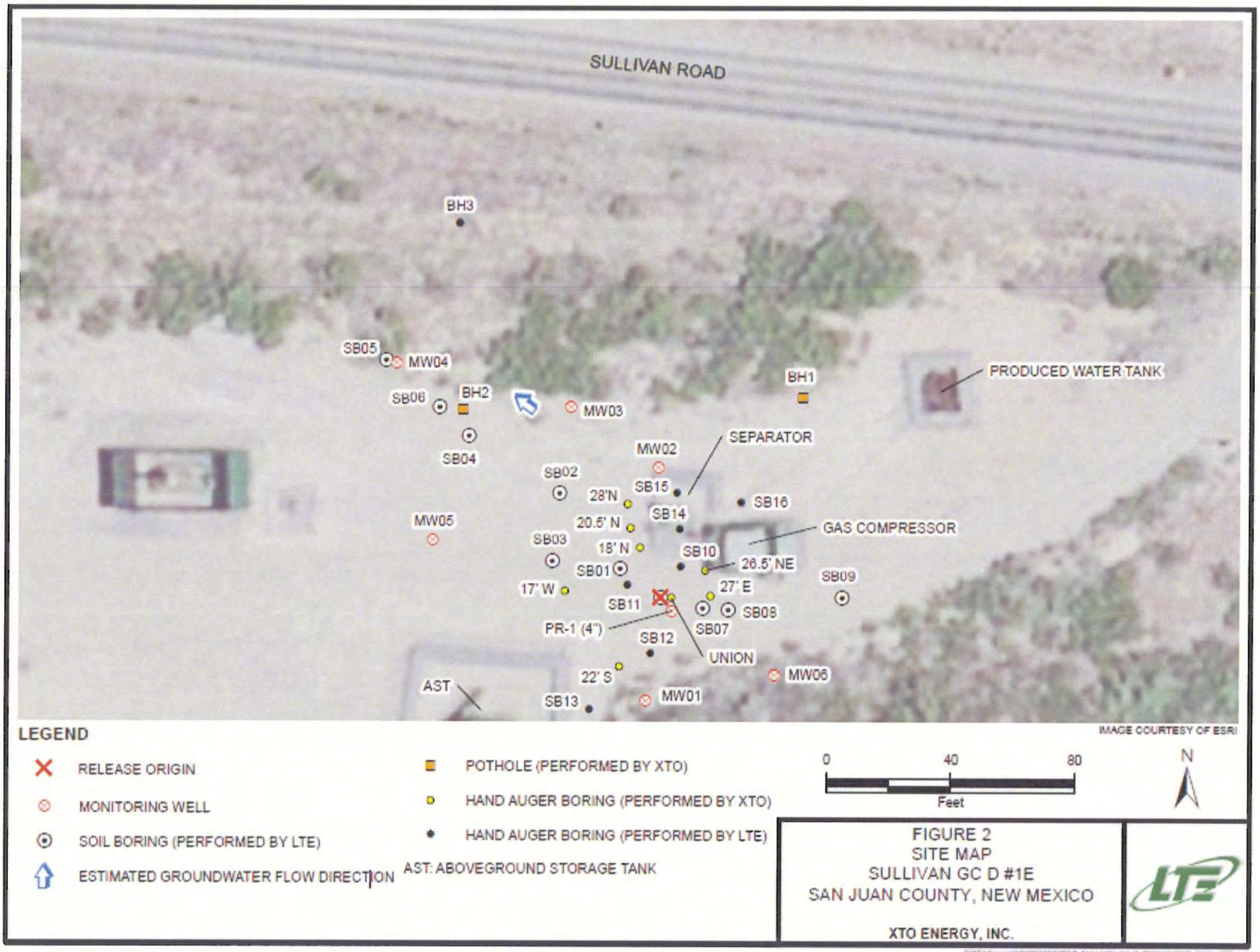


FIGURE 2
SITE MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

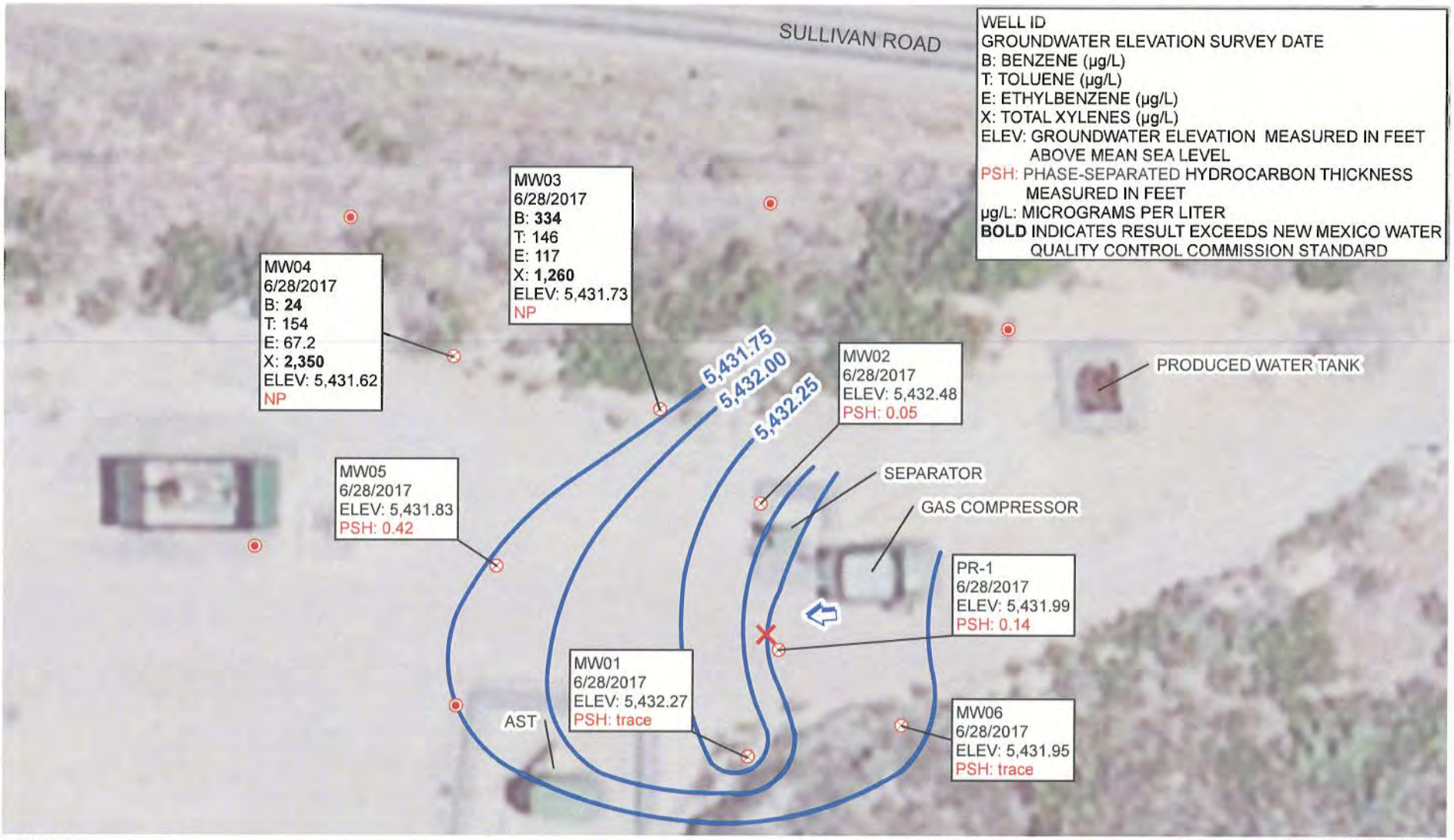


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE ORIGIN
- MONITORING WELL
- PROPOSED MONITORING WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.25 FEET
- AST: ABOVEGROUND STORAGE TANK

0 40 80
Feet

N

NOTE: A PRODUCT DENSITY FACTOR OF 0.7996 IS USED TO ACCOUNT FOR THE PRESENCE OF FREE PRODUCT IN WELLS IN WHICH FREE PRODUCT WAS OBSERVED.

FIGURE 6
GROUNDWATER POTENTIOMETRIC MAP AND ANALYTICAL RESULTS (JUNE 2017)
SULLIVAN GC D#1E
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG06_GWE_JUN_2017.mxd

TABLE 1
GROUNDWATER ELEVATIONS

SULLIVAN GAS COM D #1E
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
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	11/4/2015		19.09	19.58	0.49	5.88	5,433.04
	11/11/2015		19.23	19.39	0.16	1.92	5,432.97
	11/18/2015		19.28	19.44	0.16	1.92	5,432.92
	2/19/2016		19.97	20.31	0.34	4.08	5,432.19
	4/29/2016		19.32	22.01	2.69	32.28	5,432.37
	6/20/2016		20.75	21.05	0.30	3.60	5,431.42
	7/14/2016		18.86	20.91	2.05	24.60	5,432.96
	7/18/2016		18.89	20.95	2.06	24.72	5,432.93
	7/22/2016		19.43	19.88	0.45	5.40	5,432.71
	9/30/2016		18.72	20.10	1.38	16.56	5,433.23
	10/10/2016		18.72	19.94	1.22	14.64	5,433.27
	12/15/2016		19.35	20.14	0.79	9.48	5,432.72
	3/30/2017		NP	19.90	NP	NP	5,432.33
	6/28/2017		20.21	20.35	0.14	1.68	5,431.99
MW01	9/10/2015	5,454.15	21.55	21.82	0.27	3.24	5,432.55
	9/19/2015		--	--	--	0.21 **	--
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	9/28/2015		20.95	21.51	0.56	6.72	5,433.09
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	11/11/2015		21.05	21.74	0.69	8.28	5,432.96
	11/18/2015		21.08	21.81	0.73	8.76	5,432.92
	2/19/2016		21.65	21.84	0.19	2.28	5,432.46
	4/29/2016		21.11	21.79	0.68	8.16	5,432.90
	6/20/2016		22.96	23.03	0.07	0.84	5,431.18
	7/14/2016		NP	20.71	NP	NP	5,433.44
	7/18/2016		20.80	20.91	0.11	1.32	5,433.33
	7/22/2016		21.18	21.59	0.41	4.92	5,432.89
	9/30/2016		20.74	20.81	0.07	0.84	5,433.40
	10/10/2016		NP	20.69	NP	NP	5,433.46
	12/15/2016		22.41	22.33	0.08	0.96	5,431.88
	3/30/2017		NP	21.76	NP	NP	5,432.39
	6/28/2017		Trace	21.88	NP	NP	5,432.27
MW02	9/10/2015	5,451.95	NP	18.85	NP	NP	5,433.10
	9/19/2015		--	--	--	0.05 **	--
	9/25/2015		--	--	--	0.15 **	--
	9/28/2015		18.85	19.04	0.19	2.28	5,433.06
	11/4/2015		18.88	19.21	0.33	3.96	5,433.00
	11/11/2015		18.97	19.31	0.34	4.08	5,432.91
	11/18/2015		18.98	19.30	0.32	3.84	5,432.91
	2/19/2016		19.63	20.29	0.66	7.92	5,432.19

TABLE 1
GROUNDWATER ELEVATIONS

SULLIVAN GAS COM D #1E
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW02	4/29/2016	5,451.95	19.47	21.27	1.80	21.60	5,432.12
	6/20/2016		20.30	20.55	0.25	3.00	5,431.60
	7/14/2016		NP	19.04	NP	NP	5,432.91
	7/18/2016		NP	19.05	NP	NP	5,432.90
	7/22/2016		19.07	19.19	0.12	1.44	5,432.86
	9/30/2016		18.69	18.93	0.24	2.88	5,433.21
	10/10/2016		NP	18.64	NP	NP	5,433.31
	12/15/2016		NP	19.20	NP	NP	5,432.75
	3/30/2017		NP	19.69	NP	NP	5,432.26
	6/28/2017		19.90	19.95	0.05	0.60	5,432.48
MW03	9/10/2015	5,452.50	NP	19.45	NP	NP	5,433.05
	9/28/2015		NP	19.49	NP	NP	5,433.01
	11/4/2015		19.54	19.56	0.02	0.24	5,432.96
	11/11/2015		NP	19.65	NP	NP	5,432.85
	11/18/2015		NP	19.67	NP	NP	5,432.83
	2/19/2016		NP	20.44	NP	NP	5,432.06
	4/29/2016		20.54	20.65	0.11	1.32	5,431.94
	6/20/2016		19.70	19.78	0.08	0.96	5,432.78
	7/14/2016		19.59	19.65	0.06	0.72	5,432.90
	7/18/2016		19.65	19.69	0.04	0.48	5,432.84
	7/22/2016		19.61	19.66	0.05	0.60	5,432.88
	9/30/2016		19.28	19.33	0.05	0.60	5,433.21
	10/10/2016		NP	19.23	NP	NP	5,433.27
	12/15/2016		NP	19.82	NP	NP	5,432.68
	3/30/2017		NP	20.36	NP	NP	5,432.14
	6/28/2017		NP	20.77	NP	NP	5,431.73
MW04	9/10/2015	5,451.92	NP	18.94	NP	NP	5,432.98
	9/28/2015		NP	19.98	NP	NP	5,431.94
	11/4/2015		NP	19.08	NP	NP	5,432.84
	11/11/2015		NP	19.20	NP	NP	5,432.72
	11/18/2015		NP	19.21	NP	NP	5,432.71
	2/19/2016		NP	20.04	NP	NP	5,431.88
	4/29/2016		NP	20.11	NP	NP	5,431.81
	6/20/2016		NP	19.10	NP	NP	5,432.82
	7/14/2016		NP	19.01	NP	NP	5,432.91
	7/18/2016		NP	19.00	NP	NP	5,432.92
	7/22/2016		NP	18.99	NP	NP	5,432.93
	9/30/2016		NP	18.72	NP	NP	5,433.20
	10/10/2016		NP	18.62	NP	NP	5,433.30
	12/15/2016		NP	19.36	NP	NP	5,432.56
	3/30/2017		NP	19.98	NP	NP	5,431.94
	6/28/2017		NP	20.30	NP	NP	5,431.62

TABLE 1
GROUNDWATER ELEVATIONS

SULLIVAN GAS COM D #1E
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

Well ID	Date	Top of Casing Elevation (feet*)	Depth to Product (feet BTOC)	Depth to Groundwater (feet BTOC)	Product Thickness (feet)	Product Thickness (inches)	Groundwater Elevation (feet)
MW05	11/4/2015	5,451.89	18.82	19.51	0.69	8.28	5,432.93
	11/11/2015		18.9	19.69	0.79	9.48	5,432.83
	11/18/2015		18.93	19.73	0.8	9.60	5,432.80
	2/19/2016		19.66	20.75	1.09	13.08	5,432.01
	4/29/2016		19.35	21.95	2.60	31.20	5,432.02
	6/20/2016		20.18	20.40	0.22	2.64	5,431.67
	7/14/2016		18.63	18.89	0.26	3.12	5,433.21
	7/18/2016		18.60	20.13	1.53	18.36	5,432.98
	7/22/2016		18.84	19.18	0.34	4.08	5,432.98
	9/30/2016		18.44	19.34	0.90	10.80	5,433.27
	10/10/2016		18.39	19.17	0.78	9.36	5,433.34
	12/15/2016		NP	19.24	NP	NP	5,432.65
	3/30/2017		NP	20.42	NP	NP	5,431.47
	6/28/2017		19.98	20.40	0.42	5.04	5,431.83
MW06	11/4/2015	5,454.95	21.81	22.12	0.31	3.72	5,433.08
	11/11/2015		21.88	22.3	0.42	5.04	5,432.99
	11/11/2015		21.89	22.3	0.41	4.92	5,432.98
	2/19/2016		22.58	22.91	0.33	3.96	5,432.30
	4/29/2016		22.02	23.49	1.47	17.64	5,432.64
	6/20/2016		23.53	23.60	0.07	0.84	5,431.41
	7/14/2016		21.94	22.03	0.09	1.08	5,432.99
	7/18/2016		NP	21.79	NP	NP	5,433.16
	7/22/2016		22.09	22.31	0.22	2.64	5,432.82
	9/30/2016		21.70	21.74	0.04	0.48	5,433.24
	10/10/2016		NP	21.64	NP	NP	5,433.31
	12/15/2016		NP	22.11	NP	NP	5,432.84
	3/30/2017		NP	22.55	NP	NP	5,432.40
	6/28/2017		Trace	23.00	NP	NP	5,431.95

Notes:

A product density factor of 0.7996 is used to account for the presence of free product in wells in which free product was observed
* - survyed using North American Vertical Datum 1988 geoid 12B in U.S. survey feet
** - Estimated based on volume recovered in a bailer
-- - Not Measured
BTOC - Below Top of Casing
NP - No Product
Trace - visible sheen/product in bailer, but not detected by interface probe

TABLE 2
GROUNDWATER ANALYTICAL RESULTS

SULLIVAN GAS COM D #1E
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample ID	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
MW02	9/10/2015	**6,500**	**24,200**	**1,770**	**11,400**
	12/15/2016	**2,730**	**5,960**	440	**9,450**
MW03	9/10/2015	**2,050**	420	390	**2,890**
	9/14/2015	**6,800**	**1,800**	**900**	**7,600**
	2/19/2016	**919**	232	130	**830**
	12/15/2016	**1,440**	251	283	**2,810**
	6/28/2017	**334**	146	117	**1,260**
MW04	9/10/2015	**3,480**	30	60	180
	9/14/2015	**2,900**	25	110	290
	2/19/2016	<0.5	<5.0	<0.5	<1.50
	6/20/2016	**1,680**	<50.0	297	**2,210**
	9/30/2016	**630**	72	94	**640**
	12/15/2016	**1,520**	15.8	17.3	**166**
	6/28/2017	**24.0**	154	67.2	**2,350**
MW05	12/15/2016	**2,440**	**6,700**	638	**8,470**
MW06	12/15/2016	**1,810**	**3,640**	**811**	**14,200**
NMWQCC Standard		**10**	**750**	**750**	**620**

Notes:

< indicates result is less than the stated laboratory method detection limit
NMWQCC - New Mexico Water Quality Control Commission
µg/l - micrograms per liter

ENCLOSURE E – LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

March 25, 2020

Clara Cardoza
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Sullivan GC D 1E OrderNo.: 2003577

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 9 sample(s) on 3/12/2020 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-02
Project: Sullivan GC D 1E
Collection Date: 3/10/2020 2:00:00 PM
Lab ID: 2003577-001 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	10	D	µg/L	20	3/20/2020 11:57:00 PM
Toluene	14	10	D	µg/L	20	3/20/2020 11:57:00 PM
Ethylbenzene	12	10	D	µg/L	20	3/20/2020 11:57:00 PM
Xylenes, Total	3400	30	D	µg/L	20	3/20/2020 11:57:00 PM
Surr: 1,2-Dichloroethane-d4	94.3	70-130	D	%Rec	20	3/20/2020 11:57:00 PM
Surr: 4-Bromofluorobenzene	97.8	70-130	D	%Rec	20	3/20/2020 11:57:00 PM
Surr: Dibromofluoromethane	99.8	70-130	D	%Rec	20	3/20/2020 11:57:00 PM
Surr: Toluene-d8	96.5	70-130	D	%Rec	20	3/20/2020 11:57:00 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-03
Project: Sullivan GC D 1E
Collection Date: 3/10/2020 2:40:00 PM
Lab ID: 2003577-002 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	3/20/2020 11:09:00 PM
Toluene	ND	1.0		µg/L	1	3/20/2020 11:09:00 PM
Ethylbenzene	ND	1.0		µg/L	1	3/20/2020 11:09:00 PM
Xylenes, Total	ND	1.5		µg/L	1	3/20/2020 11:09:00 PM
Surr: 1,2-Dichloroethane-d4	93.9	70-130		%Rec	1	3/20/2020 11:09:00 PM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	3/20/2020 11:09:00 PM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	3/20/2020 11:09:00 PM
Surr: Toluene-d8	94.5	70-130		%Rec	1	3/20/2020 11:09:00 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-06
Project: Sullivan GC D 1E
Collection Date: 3/10/2020 3:10:00 PM
Lab ID: 2003577-003 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	150	50		µg/L	50	3/21/2020 12:45:00 AM
Toluene	2300	50		µg/L	50	3/21/2020 12:45:00 AM
Ethylbenzene	880	50		µg/L	50	3/21/2020 12:45:00 AM
Xylenes, Total	13000	750		µg/L	500	3/21/2020 12:21:00 AM
Surr: 1,2-Dichloroethane-d4	92.0	70-130		%Rec	50	3/21/2020 12:45:00 AM
Surr: 4-Bromofluorobenzene	96.7	70-130		%Rec	50	3/21/2020 12:45:00 AM
Surr: Dibromofluoromethane	98.5	70-130		%Rec	50	3/21/2020 12:45:00 AM
Surr: Toluene-d8	96.2	70-130		%Rec	50	3/21/2020 12:45:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-09
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 10:25:00 AM
Lab ID: 2003577-004 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	3/21/2020 3:07:00 AM
Toluene	ND	1.0		µg/L	1	3/21/2020 3:07:00 AM
Ethylbenzene	ND	1.0		µg/L	1	3/21/2020 3:07:00 AM
Xylenes, Total	ND	1.5		µg/L	1	3/21/2020 3:07:00 AM
Surr: 1,2-Dichloroethane-d4	92.5	70-130		%Rec	1	3/21/2020 3:07:00 AM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	3/21/2020 3:07:00 AM
Surr: Dibromofluoromethane	99.6	70-130		%Rec	1	3/21/2020 3:07:00 AM
Surr: Toluene-d8	95.7	70-130		%Rec	1	3/21/2020 3:07:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-10
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 11:00:00 AM
Lab ID: 2003577-005 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	3/21/2020 4:19:00 AM
Toluene	ND	1.0		µg/L	1	3/21/2020 4:19:00 AM
Ethylbenzene	ND	1.0		µg/L	1	3/21/2020 4:19:00 AM
Xylenes, Total	ND	1.5		µg/L	1	3/21/2020 4:19:00 AM
Surr: 1,2-Dichloroethane-d4	89.8	70-130		%Rec	1	3/21/2020 4:19:00 AM
Surr: 4-Bromofluorobenzene	94.9	70-130		%Rec	1	3/21/2020 4:19:00 AM
Surr: Dibromofluoromethane	98.0	70-130		%Rec	1	3/21/2020 4:19:00 AM
Surr: Toluene-d8	91.9	70-130		%Rec	1	3/21/2020 4:19:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-07
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 11:45:00 AM
Lab ID: 2003577-006 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	3/21/2020 4:42:00 AM
Toluene	ND	1.0		µg/L	1	3/21/2020 4:42:00 AM
Ethylbenzene	ND	1.0		µg/L	1	3/21/2020 4:42:00 AM
Xylenes, Total	ND	1.5		µg/L	1	3/21/2020 4:42:00 AM
Surr: 1,2-Dichloroethane-d4	94.5	70-130		%Rec	1	3/21/2020 4:42:00 AM
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	1	3/21/2020 4:42:00 AM
Surr: Dibromofluoromethane	99.1	70-130		%Rec	1	3/21/2020 4:42:00 AM
Surr: Toluene-d8	94.8	70-130		%Rec	1	3/21/2020 4:42:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-05
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 12:25:00 PM
Lab ID: 2003577-007 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	44	2.0		µg/L	2	3/21/2020 5:06:00 AM
Toluene	100	2.0		µg/L	2	3/21/2020 5:06:00 AM
Ethylbenzene	8.0	2.0		µg/L	2	3/21/2020 5:06:00 AM
Xylenes, Total	270	3.0		µg/L	2	3/21/2020 5:06:00 AM
Surr: 1,2-Dichloroethane-d4	90.8	70-130		%Rec	2	3/21/2020 5:06:00 AM
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	2	3/21/2020 5:06:00 AM
Surr: Dibromofluoromethane	97.9	70-130		%Rec	2	3/21/2020 5:06:00 AM
Surr: Toluene-d8	95.6	70-130		%Rec	2	3/21/2020 5:06:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: PR-1
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 1:00:00 PM
Lab ID: 2003577-008 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	8.0	5.0		µg/L	5	3/21/2020 5:53:00 AM
Toluene	340	5.0		µg/L	5	3/21/2020 5:53:00 AM
Ethylbenzene	73	5.0		µg/L	5	3/21/2020 5:53:00 AM
Xylenes, Total	3200	75		µg/L	50	3/21/2020 5:30:00 AM
Surr: 1,2-Dichloroethane-d4	90.2	70-130		%Rec	5	3/21/2020 5:53:00 AM
Surr: 4-Bromofluorobenzene	92.3	70-130		%Rec	5	3/21/2020 5:53:00 AM
Surr: Dibromofluoromethane	98.1	70-130		%Rec	5	3/21/2020 5:53:00 AM
Surr: Toluene-d8	96.6	70-130		%Rec	5	3/21/2020 5:53:00 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2003577**
Date Reported: **3/25/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW-11
Project: Sullivan GC D 1E
Collection Date: 3/11/2020 1:40:00 PM
Lab ID: 2003577-009 **Matrix:** AQUEOUS **Received Date:** 3/12/2020 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **CCM**
Benzene	ND	1.0		µg/L	1	3/21/2020 6:17:00 AM
Toluene	ND	1.0		µg/L	1	3/21/2020 6:17:00 AM
Ethylbenzene	ND	1.0		µg/L	1	3/21/2020 6:17:00 AM
Xylenes, Total	ND	1.5		µg/L	1	3/21/2020 6:17:00 AM
Surr: 1,2-Dichloroethane-d4	89.7	70-130		%Rec	1	3/21/2020 6:17:00 AM
Surr: 4-Bromofluorobenzene	94.6	70-130		%Rec	1	3/21/2020 6:17:00 AM
Surr: Dibromofluoromethane	97.4	70-130		%Rec	1	3/21/2020 6:17:00 AM
Surr: Toluene-d8	95.1	70-130		%Rec	1	3/21/2020 6:17:00 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2003577**

25-Mar-20

Client: HILCORP ENERGY

Project: Sullivan GC D 1E

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/20/2020**	SeqNo: **2328091** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.0	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.4	70	130			
Surr: Toluene-d8	9.5		10.00		95.2	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/20/2020**	SeqNo: **2328092** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.8	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.2	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.0	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	70	130			

Sample ID: **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **B67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/21/2020**	SeqNo: **2328115** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.1	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.3	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.5	70	130			
Surr: Toluene-d8	9.4		10.00		93.9	70	130			

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **B67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/21/2020**	SeqNo: **2328116** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2003577**

25-Mar-20

Client: HILCORP ENERGY

Project: Sullivan GC D 1E

Sample ID: **mb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **B67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/21/2020**	SeqNo: **2328116** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.3		10.00		93.2	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.9	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.5	70	130			
Surr: Toluene-d8	9.5		10.00		94.6	70	130			

Sample ID: **2003577-004ams**	SampType: **MS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **MW-09**	Batch ID: **B67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/21/2020**	SeqNo: **2328118** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.5	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.5	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.2	70	130			
Surr: Toluene-d8	9.5		10.00		94.9	70	130			

Sample ID: **2003577-004amsd**	SampType: **MSD**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **MW-09**	Batch ID: **B67467**	RunNo: **67467**
Prep Date:	Analysis Date: **3/21/2020**	SeqNo: **2328119** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	70	130	4.77	20	
Toluene	19	1.0	20.00	0	97.3	70	130	6.80	20	
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.0	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.5		10.00		95.1	70	130	0	0	
Surr: Dibromofluoromethane	9.9		10.00		98.6	70	130	0	0	
Surr: Toluene-d8	9.3		10.00		93.2	70	130	0	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY FAR Work Order Number: 2003577 RcptNo: 1

Received By: **Yazmine Garduno** 3/12/2020 8:30:00 AM Yazmine Garduno

Completed By: **Desiree Dominguez** 3/12/2020 1:58:08 PM DD

Reviewed By: DB 3/12/2020

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? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

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

Adjusted? _____

Checked by: YR 3/12/20

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:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Yes			
2	5.6	Good	Yes			

Chain-of-Custody Record

Client: Clara Cardoza
Hilcorp Energy Company
Mailing Address: 382 Road 3100
Aztec, NM 87410
Phone #: 505-793-2784
email or Fax#: ccardoza@hilcorp.com
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: Sullivan GC D#1E
Project #: 017820002
Project Manager: Josh Adams
Sampler: Mary mrdjenovich
On Ice: ☒ Yes ☐ No
# of Coolers: 2
Cooler Temp(including CF): 3.6 +0.1 = 3.7
S.S +0.1 = 5.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2003577	(BTEX) MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3/10/20	14:00	GW	MW-02	3 VOAs	HCl	-001	X									
	14:40		MW-03		HCl	-002										
	15:10		MW-06		$HgCl_2$	-003										
3/11/20	10:25		MW-09		HCl	-004										
	11:00		MW-10		HCl	-005										
	11:45		MW-07		HCl	-006										
	12:25		MW-05		$HgCl_2$	-007										
	13:00		PR-1		$HgCl_2$	-008										
	13:40		MW-11		HCl	-009										

Date	Time	Relinquished by	Received by	Via	Date	Time
3/11/20	1442		Christa Ward		3/11/20	1442
3/11/20	1804	Christa Ward		Courier	3/12/20	0830

Remarks: Please cc: mmrdjenovich@ltenv.com with results.

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

July 01, 2020

Josh Adams
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Sullivan GC D #1E OrderNo.: 2006C05

Dear Josh Adams:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/24/2020 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2006C05**
Date Reported: **7/1/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW 06
Project: Sullivan GC D #1E
Collection Date: 6/23/2020 2:00:00 PM
Lab ID: 2006C05-001 **Matrix:** AQUEOUS **Received Date:** 6/24/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	120	50	P	µg/L	50	6/26/2020 9:04:19 PM	SL69947
Toluene	1900	50	P	µg/L	50	6/26/2020 9:04:19 PM	SL69947
Ethylbenzene	850	50	P	µg/L	50	6/26/2020 9:04:19 PM	SL69947
Xylenes, Total	18000	750	P	µg/L	500	6/26/2020 8:35:39 PM	SL69947
Surr: 1,2-Dichloroethane-d4	110	70-130	P	%Rec	50	6/26/2020 9:04:19 PM	SL69947
Surr: 4-Bromofluorobenzene	99.4	70-130	P	%Rec	50	6/26/2020 9:04:19 PM	SL69947
Surr: Dibromofluoromethane	108	70-130	P	%Rec	50	6/26/2020 9:04:19 PM	SL69947
Surr: Toluene-d8	105	70-130	P	%Rec	50	6/26/2020 9:04:19 PM	SL69947

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

Qualifiers:

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

Analytical Report
Lab Order **2006C05**
Date Reported: **7/1/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW 07
Project: Sullivan GC D #1E
Collection Date: 6/23/2020 11:10:00 AM
Lab ID: 2006C05-002 **Matrix:** AQUEOUS **Received Date:** 6/24/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	6/26/2020 9:32:56 PM	SL69947
Toluene	ND	1.0		µg/L	1	6/26/2020 9:32:56 PM	SL69947
Ethylbenzene	ND	1.0		µg/L	1	6/26/2020 9:32:56 PM	SL69947
Xylenes, Total	ND	1.5		µg/L	1	6/26/2020 9:32:56 PM	SL69947
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	6/26/2020 9:32:56 PM	SL69947
Surr: 4-Bromofluorobenzene	92.6	70-130		%Rec	1	6/26/2020 9:32:56 PM	SL69947
Surr: Dibromofluoromethane	105	70-130		%Rec	1	6/26/2020 9:32:56 PM	SL69947
Surr: Toluene-d8	108	70-130		%Rec	1	6/26/2020 9:32:56 PM	SL69947

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

Qualifiers:

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

Analytical Report
Lab Order **2006C05**
Date Reported: **7/1/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW 09
Project: Sullivan GC D #1E
Collection Date: 6/23/2020 12:00:00 PM
Lab ID: 2006C05-003 **Matrix:** AQUEOUS **Received Date:** 6/24/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	6/26/2020 10:01:28 PM	SL69947
Toluene	ND	1.0		µg/L	1	6/26/2020 10:01:28 PM	SL69947
Ethylbenzene	ND	1.0		µg/L	1	6/26/2020 10:01:28 PM	SL69947
Xylenes, Total	ND	1.5		µg/L	1	6/26/2020 10:01:28 PM	SL69947
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	6/26/2020 10:01:28 PM	SL69947
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	1	6/26/2020 10:01:28 PM	SL69947
Surr: Dibromofluoromethane	104	70-130		%Rec	1	6/26/2020 10:01:28 PM	SL69947
Surr: Toluene-d8	106	70-130		%Rec	1	6/26/2020 10:01:28 PM	SL69947

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

Qualifiers:

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

Analytical Report
Lab Order **2006C05**
Date Reported: **7/1/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW 10
Project: Sullivan GC D #1E
Collection Date: 6/23/2020 12:40:00 PM
Lab ID: 2006C05-004 **Matrix:** AQUEOUS **Received Date:** 6/24/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	6/26/2020 10:30:00 PM	SL69947
Toluene	ND	1.0		µg/L	1	6/26/2020 10:30:00 PM	SL69947
Ethylbenzene	ND	1.0		µg/L	1	6/26/2020 10:30:00 PM	SL69947
Xylenes, Total	ND	1.5		µg/L	1	6/26/2020 10:30:00 PM	SL69947
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	6/26/2020 10:30:00 PM	SL69947
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	6/26/2020 10:30:00 PM	SL69947
Surr: Dibromofluoromethane	109	70-130		%Rec	1	6/26/2020 10:30:00 PM	SL69947
Surr: Toluene-d8	105	70-130		%Rec	1	6/26/2020 10:30:00 PM	SL69947

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

Qualifiers:

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

Analytical Report
Lab Order **2006C05**
Date Reported: **7/1/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: MW 11
Project: Sullivan GC D #1E
Collection Date: 6/23/2020 1:30:00 PM
Lab ID: 2006C05-005 **Matrix:** AQUEOUS **Received Date:** 6/24/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	6/26/2020 10:58:41 PM	SL69947
Toluene	ND	1.0		µg/L	1	6/26/2020 10:58:41 PM	SL69947
Ethylbenzene	ND	1.0		µg/L	1	6/26/2020 10:58:41 PM	SL69947
Xylenes, Total	ND	1.5		µg/L	1	6/26/2020 10:58:41 PM	SL69947
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	6/26/2020 10:58:41 PM	SL69947
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	6/26/2020 10:58:41 PM	SL69947
Surr: Dibromofluoromethane	110	70-130		%Rec	1	6/26/2020 10:58:41 PM	SL69947
Surr: Toluene-d8	103	70-130		%Rec	1	6/26/2020 10:58:41 PM	SL69947

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2006C05**

01-Jul-20

Client: HILCORP ENERGY

Project: Sullivan GC D #1E

Sample ID: **mb1**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL69947**	RunNo: **69947**
Prep Date:	Analysis Date: **6/26/2020**	SeqNo: **2429275** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.1	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL69947**	RunNo: **69947**
Prep Date:	Analysis Date: **6/26/2020**	SeqNo: **2429276** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	114	70	130			
Toluene	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		111	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		92.6	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Hilcorp Energy** Work Order Number: **2006C05** RcptNo: 1

Received By: **Emily Mocho** **6/24/2020 8:00:00 AM**

Completed By: **Emily Mocho** **6/24/2020 9:14:08 AM**

Reviewed By: JO 6/24/20

Chain of Custody

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

Log In

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

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

Adjusted?

Checked by: EM 6/24/20

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:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Not Present			

Chain-of-Custody Record

Client: Clara Cordoza
Hilcorp Energy
Mailing Address: 382 Rd 3100, Aztec, NM
Phone #: 505-793-784
email or Fax#: CCordoza@hilcorp.com
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: Sullivan GC D #1E
Project #: 01782002
Project Manager: Josh Adams
Sampler: Travis Short
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.6-0.2 = 1.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2006C05
6/23	1400	H2O	MW06	3 (VOA)	HCL	-001
	1110		MW07			-002
	1200		MW09			-003
	1240		MW10			-004
	1330		MW11			-005

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
X															
X															
X															
X															
X															

Date:	Time:	Relinquished by:	Received by:	Date	Time
6/23	1430		Chris Ward	4/23/2020	1430
4/23/2020	1920	Christian Waeters	Courier	6/24/20	800

Remarks: Please cc' JAdams@Ltenv.com
Tshort@Ltenv.com

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 05, 2020

Clara Cardoza

Hilcorp Energy
PO Box 61529
Houston, TX 77208-1529
TEL: (337) 276-7676
FAX:

RE: Sullivan GC D 1E OrderNo.: 2009H12

Dear Clara Cardoza:

Hall Environmental Analysis Laboratory received 5 sample(s) on 9/29/2020 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **2009H12**
Date Reported: **10/5/2020**

CLIENT: Hilcorp Energy **Lab Order:** 2009H12
Project: Sullivan GC D 1E

Lab ID: 2009H12-001 **Collection Date:** 9/28/2020 11:20:00 AM
Client Sample ID: MW06 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	110	50	P	µg/L	50	10/1/2020 12:09:32 AM	L72279
Toluene	1800	50	P	µg/L	50	10/1/2020 12:09:32 AM	L72279
Ethylbenzene	990	50	P	µg/L	50	10/1/2020 12:09:32 AM	L72279
Xylenes, Total	13000	750	P	µg/L	500	9/30/2020 11:40:52 PM	L72279
Surr: 1,2-Dichloroethane-d4	98.4	70-130	P	%Rec	50	10/1/2020 12:09:32 AM	L72279
Surr: Dibromofluoromethane	104	70-130	P	%Rec	50	10/1/2020 12:09:32 AM	L72279
Surr: Toluene-d8	104	70-130	P	%Rec	50	10/1/2020 12:09:32 AM	L72279

Lab ID: 2009H12-002 **Collection Date:** 9/28/2020 12:15:00 PM
Client Sample ID: MW07 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	10/1/2020 1:34:55 AM	L72279
Toluene	ND	1.0		µg/L	1	10/1/2020 1:34:55 AM	L72279
Ethylbenzene	ND	1.0		µg/L	1	10/1/2020 1:34:55 AM	L72279
Xylenes, Total	ND	1.5		µg/L	1	10/1/2020 1:34:55 AM	L72279
Surr: 1,2-Dichloroethane-d4	92.7	70-130		%Rec	1	10/1/2020 1:34:55 AM	L72279
Surr: Dibromofluoromethane	110	70-130		%Rec	1	10/1/2020 1:34:55 AM	L72279
Surr: Toluene-d8	101	70-130		%Rec	1	10/1/2020 1:34:55 AM	L72279

Lab ID: 2009H12-003 **Collection Date:** 9/28/2020 12:40:00 PM
Client Sample ID: MW09 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	10/1/2020 2:03:22 AM	L72279
Toluene	ND	1.0		µg/L	1	10/1/2020 2:03:22 AM	L72279
Ethylbenzene	ND	1.0		µg/L	1	10/1/2020 2:03:22 AM	L72279
Xylenes, Total	ND	1.5		µg/L	1	10/1/2020 2:03:22 AM	L72279
Surr: 1,2-Dichloroethane-d4	96.0	70-130		%Rec	1	10/1/2020 2:03:22 AM	L72279
Surr: Dibromofluoromethane	106	70-130		%Rec	1	10/1/2020 2:03:22 AM	L72279
Surr: Toluene-d8	102	70-130		%Rec	1	10/1/2020 2:03:22 AM	L72279

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

Qualifiers:

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

Analytical Report
Lab Order: **2009H12**
Date Reported: **10/5/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy **Lab Order:** 2009H12
Project: Sullivan GC D 1E

Lab ID: 2009H12-004 **Collection Date:** 9/28/2020 1:15:00 PM
Client Sample ID: MW10 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	10/1/2020 2:31:45 AM	L72279
Toluene	ND	1.0		µg/L	1	10/1/2020 2:31:45 AM	L72279
Ethylbenzene	ND	1.0		µg/L	1	10/1/2020 2:31:45 AM	L72279
Xylenes, Total	ND	1.5		µg/L	1	10/1/2020 2:31:45 AM	L72279
Surr: 1,2-Dichloroethane-d4	92.1	70-130		%Rec	1	10/1/2020 2:31:45 AM	L72279
Surr: Dibromofluoromethane	109	70-130		%Rec	1	10/1/2020 2:31:45 AM	L72279
Surr: Toluene-d8	101	70-130		%Rec	1	10/1/2020 2:31:45 AM	L72279

Lab ID: 2009H12-005 **Collection Date:** 9/28/2020 1:40:00 PM
Client Sample ID: MW11 **Matrix:** GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **JMR**	
Benzene	ND	1.0		µg/L	1	10/1/2020 3:00:17 AM	L72279
Toluene	ND	1.0		µg/L	1	10/1/2020 3:00:17 AM	L72279
Ethylbenzene	ND	1.0		µg/L	1	10/1/2020 3:00:17 AM	L72279
Xylenes, Total	ND	1.5		µg/L	1	10/1/2020 3:00:17 AM	L72279
Surr: 1,2-Dichloroethane-d4	96.8	70-130		%Rec	1	10/1/2020 3:00:17 AM	L72279
Surr: Dibromofluoromethane	104	70-130		%Rec	1	10/1/2020 3:00:17 AM	L72279
Surr: Toluene-d8	102	70-130		%Rec	1	10/1/2020 3:00:17 AM	L72279

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2009H12**

05-Oct-20

Client: Hilcorp Energy

Project: Sullivan GC D 1E

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **LCSW** Batch ID: **L72279** RunNo: **72279**

Prep Date: Analysis Date: **9/30/2020** SeqNo: **2535572** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	89.0	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID: **mb1** SampType: **MBLK** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **PBW** Batch ID: **L72279** RunNo: **72279**

Prep Date: Analysis Date: **9/30/2020** SeqNo: **2535573** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		111	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Sample ID: **2009h12-001ams** SampType: **MS** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **MW06** Batch ID: **L72279** RunNo: **72279**

Prep Date: Analysis Date: **10/1/2020** SeqNo: **2535578** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1000	50	1000	105.5	90.4	70	130			P
Toluene	2800	50	1000	1848	96.8	70	130			P
Surr: 1,2-Dichloroethane-d4	490		500.0		97.9	70	130			P
Surr: 4-Bromofluorobenzene	500		500.0		101	70	130			P
Surr: Dibromofluoromethane	510		500.0		102	70	130			P
Surr: Toluene-d8	510		500.0		103	70	130			P

Sample ID: **2009h12-001amsd** SampType: **MSD** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **MW06** Batch ID: **L72279** RunNo: **72279**

Prep Date: Analysis Date: **10/1/2020** SeqNo: **2535579** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	960	50	1000	105.5	85.6	70	130	4.85	20	P
Toluene	2600	50	1000	1848	77.8	70	130	6.99	20	P

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2009H12**
05-Oct-20

Client: Hilcorp Energy
Project: Sullivan GC D 1E

Sample ID: **2009h12-001amsd** SampType: **MSD** TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **MW06** Batch ID: **L72279** RunNo: **72279**
Prep Date: Analysis Date: **10/1/2020** SeqNo: **2535579** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	490		500.0		98.2	70	130	0	0	P
Surr: 4-Bromofluorobenzene	480		500.0		95.3	70	130	0	0	P
Surr: Dibromofluoromethane	530		500.0		107	70	130	0	0	P
Surr: Toluene-d8	520		500.0		104	70	130	0	0	P

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Hilcorp Energy** Work Order Number: **2009H12** RcptNo: **1**

Received By: **Cheyenne Cason** **9/29/2020 8:10:00 AM**

Completed By: **Isaiah Ortiz** **9/29/2020 8:37:04 AM** IO

Reviewed By: JR 9/29/20

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. 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? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: CM 9/29/20

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:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client: Clara Cordoza
Hilcorp Energy Company
Mailing Address:
Aztec, NM
Phone #: 515-723-2784
email or Fax#: Ccordoza@hilcorp.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☑ NELAC ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: Sullivan GC D #1E
Project #: 01782000 2
Project Manager: Josh Adams
Sampler: Travis Short
On Ice: ☒ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): ~~1.3+0=1.3~~ 1.6+0=1.6 (°C)
CMC 9/29/20

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2009H12	BTEX / ~~MTBE~~ / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
9/28	1120	GW	MW06	3 VOA	HCl	001	X									
	1215		MW07			002	X									
	1240		MW09			003	X									
	1315		MW10			004	X									
	1340		MW11			005	X									

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/28	1410					
9/29/2020	1811				9/29/20	0810

Remarks: cc: Jadams@Ltenv.com
Tshort@Ltenv.com

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.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 23, 2020

Josh Adams
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX

RE: Sullivan GC D 1E OrderNo.: 2012770

Dear Josh Adams:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/16/2020 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order: **2012770**
Date Reported: **12/23/2020**

CLIENT: HILCORP ENERGY **Lab Order:** 2012770
Project: Sullivan GC D 1E

Lab ID: 2012770-001 **Collection Date:** 12/14/2020 1:59:00 PM
Client Sample ID: MW-09 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/18/2020 9:22:15 PM	B74138
Toluene	ND	1.0		µg/L	1	12/18/2020 9:22:15 PM	B74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 9:22:15 PM	B74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 9:22:15 PM	B74138
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/18/2020 9:22:15 PM	B74138

Lab ID: 2012770-002 **Collection Date:** 12/15/2020 12:13:00 PM
Client Sample ID: MW-06 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	140	50	P	µg/L	50	12/18/2020 10:55:47 PM	B74138
Toluene	2400	50	P	µg/L	50	12/18/2020 10:55:47 PM	B74138
Ethylbenzene	1400	50	P	µg/L	50	12/18/2020 10:55:47 PM	B74138
Xylenes, Total	16000	1000	P	µg/L	500	12/18/2020 10:32:28 PM	B74138
Surr: 4-Bromofluorobenzene	139	80-120	SP	%Rec	50	12/18/2020 10:55:47 PM	B74138

Lab ID: 2012770-003 **Collection Date:** 12/15/2020 12:57:00 PM
Client Sample ID: MW-07 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/18/2020 11:42:22 PM	B74138
Toluene	ND	1.0		µg/L	1	12/18/2020 11:42:22 PM	B74138
Ethylbenzene	ND	1.0		µg/L	1	12/18/2020 11:42:22 PM	B74138
Xylenes, Total	ND	2.0		µg/L	1	12/18/2020 11:42:22 PM	B74138
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/18/2020 11:42:22 PM	B74138

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

Qualifiers:

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

Analytical Report
Lab Order: **2012770**
Date Reported: **12/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY **Lab Order:** 2012770
Project: Sullivan GC D 1E

Lab ID: 2012770-004 **Collection Date:** 12/15/2020 1:16:00 PM
Client Sample ID: MW-03 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/19/2020 12:05:39 AM	B74138
Toluene	ND	1.0		µg/L	1	12/19/2020 12:05:39 AM	B74138
Ethylbenzene	ND	1.0		µg/L	1	12/19/2020 12:05:39 AM	B74138
Xylenes, Total	ND	2.0		µg/L	1	12/19/2020 12:05:39 AM	B74138
Surr: 4-Bromofluorobenzene	97.5	80-120		%Rec	1	12/19/2020 12:05:39 AM	B74138

Lab ID: 2012770-005 **Collection Date:** 12/15/2020 1:58:00 PM
Client Sample ID: MW-11 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/19/2020 12:28:53 AM	B74138
Toluene	ND	1.0		µg/L	1	12/19/2020 12:28:53 AM	B74138
Ethylbenzene	ND	1.0		µg/L	1	12/19/2020 12:28:53 AM	B74138
Xylenes, Total	ND	2.0		µg/L	1	12/19/2020 12:28:53 AM	B74138
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	12/19/2020 12:28:53 AM	B74138

Lab ID: 2012770-006 **Collection Date:** 12/15/2020 2:26:00 PM
Client Sample ID: MW-10 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/19/2020 12:52:07 AM	B74138
Toluene	ND	1.0		µg/L	1	12/19/2020 12:52:07 AM	B74138
Ethylbenzene	ND	1.0		µg/L	1	12/19/2020 12:52:07 AM	B74138
Xylenes, Total	ND	2.0		µg/L	1	12/19/2020 12:52:07 AM	B74138
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	12/19/2020 12:52:07 AM	B74138

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2012770**

23-Dec-20

Client: HILCORP ENERGY

Project: Sullivan GC D 1E

Sample ID: **mb-II**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **B74138**	RunNo: **74138**
Prep Date:	Analysis Date: **12/18/2020**	SeqNo: **2616115** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		101	80	120			

Sample ID: **100ng btex lcs-II**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **B74138**	RunNo: **74138**
Prep Date:	Analysis Date: **12/18/2020**	SeqNo: **2616116** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	92.0	80	120			
Toluene	19	1.0	20.00	0	94.6	80	120			
Ethylbenzene	19	1.0	20.00	0	94.2	80	120			
Xylenes, Total	57	2.0	60.00	0	95.6	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		104	80	120			

Sample ID: **2012770-001ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-09**	Batch ID: **B74138**	RunNo: **74138**
Prep Date:	Analysis Date: **12/18/2020**	SeqNo: **2616118** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.8	80	120			
Toluene	20	1.0	20.00	0.1920	97.0	80	120			
Ethylbenzene	20	1.0	20.00	0	98.6	80	120			
Xylenes, Total	60	2.0	60.00	0.7700	99.1	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		109	80	120			

Sample ID: **2012770-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-09**	Batch ID: **B74138**	RunNo: **74138**
Prep Date:	Analysis Date: **12/18/2020**	SeqNo: **2616119** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.5	80	120	0.264	20	
Toluene	20	1.0	20.00	0.1920	97.2	80	120	0.184	20	
Ethylbenzene	20	1.0	20.00	0	98.3	80	120	0.335	20	
Xylenes, Total	60	2.0	60.00	0.7700	98.7	80	120	0.472	20	
Surr: 4-Bromofluorobenzene	22		20.00		108	80	120	0	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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2012770 RcptNo: 1

Received By: Desiree Dominguez 12/16/2020 8:00:00 AM DD

Completed By: Desiree Dominguez 12/16/2020 8:49:29 AM DD

Reviewed By: JR 12/16/20

Chain of Custody

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

Log In

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

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

Adjusted?

Checked by: SGL 12/16/20

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:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Energy
Clara Cordoza

Mailing Address:

Phone #:

email or Fax#: ccordoza@hilcorp.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Sullivan GC D #1E

Project #: ~~Jost~~ TE017820002

Project Manager: Josh Adams

Sampler: C. McGinn

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.6 - 0.0 = 0.6 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2012770	BTEX / ~~MTBE / TMB's~~ (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)						
12 14 20	1359	Aq	MW-09	3 voa	HCL	-001	X															
12 15 20	1213		MW-06		None	-002	X															
	1257		MW-07		HCL	-003	X															
	1316		MW-03		HCL	-004	X															
	1358		MW-11		HCL	-005	X															
↓	1426	↓	MW-10	↓	HCL	-006	X															

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
12.15.20	1530	Caitlin McGinn	Christin Walls		12/15/2020	1534
12/15/2020	1806	Christin Walls	[illegible]	Courier	12/16/20	8:00

Remarks: Please cc: josh.adams@wsp.com
caitlin.mcginn@wsp.com

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.

ENCLOSURE F – GROUNDWATER SAMPLE COLLECTION FORMS

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-02
Sample Date: ~~3/9/2020~~ 3/10/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 14:00
Shipping Method: Hand Delivery

Depth to Water: 22.03
Time: 11:27
Total Depth of Well: 22.73
Depth to Product: —

Vol. of Water to Purge: .7 x .1631 = .11 x 3 = 0.35 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: GW was light gray, had HC odor and sheen, clear,

Describe Deviations from SOP: Insufficient water to take measurements.

Signature: Mary Mrdjenovich
Date: 3/10/2020 ~~3/9/2020~~

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-03
Sample Date: ~~3/9/2020~~ 3/10/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 14:40
Shipping Method: Hand Delivery

Depth to Water: 22.72
Time: 10:44
Total Depth of Well: 23.61
Depth to Product: —

Vol. of Water to Purge: 0.89 x .1631 = .15 x 3 = .44 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
~~14:30~~	~~0.05~~ 0.15	~~0.05~~ 0.15	6.88	60.1	3.57	Clear, sheen, no odor
14:32	0.20	0.35	7.13	59.5	5.20	no sheen, sac
14:33	0.10	0.45	7.18	59.5	3.98	sac

Comments: Water was clear, no color/odor/sheen.

Describe Deviations from SOP:

Signature: Mary Mrdjenovich
Date: 3/10/2020 ~~3/9/2020~~

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-06
Sample Date: ~~3/9/2020~~ 3/10/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 1510
Shipping Method: Hand Delivery

Depth to Water: 24.95
Time: 11:16
Total Depth of Well: 26.80
Depth to Product: —

Vol. of Water to Purge: 1.85x.1631 = .3x3 = 0.90 gallon
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1455	0.25	0.25	7.40	60.1	11.07	Black, HC odor, sheen
1458	0.25	0.50	7.44	60.8	11.27	saa
1500	0.10	0.60	7.44	60.5	11.09	saa
1503	0.05	0.65	7.47	60.3	11.12	saa

Comments:

Describe Deviations from SOP: Sampled after purging 0.65 gallons, well bailed dry, GW reacted with HCl VOA, stopped on $HgCl_2$.

Signature: Mary Mrdjenovich
Date: 3/10/2020 ~~3/9/2020~~

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-09
Sample Date: ~~3/9/2020~~ ~~3/10/2020~~ 3/11/2020
Matrix: Groundwater
Sample Time: 1025
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX (no mtbe's or tmb's)

Depth to Water: 21.79
Time: 10:35
Total Depth of Well: 26.79
Depth to Product: —

Vol. of Water to Purge: 5 x .1631 = .82 x 3 = 2.45 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: Dedicated bailer
Method of Sampling: Dedicated bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1008	0.25	0.25	5.16	59.7	5.21	Clear, no sheen/odor
1010	0.25	0.50	5.07	59.4	5.18	Cloudy, very lt brown
1012	0.25	0.75	5.04	59.4	5.19	SAA
1013	0.25	1	5.05	59.4	5.17	SAA
1015	0.50	1.5	5.04	59.2	5.21	SAA
1017	0.50	2	5.05	59.2	5.20	SAA
1020	0.50	2.5	5.03	59.2	5.20	SAA

Comments: water was cloudy, very lyt brown, no odor or sheen.

Describe Deviations from SOP:

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-10
Sample Date: ~~3/9/2020~~ 3/11/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 1100
Shipping Method: Hand Delivery

Depth to Water: 18.90
Time: 10:40
Total Depth of Well: 29.05
Depth to Product:

Vol. of Water to Purge: 10.15 x ~~1.65~~ .1631 = 1.65 x 3 = 5 gallons
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ~~ms~~)	Comments
10:35	0.25	0.25	5.47	57.6	5.57	Clear, no odor, no sheen
10:37	0.25	0.50	5.49	57.6	5.55	saa
10:38	0.25	0.75	5.51	57.9	5.55	slightly cloudy
10:39	0.25	1	5.38	57.9	5.63	saa
1041	0.50	1.5	5.43	58.1	6.08	saa
1043	0.50	2	5.45	58.3	7.06	saa
1045	0.50	2.5	5.44	58.6	7.37	saa
1047	0.5	3	5.44	58.6	7.80	saa
1053	1	4	5.51	58.6	6.43	saa
1057	1	5	5.59	58.3	6.41	saa

Comments: Water was slightly cloudy, no color, no odor or sheen.

Describe Deviations from SOP:

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-07
Sample Date: ~~3/9/2020~~ 3/11/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 1145
Shipping Method: Hand Delivery

Depth to Water: 25.88
Time: 11:05
Total Depth of Well: 31.97
Depth to Product: —

Vol. of Water to Purge: 6.09 x .1631 = 1 x 3 = 3 gallons (Height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1124	0.25	0.25	5.39	61.2	18.29	clear, no odor/color/sheen
1126	0.25	0.50	5.52	62.1	18.30	saa
1127	0.25	0.75	5.89	62.1	18.33	saa
1129	0.25	1	5.86	61.9	18.26	saa
1131	0.5	1.5	5.65	62.1	18.28	saa
1133	0.5	2	5.46	61.9	18.37	saa
1135	0.5	2.5	5.43	61.9	18.28	saa
1139	0.5	3	5.42	61.9	18.38	slightly cloudy, very light brown

Comments: GW was slightly cloudy, very light brown, no odor, no sheen

Describe Deviations from SOP:

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

A proud member of WSP

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-05
Sample Date: ~~3/9/2020~~ 3/11/20
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 1225
Shipping Method: Hand Delivery

Depth to Water: 22.25
Time: 11:43
Total Depth of Well: 27.45
Depth to Product: ———

Vol. of Water to Purge: 5.2 x .1631 = .85 x 3 = 2.5 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1209	0.25	0.25	7.07	62.8	6.19	Clear, gray, HC odor, sheen
1210	0.25	0.50	7.07	63.1	6.12	saa
1212	0.25	0.75	7.09	63.3	6.08	saa
1213	0.25	1	6.96	63.1	6.13	saa
1215	0.5	1.5	6.80	63.1	6.10	Clear, ~~lt. gray~~ lgt gray HC odor, sheen
1217	0.5	2	6.81	63.0	6.11	saa
1218	0.5	2.5	6.78	63.0	6.07	saa

Comments: Water is clear, ~~no color~~ very lgt gray HC odor, sheen.
mm

Describe Deviations from SOP: Water reacted to HCl, ~~sulfur~~ mm
Sampled in HgCl2 preserved VOA

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

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Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: PR-1
Sample Date: ~~3/9/2020~~ 3/11/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 13:00
Shipping Method: Hand Delivery

Depth to Water: 22.34
Time: 11:33
Total Depth of Well: 24.28
Depth to Product:

Vol. of Water to Purge: 1.94 x .1631 = .32 x 3 = .96 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1245	0.25	0.25	7.53	62.2	6.43	Slightly cloudy, gray, HC odor, sheen
1246	0.25	0.50	7.55	62.2	6.55	sheen
1248	0.25	0.75	7.73	62.2	6.52	Sga
1250	0.25	1	7.73	62.2	6.46	Cloudy, black, HC odor, sheen

Comments: Water was cloudy, black, had HC odor and sheen.

Describe Deviations from SOP: Water reacted with HCl, sampled in $HgCl_2$ preserved VOAs.

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

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Groundwater Sample Collection Form

Project Name: Sullivan GC D #1E
Project Number: 017820002
Project Location: Sullivan GC D #1E
Sampler: Mary Mrdjenovich

Sample ID: MW-11
Sample Date: ~~3/9/2020~~ 3/11/2020
Laboratory: Hall Environmental
Analyses: BTEX (no mtbe's or tmb's)
Matrix: Groundwater
Sample Time: 1340
Shipping Method: Hand Delivery

Depth to Water: 20.18
Time: 1048
Total Depth of Well: 27.69
Depth to Product:

Vol. of Water to Purge: 7.51 x .1631 = 1.2 x 3 = 3.6 gallon
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1316	0.25	0.25	7.45	59.2	5.16	clear, white vegetation, no odor/sheen
1318	0.25	0.50	7.41	59.0	4.94	saa
1319	0.25	0.75	7.40	59.2	5.25	saa
1320	0.25	1	7.40	59.2	5.03	cloudy, lgt brown
1323	0.50	1.5	7.46	59.0	5.29	saa
1325	0.50	2	7.42	59.0	5.20	saa
1327	0.50	2.5	7.35	59.0	5.38	saa
1329	0.50	3	7.44	58.8	5.36	saa
1334	0.50	3.5	7.21	59.2	5.44	saa
1336	0.50	4	7.19	59.2	5.38	saa

Comments: Water was cloudy, light brown, no odor ~~or~~ or sheen.

Describe Deviations from SOP:

Signature: Mary Mrdjenovich
Date: 3/11/2020 ~~3/9/2020~~

Advancing Opportunity

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW 01
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.13
Time: —
Total Depth of Well: 22.19
Depth to Product: —

Vol. of Water to Purge: 0.03 gal. (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: NO Sample Collected. Insufficient amount of Water

Describe Deviations from SOP: None

Signature: [signature]
Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW02
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.32
Time: —
Total Depth of Well: 22.58
Depth to Product: —

Vol. of Water to Purge: 0.1 gal (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled. Insufficient amount of water

Describe Deviations from SOP: none

Signature: [signature]

Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW03
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: –
Shipping Method: Hand Delivery

Depth to Water: 23.03
Time: –
Total Depth of Well: 23.47
Depth to Product: –

Vol. of Water to Purge: 0.2 gal (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: –
Method of Sampling: –

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled. Insufficient amount of water

Describe Deviations from SOP: None

Signature: [signature] Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW 04
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.27
Time: —
Total Depth of Well: 22.31
Depth to Product: —

Vol. of Water to Purge: 0.04 gal. (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled. Insufficient amount of water

Describe Deviations from SOP: none

Signature: [signature] **Date:** 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW06
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1400
Shipping Method: Hand Delivery

Depth to Water: 25.27
Time: 1350
Total Depth of Well: 26.79
Depth to Product: —

Vol. of Water to Purge: 0.7 gal (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
						black, strong odor
						reacts with HCl

Comments: Grab sample

Describe Deviations from SOP: none

Signature: [signature] Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW07
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1110
Shipping Method: Hand Delivery

Depth to Water: 26.54
Time: 1050
Total Depth of Well: 31.95
Depth to Product: —

Vol. of Water to Purge: 2.6 gal.
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)C	Conductivity (us or ms)	Comments
1055	.5	.5	7.09	19.0	13.25	clear, no odor
1100	.5	1	7.09	18.7	13.21	↓
1105	.5	1.5	7.09	18.7	13.19	↓

Comments: bailed dry @ 1.5 gal.

Describe Deviations from SOP: None

Signature: [signature]

Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW09
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1200
Shipping Method: Hand Delivery

Depth to Water: 22.10
Time: 1140
Total Depth of Well: 26.19
Depth to Product: —

Vol. of Water to Purge: 2 gal (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F) C	Conductivity (us or ms)	Comments
1142	0.5	0.5	7.07	20.2	4.15	clear, no odor
1144	0.5	1	7.07	18.1	3.90	↓
1146	0.5	1.5	7.07	18.0	3.91	
1148	0.5	2	7.07	17.9	3.91	

Comments: —

Describe Deviations from SOP: none

Signature: [signature]
Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: PR1
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: –
Shipping Method: Hand Delivery

Depth to Water: 23.91
Time: –
Total Depth of Well: 24.01
Depth to Product: –

Vol. of Water to Purge: – (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: –
Method of Sampling: –

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled, Insufficient amount of Water

Describe Deviations from SOP:

Signature: [signature] Date: 9/28/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW10
Matrix: Groundwater
Sample Date: 6/23/2020
Sample Time: 1240
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX 8021

Depth to Water: 19.25
Total Depth of Well: 28.99
Time: 1210
Depth to Product: —

Vol. of Water to Purge: 4.8 gal. (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)(C)	Conductivity (us or ms)	Comments
1212	0.5	0.5	7.07	19.2	3.95	clear, no odor
1214	0.5	1	7.07	16.6	3.90	↓
1218	1	2	7.07	15.9	3.88	↓
1220	.5	2.5	7.07	15.7	3.88	cloudy, no odor
1224	1	3.5	7.07	15.5	3.88	↓
1226	.5	4	7.07	15.5	3.88	↓

Comments: bailed dry @ 4 gal

Describe Deviations from SOP: none

Signature: [signature]
Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Semi-Annual Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW11
Sample Date: 6/23/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1330
Shipping Method: Hand Delivery

Depth to Water: 20.55
Time: 1255
Total Depth of Well: 27.40
Depth to Product: —

Vol. of Water to Purge: 3.3 gal. (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F) C	Conductivity (us or ms)	Comments
1310	0.5	0.5	7.04	20.9	1441	clear, no odor
1315	0.5	1.0	7.04	20.1	1456	cloudy, no odor
1320	0.25	1.25	7.04	20.1	1451	↓

Comments: bailed dry @ 1.25 gal.

Describe Deviations from SOP: none

Signature: [signature] Date: 6/23/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW01
Matrix: Groundwater
Sample Date: 9/28/2020
Sample Time: —
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX 8021

Depth to Water: 22.45
Total Depth of Well: 22.47
Time: —
Depth to Product: —

Vol. of Water to Purge: — (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: NO Sample Collected, Insufficient amount of Water

Describe Deviations from SOP:

Signature: [signature] Date: 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW02
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: dry
Time: —
Total Depth of Well: 22.70
Depth to Product: —

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: dry, no sample collected

Describe Deviations from SOP:

Signature: [signature]
Date: 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: PR-2
Sample Date: 9/28/2020
Matrix: Groundwater
Sample Time: –
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX 8021

Depth to Water: 22.82
Time: –
Total Depth of Well: 23.00
Depth to Product: –

Vol. of Water to Purge: – (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: –
Method of Sampling: –

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled, Insufficient amount of water

Describe Deviations from SOP:

Signature: _____ **Date:** 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW03
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 23.14
Time: —
Total Depth of Well: —
Depth to Product: 23.12

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: No sample collected, Product in well.

Describe Deviations from SOP:

Signature: _____ **Date:** 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW04
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.30
Time: —
Total Depth of Well: 22.74
Depth to Product: —

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: No sample collected. Insufficient amount of water

Describe Deviations from SOP:

Signature: _____ **Date:** 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW05
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 23.95
Time: —
Total Depth of Well: —
Depth to Product: 23.00

Vol. of Water to Purge: — (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: NO Sample Collected. Product in well

Describe Deviations from SOP:

Signature: [signature] Date: 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW06
Matrix: Groundwater
Sample Date: 9/28/2020
Sample Time: 1120
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX 8021

Depth to Water: 25.98
Total Depth of Well: 26.90
Time: 1120
Depth to Product: —

Vol. of Water to Purge: 0.92 x 0.163 = 0.1543 [0.45] (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
						black, strong HC odor

Comments: Grab sample

Describe Deviations from SOP:

Signature: [signature]
Date: 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW07
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1215
Shipping Method: Hand Delivery

Depth to Water: 26.90
Time: 1200
Total Depth of Well: 31.91
Depth to Product: —

Vol. of Water to Purge: 5.01 x 0.1631 = .817 x 3 = 2.45 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1200	0.5	0.5	6.49	66.7	18.56	Clear, no odor
1202	0.5	1	6.98	65.7	18.72	↓
1204	0.5	1.5	6.98	65.1	18.88	
1206	0.5	2	6.98	65.1	18.89	
1208	0.5	2.5	6.98	65.0	18.87	

Comments:

Describe Deviations from SOP: none

Signature: _____ **Date:** 9/28/2020

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW08
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 24.90
Time: —
Total Depth of Well: —
Depth to Product: 23.75

Vol. of Water to Purge: — (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not Sampled, Product in well

Describe Deviations from SOP:

Signature: [signature] Date: 9/28/2020

Advancing Opportunity

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW09
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1240
Shipping Method: Hand Delivery

Depth to Water: 22.77
Time: 1220
Total Depth of Well: 26.52
Depth to Product: —

Vol. of Water to Purge: 3.79x0.1631=0.6x3=1.85 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1222	0.5	0.5	7.81	65.8	5.46	Clear, no odor
1225	0.5	1	7.81	65.4	5.41	↓

Comments: Started bailing dry @ 1gal

Describe Deviations from SOP: none

Signature: [signature] Date: 9/28/2020

Advancing Opportunity

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW10
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1315
Shipping Method: Hand Delivery

Depth to Water: 19.98
Time: 1300
Total Depth of Well: 29.03
Depth to Product: —

Vol. of Water to Purge: 9.05x0.1631=1.4x3= 4.4 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1302	0.5	0.5	7.51	63.3	83.01	Clear, no odor
1304	1	1.5	7.64	61.3	82.61	↓
1306	1	2.5	7.75	60.8	82.55	
1308	1	3.5	7.75	60.5	82.55	
1310	.5	4	7.78	60.1	82.51	
1312	.5	4.5	7.79	60.0	82.51	

Comments:

Describe Deviations from SOP: none

Signature: [signature] **Date:** 9/28/2020

LT Advancing Opportunity

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW11
Sample Date: 9/28/2020
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1340
Shipping Method: Hand Delivery

Depth to Water: 21.20
Time: 1325
Total Depth of Well: 27.78
Depth to Product: —

Vol. of Water to Purge: 6.58 X 0.1631 = 1.07 X 3 = 3.2 (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: bailer
Method of Sampling: bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1226	0.5	0.5	7.30	69.8	3.03	clear, no odor
1228	0.5	1	7.30	69.7	3.08	"

Comments: bailed dry @ 1gal

Describe Deviations from SOP: none

Signature: [signature] Date: 9/28/2020

Advancing Opportunity

LT Environmental, Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: 017818010
Project Location: Sullivan GC D #1E
Sampler: Travis Short

Sample ID: MW12
Matrix: Groundwater
Sample Date: 9/28/2020
Sample Time: —
Laboratory: Hall Environmental
Shipping Method: Hand Delivery
Analyses: BTEX 8021

Depth to Water: 24.40
Time: —
Total Depth of Well: —
Depth to Product: 22.75

Vol. of Water to Purge: — (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: —
Method of Sampling: —

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled, Product in well

Describe Deviations from SOP:

Signature: [signature] Date: 9/28/2020

WSP USA Inc.
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Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW01
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.11
Time:
Total Depth of Well: 22.30
Depth to Product: —

Vol. of Water to Purge: 0.09 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Insufficient amount of water. Not Sampled.

Describe Deviations from SOP:

Signature: Caitlin McGinn
Date: 12.15.20

WSP USA Inc.
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Durango, Colorado 81301
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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-02
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: NS
Shipping Method: Hand Delivery

Depth to Water: —
Time: —
Total Depth of Well: —
Depth to Product: —

Vol. of Water to Purge: Dry (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Well dry. Not sampled.

Describe Deviations from SOP:

Signature: Cait McGinn Date: 12.15.20

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-03
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1316
Shipping Method: Hand Delivery

Depth to Water: 23.15
Time:
Total Depth of Well: 23.101
Depth to Product: —

Vol. of Water to Purge: 0.2 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging:
Method of Sampling:

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Grab sampled due to little water.

Describe Deviations from SOP: Did not bail 0.2 gallons

Signature: Caitlin McGinn Date: 12.15.20

WSP USA Inc.
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Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-04
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.26
Time: —
Total Depth of Well: 22.40
Depth to Product: —

Vol. of Water to Purge: (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Not sampled. Insufficient amount of water.

Describe Deviations from SOP:

Signature: Caitlin McGinn
Date: 12.15.20

WSP USA Inc.
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Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-05
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 23.30
Time: —
Total Depth of Well: —
Depth to Product: 22.80

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Product in well. Not sampled.

Describe Deviations from SOP:

Signature: Caitlin McGinn **Date:** 12.15.20

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-06
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1213
Shipping Method: Hand Delivery

Depth to Water: 26.92
Time:
Total Depth of Well: 28.25
Depth to Product: —

Vol. of Water to Purge: 0.6 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
						Black, strong odor

Comments: Grab sampled due to little water. Water reacted w/ HCL vials. Vials not preserved.

Describe Deviations from SOP: Did not bail 0.6 gallons.

Signature: Caitlin McGinn
Date: 12.15.20

WSP USA Inc.
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Durango, Colorado 81301
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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-07
Sample Date: 12-15-20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1257
Shipping Method: Hand Delivery

Depth to Water: 26.72
Time:
Total Depth of Well: 32.00
Depth to Product: —

Vol. of Water to Purge: 2.4 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging:
Method of Sampling:

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1243		.25	7.41	62.1	19.08	Cloudy, no odor, Sheen
1245		.50	7.57	62.4	19.04	" "
1247		.75	7.64	62.1	19.16	" "
1248		1 gal	7.63	62.1	18.98	" "
1253		2 gal	7.74	61.2	18.88	Brown, cloudy, no odor, Sheen
1257		2.4 gal	7.75	59.9	18.63	" "

Comments:

Describe Deviations from SOP: NA

Signature: Caitlin McGinn **Date:** 12-15-20

WSP USA Inc.
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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-08
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: –
Shipping Method: Hand Delivery

Depth to Water: 24.23
Time: –
Total Depth of Well: –
Depth to Product: 23.55

Vol. of Water to Purge: –
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Product in well. Not sampled.

Describe Deviations from SOP:

Signature: _____ **Date:** _____

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Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-09
Sample Date: 12.14.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1359
Shipping Method: Hand Delivery

Depth to Water: 22.42
Time:
Total Depth of Well: 26.57
Depth to Product: —

Vol. of Water to Purge: 2 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC Bailer
Method of Sampling: PVC Bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1349		.25	7.46	58.1	4.82	Cloudy, no odor/sheen
1351		.50	7.09	59.4	4.82	" "
1352		.75	7.71	60.4	5.14	" "
1353		1 gallon	7.79	60.3	4.76	" "
1359		2 gallon	7.93	58.3	4.86	" "

Comments:

Describe Deviations from SOP: None

Signature: Caitlin McGinn **Date:** 12.14.20

WSP USA Inc.
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Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-10
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1426
Shipping Method: Hand Delivery

Depth to Water: 19.55
Time:
Total Depth of Well: 29.04
Depth to Product: —

Vol. of Water to Purge: 4.6 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1413		25	7.88	54.7	5.29	clear, no odor/sheen
1415		.50	7.95	58.3	5.36	" "
1416		.75	8.02	58.6	5.55	" "
1418		1 gal	8.04	58.5	6.07	" "
1421		2 gal	8.52	56.5	8.82	" "
1426		2.75 ~~3 gal~~ 4 gal cm	8.24	55.4	6.52	" "

Comments: Sampled @ 2.75 gallons, well started bailing dry.

Describe Deviations from SOP: Sampled before bailing 4.6 gallons.

Signature: Caiti McGinn
Date: 12 15 20

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-11
Sample Date:
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: 1358
Shipping Method: Hand Delivery

Depth to Water: 20.87
Time:
Total Depth of Well: 27.87
Depth to Product: —

Vol. of Water to Purge: 3.4 gallons (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments
1342		.25	7.52	56.8	5.85	Brown, cloudy, no odor/sheen
1344		.50	7.74	59.0	5.55	" "
1345		.75	7.92	58.1	5.41	" "
1347		1gal	7.81	59.4	5.36	" "
1350		2gal	7.94	57.6	5.44	" "
1358		3.4gal	8.01	53.4	5.73	" "

Comments:

Describe Deviations from SOP:

Signature: **Date:**

WSP USA Inc.
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Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: MW-12
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 24.15
Time: —
Total Depth of Well: 24.86
Depth to Product: 23.65

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Product in well. Not sampled.

Describe Deviations from SOP:

Signature: Caitlin McGinn
Date: 12.15.20

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: AR-1
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 24.52
Time:
Total Depth of Well: —
Depth to Product: 24.50

Vol. of Water to Purge: —
(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Product in well, not sampled.

Describe Deviations from SOP:

Signature: Caitlin McGinn **Date:** 12.15.20

WSP USA Inc.
848 E. 2nd Ave.
Durango, Colorado 81301
T 970.385.1096

Groundwater Sample Collection Form

Project Name: Quarterly Groundwater Monitoring
Project Number: TE0178120002
Project Location: Sullivan GC D #1E
Sampler: Caitlin McGinn

Sample ID: DR - 2
Sample Date: 12.15.20
Laboratory: Hall Environmental
Analyses: BTEX 8021
Matrix: Groundwater
Sample Time: —
Shipping Method: Hand Delivery

Depth to Water: 22.76
Time: —
Total Depth of Well: ~~29.76~~
Depth to Product: 22.52

Vol. of Water to Purge: — (height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols
Method of Purging: PVC bailer
Method of Sampling: PVC bailer

Time	Vol. Removed	Total Vol. Removed (gallons)	pH (std. units)	Temp. (F)	Conductivity (us or ms)	Comments

Comments: Product in well, not sampled.

Describe Deviations from SOP:

Signature: Caitlin McGinn **Date:** 12.15.20

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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 21578

CONDITIONS

Operator:	OGRID:
HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	372171
	Action Number: 21578
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
csmith	OCD Accepted the 2020 annual report, with the following conditions - Operator to fully delineate ground water plum before submitting next annual report. - continue active removal of psh and LNAPl on ground water surface. - continue 90% run time on SVE system. - all other approved conditions remain.	6/25/2021