2019

AGWMR

From: Smith, Cory, EMNRD
To: "Drewry, Scott"; Powell, Brandon, EMNRD; Billings, Bradford, EMNRD; Griswold, Jim, EMNRD; Jaramillo, Nick
Cc: Miller, Greg; Cooksey, Nick; Kyle Summers; Marc Gentry
Subject: RE: (RP No. 3R-440) Lateral K-31 - AGWMR
Date: Monday, June 8, 2020 9:36:00 AM

Mr. Drewry,

OCD is still currently in the process of transferring the 3R-440 case to AP-129. In the meant time OCD has reviewed the 2018? (I assume 2019) AGWMR.

OCD has accepted the report and have approved Enterprise request with the following conditions of approval:

- Enterprise may reduce sampling events in MW-1 through MW-4 to annual events please still collect field data quarterly.
- Enterprise does not need OCD approval to install additional delineation wells please install as many wells as needed to fully delineate the plum.

Please keep a copy of this electronic communication for your files, as no paper copy of the approval will be delivered. The signed report will be saved in AP-129 electronic file on the OCD website.

Thanks,

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: Drewry, Scott <sdrewry@eprod.com>
Sent: Monday, May 4, 2020 1:21 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Jaramillo, Nick <njaramillo@slo.state.nm.us>
Cc: Miller, Greg <GEMiller@eprod.com>; Cooksey, Nick <jncooksey@eprod.com>; Kyle Summers <ksummers@ensolum.com>; Marc Gentry <mgentry@ensolum.com>
Subject: [EXT] (RP No. 3R-440) Lateral K-31 - AGWMR
Importance: High

Greetings,

The attached document (2018 Annual Groundwater Monitoring Report, dated September 27th) for the Lateral K-31 pipeline release is being distributed on behalf of Enterprise Products Operating LLC. Please accept the PDF attachment as NMOCD's electronic copy of submittal.

Enterprise appreciates the LDEQ's continued assistance and guidance in moving this Site towards closure. Should you have any questions, comments or concerns, please feel free to contact Greg Miller at 713-381-8780, or at GEMiller@eProd.com.

Many thanks,

Scott Drewry, P.G.
Environmental Remediation
713.381.5696
sdrewry@eprod.com

ENTERPRISE PRODUCTS PARTNERS L.P.
ENTERPRISE PRODUCTS GP, LLC
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

April 27, 2020

Return Receipt Requested**
Submitted via email: Cory.Smith@state.nm.us

Mr. Cory Smith
New Mexico Energy, Minerals & Natural Resources
Department – Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

RE: 2018 *Annual Groundwater Monitoring Report*
Enterprise Field Services, LLC
Lateral K-31 Pipeline Release (12/02/2011)
Rio Arriba Co., New Mexico [SW ¼, S16 T25N R6W (36.393827° N, 107.475065° W)]
OCD RP: 3R-440; OCD Abatement Plan No. 129

Dear Mr. Smith:

Enterprise Products Operating LLC (Enterprise), on behalf of Enterprise Field Services, LLC, is submitting this electronic copy of the above-referenced report prepared by Ensolum, LLC (Ensolum) and dated September 27, 2019. The report is associated with the Enterprise Lateral K-31 pipeline release of natural gas and associated pipeline liquids that was discovered on December 2, 2011, in Rio Arriba County, New Mexico (the "Site"). The activities detailed in the attached report include two semi-annual groundwater monitoring and sampling (GWM&S) events that occurred between January 1, 2018 and December 31, 2018 (the "reporting period"). The monitoring activities were performed to further evaluate the concentrations of dissolved-phased hydrocarbons (DPH), or constituents of concern (COCs), in groundwater.

Based on the data and results presented in the attached report, COC concentrations are generally declining across the Site. However, the plume has not been delineation to the west-northwest of MW-5. Additionally, in comparing current COC data to historical data, COCs in the original release area (i.e. MW-1 through MW-4) have migrated to the north (i.e. MW-5, MW-6 and MW-8). COCs in the original release area have been below laboratory detection and/or the applicable *Water Quality Control Commission* (WQCC) *Groundwater Quality Standards* (GQSs) since March 2014 (for 6 consecutive years). As such, **Enterprise requests permission to suspend analytical testing of monitor wells MW-1 through MW-4** (until COC concentrations at the Site have declined to/below the WQCC GQSs)**, and to install one additional delineation well (MW-10) to the west-northwest of MW-5** (delineating the current plume by MW-7, MW-9 and proposed MW-10). Enterprise also intends to further evaluate the dynamics of the DPH plume after concurrence that the *Stage 1 Abatement Plan* (Ensolum, revised May 7, 2019) is deemed administratively complete.

Enterprise appreciates the Oil Conservation Division's (OCD) continued assistance and guidance in bringing closure to this Site. Should you have any questions, comments or concerns, or require additional information, please feel free to contact me any time at 713-381-8780, or at gemiller@eprod.com.

Sincerely,

Gregory E. Miller, P.G.
Supervisor, Environmental

Rodney M. Sartor
Sr. Director, Environmental

cc: NM State Land Office, Attn: Mr. Nick Jaramillo, 310 Old Santa Fe Trail, Santa Fe, NM 87501
ec: NMOCD, Santa Fe, NM – Mr. Jim Griswold <Jim.Griswold@state.nm.us>
NMOCD, Santa Fe, NM – Mr. Brad Billings <Bradford.Billings@state.nm.us>
Ensolum, Houston, TX – Mr. Marc E. Gentry <MGentry@ensolum.com>

*** Please note that due to the COVID-19 pandemic and the current "Stay Home, Work Safe" order issued for Harris County Texas, all hard copies (and associated electronic copies on CD or USB drives) of the Subject document(s) will be mailed to each recipient once Enterprise staff are allowed to return to work. In the interim, an electronic copy will be emailed as the official submittal.*

LATERAL K-31 PIPELINE RELEASE (12/02/2011)
2018 ANNUAL GROUNDWATER MONITORING REPORT

Property:

Lateral K-31 Pipeline Release (12/02/2011)
SW ¼, S16 T25N R6W
Rio Arriba County, New Mexico

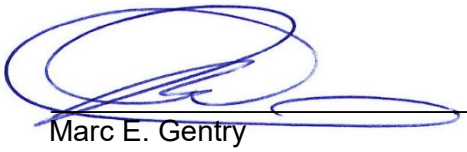
New Mexico EMNRD OCD RP No. 3R-440

September 27, 2019
Ensolum Project No. 05B1226002

Prepared for:

Enterprise Field Services, LLC
P.O. Box 4324
Houston, Texas 77210-4324
Attn: Mr. Greg E. Miller, P.G.

Prepared by:



Marc E. Gentry
Principal

LATERAL K-31 PIPELINE RELEASE (12/02/2011)
2018 ANNUAL GROUNDWATER MONITORING REPORT
EXECUTIVE SUMMARY

The Lateral K-31 pipeline release (12/02/2011) site, referred to hereinafter as the "Site", is located within the Enterprise Field Services, LLC (Enterprise) pipeline right-of-way in the southwest (SW) 1/4 of Section 16, Township 25 North, Range 6 West, in Rio Arriba County, New Mexico.

On December 2, 2011, a pipeline release of natural gas and associated pipeline liquids was discovered at the Site and was subsequently repaired. Site assessments conducted by Animas Environmental Services, LLC (AES) during December 2011 and June 2012 identified concentrations of constituents of concern (COCs) in soils and groundwater above the New Mexico Energy, Minerals and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) *Remediation Action Levels* (*RALs*) and the New Mexico Water Quality Control Commission (WQCC) *Groundwater Quality Standards* (*GQSs*).

During September 2012, AES advanced nine (9) additional soil borings/monitoring wells (MW-1 through MW-9) to further evaluate the extent of dissolved phase COCs in groundwater. COCs were not identified in soil above the New Mexico EMNRD OCD *RALs* at these soil boring/monitoring well boring locations. However, COCs were identified in groundwater above the WQCC *GQSs*. Groundwater monitoring events were conducted by AES during December 2012, June 2013, September 2013, and December 2013 and were subsequently conducted by Apex TITAN, Inc. (Apex). Enterprise retained Apex to perform environmental Site investigation activities between 2016 and 2018. Following a staffing change at Apex in January 2019, Enterprise reassigned management of the project to Ensolum, LLC (Ensolum). Semi-annual groundwater monitoring events are ongoing at the Site. Ensolum submitted a Stage 1 Abatement Plan to the EMNRD OCD on March 22, 2019.

Semi-annual groundwater monitoring events were conducted during June 2018 and January 2019 to further evaluate the concentrations of COCs in groundwater over time. Findings and recommendations based on these activities are as follows:

- The groundwater flow direction at the Site is generally towards the northwest, with an approximate average gradient of 0.005 feet per foot (ft/ft) across the Site.
- During the June 2018 and January 2019 sampling events, BTEX concentrations above WQCC *GQSs* were not identified int he monitoring well network.
- Results from the sampling events at the Site demonstrate generally declining COC concentrations in groundwater.

Ensolum offers the following recommendations:

- Report the groundwater monitoring results to the New Mexico EMNRD OCD;
- Continue semi-annual groundwater monitoring at the Site; and,
- Install delineation monitoring wells (downgradient and upgradient) of MW-5 to assess periodic COC exceedances and further evaluate the gradient in the north and east portions of the Site upon notification by the EMNRD OCD that the Stage 1 Abatement Plan dated March 22, 2019 has been determined to be administratively complete.

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LATERAL K-31 PIPELINE RELASE (12/02/2011)
2018 ANNUAL GROUNDWATER MONITORING REPORT

New Mexico EMNRD OCD RP No. 3R-440

Ensolum Project No. 05B1226002

1.0 INTRODUCTION

1.1 Site Description & Background

Operator:	Enterprise Field Services, LLC / Enterprise Products Operating LLC (Enterprise)
Site Name:	Lateral K-31 Pipeline Release (12/02/2011) (Site)
Location:	36.393827° North, 107.475065° West Southwest (SW) ¼ of Sections 16, Township 25 North, Range 6 West Rio Arriba County, New Mexico
Property:	New Mexico State Land Office (SLO)
Regulatory:	New Mexico Energy, Minerals and Natural Resources Department (EMNRD) Oil Conservation Division (OCD)

On December 2, 2011, a pipeline release of natural gas and associated pipeline liquids was discovered at the Site and was subsequently repaired. An initial site assessment was conducted by Animas Environmental Services, LLC (AES) on December 8, 2011, which included the collection of soil samples from four (4) test holes (TP-1 through TP-4) completed near the release area as well as a groundwater sample from an existing off-Site monitoring well located south of the release location and associated with another operator's release site. Constituents of concern (COC) were identified in soils from two (2) of the test holes (TP-3 and TP-4) at concentrations above the New Mexico EMNRD OCD *Remediation Action Levels* (*RALs*). The off-Site groundwater sample did not exhibit COC concentrations above New Mexico Water Quality Control Commission (WQCC) *Groundwater Quality Standards* (*GQSs*).

During June 2012, AES advanced 12 soil borings (SB-1 through SB-12) at the Site to further delineate the extent of hydrocarbon affected soil and potentially impacted groundwater. Based on laboratory analytical results of soil and groundwater samples collected from the soil borings, COC concentrations were identified in soil above the New Mexico EMNRD OCD *RALs* and in groundwater above the WQCC *GQSs (Site Investigation Report, dated May 16, 2012 – AES).*

During September 2012, AES performed groundwater investigation activities and advanced nine (9) additional soil borings to further evaluate the extent of dissolved phase COCs in groundwater. Subsequent to advancement, the soil borings were completed as groundwater monitoring wells (MW-1 through MW-9). COCs were not identified in soil above the New Mexico EMNRD OCD *RALs* at these monitoring well/soil boring locations. However, COCs were identified in groundwater above the WQCC *GQSs (Groundwater Investigation Report, dated November 28, 2012 – AES)*.

Groundwater monitoring events were conducted by AES during December 2012, June 2013, September 2013, and December 2013, and were subsequently collected by Apex. COC concentrations were identified in groundwater above WQCC standards.

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. Initial Site activities were performed in accordance with the New Mexico ENMRD OCD *Guidelines for Remediation of Leaks, Spills and Releases*, in addition to the New Mexico EMNRD OCD rules, specifically New Mexico Administrative

Code (NMAC) 19.15.29 *Release Notification.* This guidance established investigation and abatement action requirements for sites subject to reporting and/or corrective action prior to the update of the rule finalized August 14, 2018. Additionally, the New Mexico EMNRD OCD utilizes the New Mexico WQCC *GQS* (NMAC 20.6.2 *Groundwater and Surface Water Protection*) to evaluate groundwater conditions. NMAC 20.6.2 was amended (12/21/18). The New Mexico EMNRD OCD District 3 Office has indicated that the updated GQSs will not be enforced until sometime in 2020. Therefore, this document reflects the previous GQSs which are currently being enforced.

The Site location is depicted on **Figure 1** of **Appendix A** which was reproduced from a portion of a United States Geological Survey (USGS) 7.5-minute series topographic map. A **Site Vicinity Map**, created from an aerial photograph, is provided as **Figure 2**, and a **Site Map**, which indicates the approximate locations of the monitoring wells and previous soil boring locations in relation to pertinent structures and general Site boundaries, is included as **Figure 3** of **Appendix A**.

1.2 Project Objective

The objective of the groundwater monitoring events was to further evaluate the concentrations of COCs in groundwater at the Site over time.

2.0 GROUNDWATER MONITORING – JUNE 2018 AND JANUARY 2019

2.1 Groundwater Sampling Program

Semi-annual groundwater sampling events were conducted during June 2018 and January 2019 by Apex. Information, data, and conclusions provided in the following sections and attached figures are based on information provided by Apex to Enterprise, and eyewitness accounts.

Based on information provided by Enterprise, Apex's groundwater sampling program consisted of the following:

Prior to sample collection, Apex gauged the depth to fluids in each monitoring well using an interface probe capable of detecting non-aqueous phase liquids (NAPL).

Each monitoring well was sampled utilizing micro-purge low-flow sampling techniques. Subsequent to the completion of the micro-purge process, one (1) groundwater sample was collected from each monitoring well.

Low-flow refers to the velocity with which groundwater enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective is to pump in a manner that minimizes stress (drawdown) to the system, to the extent practical, taking into account established Site sampling objectives. Flow rates on the order of 0.1 to 0.5 liters per minute (L/min) are maintained during sampling activities, using dedicated or decontaminated sampling equipment.

The groundwater samples are collected from each monitoring well once produced groundwater is consistent in color, clarity, pH, temperature, and conductivity. Measurements are taken every three to five minutes while purging. Purging is considered complete once key parameters (especially pH and conductivity) have stabilized for three successive readings.

During the June 2018 Janauary 2019 sampling event, the sampling technician was unable to get a bailer past the casing obstruction to sample monitoring well MW-3.

Monitoring well MW-2 was apparently destroyed by construction activity in 2014 and has not been located (and was therefore not sampled). Additional attempts will continue to be made to locate any remnants of this monitoring well to allow proper plugging and abandonment.
Groundwater samples were collected in laboratory supplied containers, labeled/sealed using the laboratory supplied labels and custody seals, and stored on ice in a cooler. The groundwater samples were relinquished to the courier for Hall Environmental Analysis Laboratory (HEAL) of Albuquerque, New Mexico under proper chain-of-custody procedures.

2.2 Groundwater Laboratory Analytical Methods

The groundwater samples collected from the monitoring wells during the groundwater sampling events were analyzed for BTEX utilizing Environmental Protection Agency (EPA) method SW-846 #8021/8260. The containers were pre-preserved with mercuric chloride ($HgCl_2$).

A summary of the per-event analytes, sample matrix, sample frequency and EPA-approved methods for the two (2) sampling events are presented on the following table.

Analytes	Sample Matrix	No. of Samples (per event)	EPA Method
BTEX	Groundwater	14	SW-846 8021/8260

Laboratory analytical results are summarized in **Table 1** in **Appendix B**. The executed chain-of-custody forms and laboratory data sheets are provided in **Appendix C**.

2.3 Groundwater Flow Direction

Each of the monitoring wells was geospatially surveyed or re-surveyed to determine top-of-casing (TOC) elevations. Based on gauging data, the groundwater flow direction (gradient) at the Site is generally toward the northwest. The observed gradient during the June 2018 and January 2019 monitoring events averages approximately 0.005 feet per foot (ft/ft) across the Site.

Groundwater measurements collected during the June 2018 and January 2019 sampling events (as well as historical data) are presented with TOC elevations in **Table 2** (**Appendix B**). Groundwater gradient maps for the June 2018 and January 2019 gauging events are included as **Figure 4A** and **4B** (**Appendix A**).

2.4 Data Evaluation

Ensolum compared the BTEX laboratory analytical results or laboratory practical quantitation limits (PQLs) associated with the groundwater samples collected from monitoring wells during the June 2018 and January 2019 sampling events to the New Mexico WQCC *GQSs*. The results of the groundwater sample analyses are summarized in **Table 1** of **Appendix B**. Groundwater Quality Data maps are provided as **Figures 5A** and **5B** of **Appendix A**.

Monitoring well MW-3 was not sampled during the June 2018 and January 2019 sampling events due to an obstructed well screen/casing.

June 2018 Sampling Results

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit benzene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 10 micrograms

per liter (µg/L).

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit toluene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 750 µg/L.
The groundwater samples collected from monitoring wells MW-5 and MW-8 exhibited ethylbenzene concentrations of 5.7 µg/L and 1.9 µg/L, respectively, which are below the WQCC *GQS* of 750 µg/L. The groundwater samples collected from the remaining monitoring wells did not exhibit ethylbenzene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 750 µg/L.

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit total xylenes concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 620 µg/L.

No data qualifier flags were associated with the June 2018 analytical results.

January 2019 Sampling Results

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit benzene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 10 µg/L.

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit toluene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 750 µg/L.

The groundwater sample collected from monitoring well MW-5 exhibited a ethylbenzene concentration of 3.4 µg/L, which is below the WQCC *GQS* of 750 µg/L. The groundwater samples collected from the remaining monitoring wells did not exhibit ethylbenzene concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 750 µg/L.

The groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit total xylenes concentrations above the laboratory PQLs, which are below the WQCC *GQS* of 620 µg/L.

No data qualifier flags were associated with the January 2019 analytical results.

3.0 FINDINGS AND RECOMMENDATION

Semi-annual groundwater monitoring events were conducted at the Lateral K-31 Pipeline Release (12/02/2011) Site during June 2018 and January 2019. The objective of the groundwater monitoring events was to further evaluate the concentrations of COCs in groundwater at the Site with respect to WQCC *GQSs*.

- The groundwater flow direction at the Site is generally towards the north-northwest, with an approximate gradient of 0.005 ft/ft across the Site.
- During the June 2018 and January 2019 sampling events, the groundwater samples collected from monitoring wells MW-1 and MW-4 through MW-9 did not exhibit BTEX concentrations above WQCC *GQSs*.
- Results from the sampling events at the Site demonstrate generally declining COC concentrations in groundwater.

Based on the results of groundwater monitoring activities, Ensolum has the following recommendations:

- Report the groundwater monitoring results to the New Mexico EMNRD OCD;
- Continue semi-annual groundwater monitoring at the Site; and,

- Install delineation monitoring wells (downgradient and upgradient) of MW-5 to assess periodic COC exceedances and further evaluate the gradient in the north and east portions of the Site upon notification by the EMNRD OCD that the Stage 1 Abatement Plan dated March 22, 2019 has been determined to be administratively complete.

4.0 STANDARDS OF CARE, LIMITATIONS, AND RELIANCE

4.1 Standard of Care

Ensolum's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Ensolum makes no warranties, express or implied, as to the services performed hereunder. Additionally, Ensolum does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services was performed in accordance with the scope of work agreed with the client, as detailed in our proposal.

4.2 Limitations

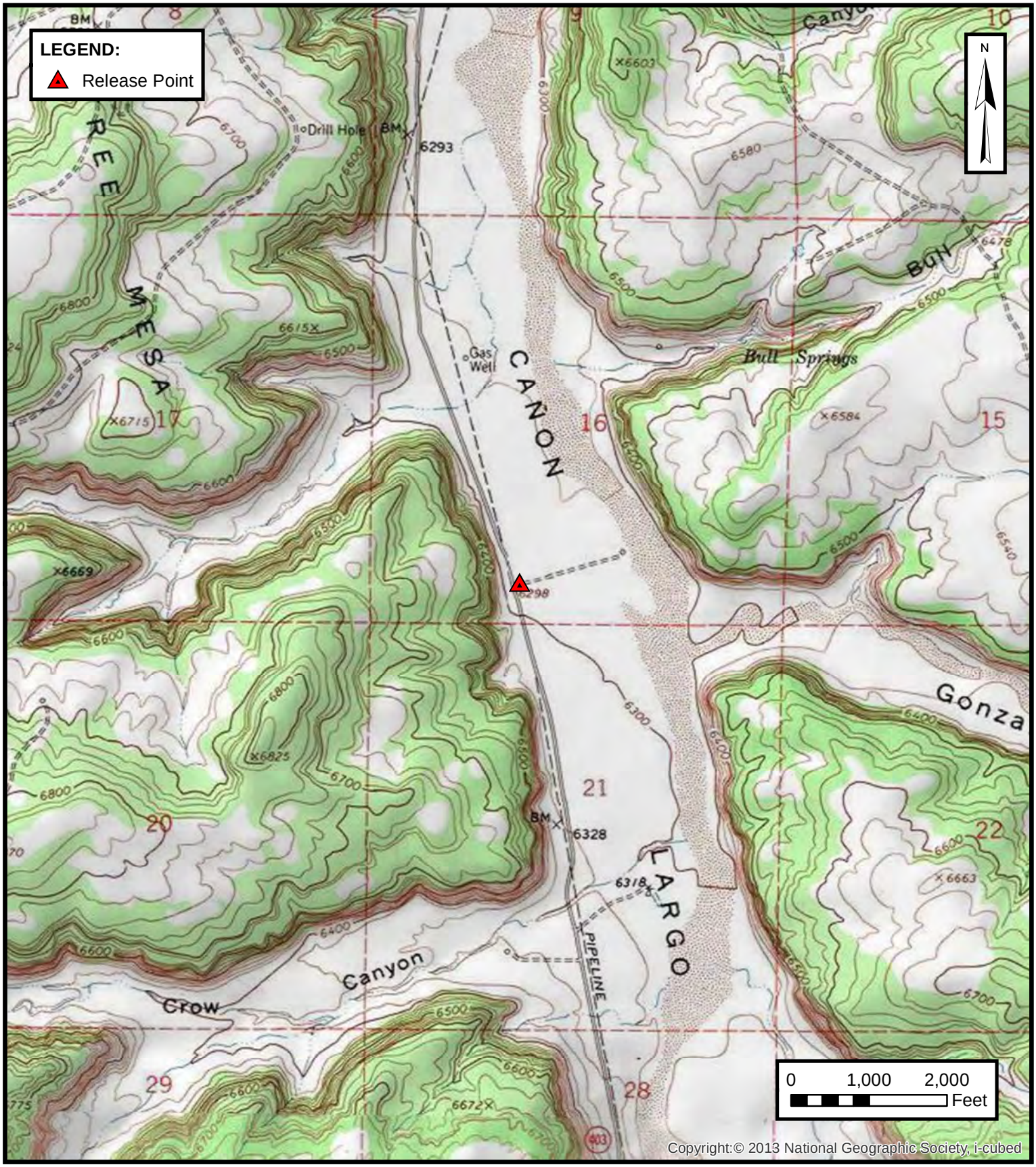
Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and Ensolum cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during the investigation. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Ensolum's findings, and recommendations are based solely upon data available to Ensolum at the time of these services.

4.3 Reliance

This report has been prepared for the exclusive use of Enterprise Products Operating LLC, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the express written authorization Enterprise Products Operating LLC and Ensolum. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the report, and Ensolum's Master Services Agreement. The limitation of liability defined in the agreement is the aggregate limit of Ensolum's liability to the client.

APPENDIX A

Figures



ENSOLUM
Environmental & Hydrogeologic Consultants

TOPOGRAPHIC MAP

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 04E[redacted]6024

FIGURE
1

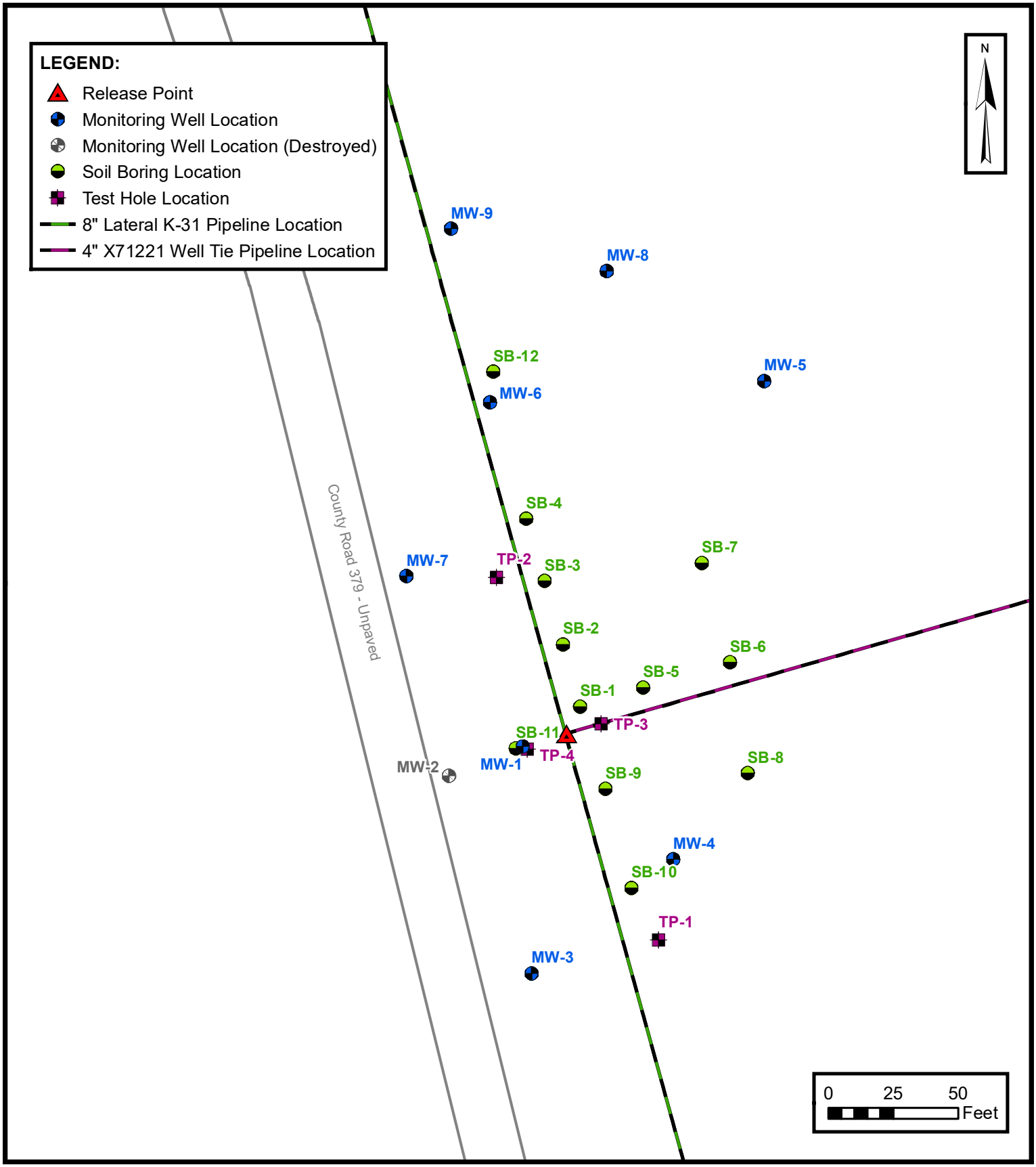
ENSOLUM
Environmental & Hydrogeologic Consultants

SITE VICINITY MAP

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 0[redacted]226024

FIGURE
2



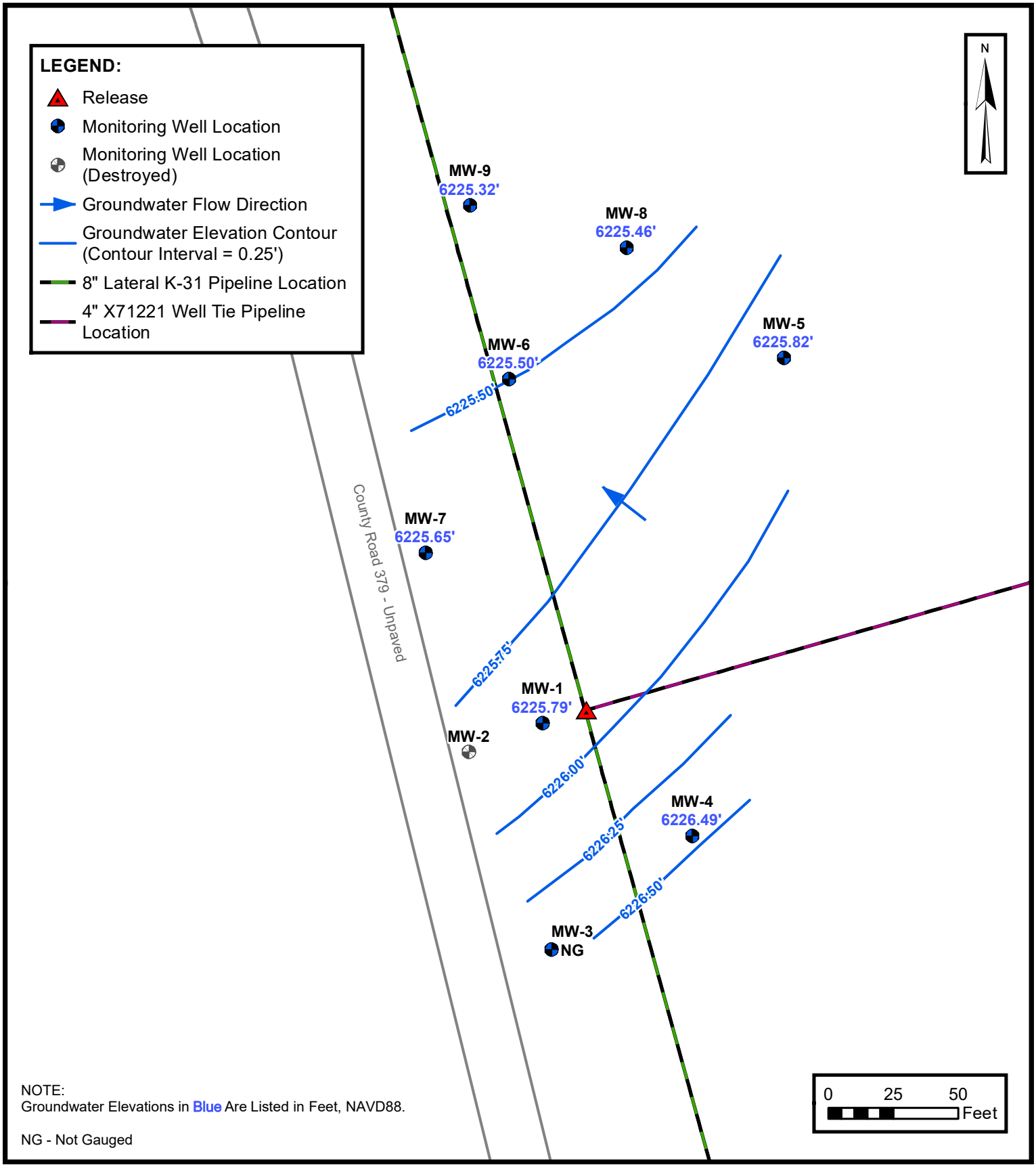
ENSOLUM
Environmental & Hydrogeologic Consultants

SITE MAP

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 05B1226002

FIGURE
3



NOTE:
Groundwater Elevations in Blue Are Listed in Feet, NAVD88.

NG - Not Gauged

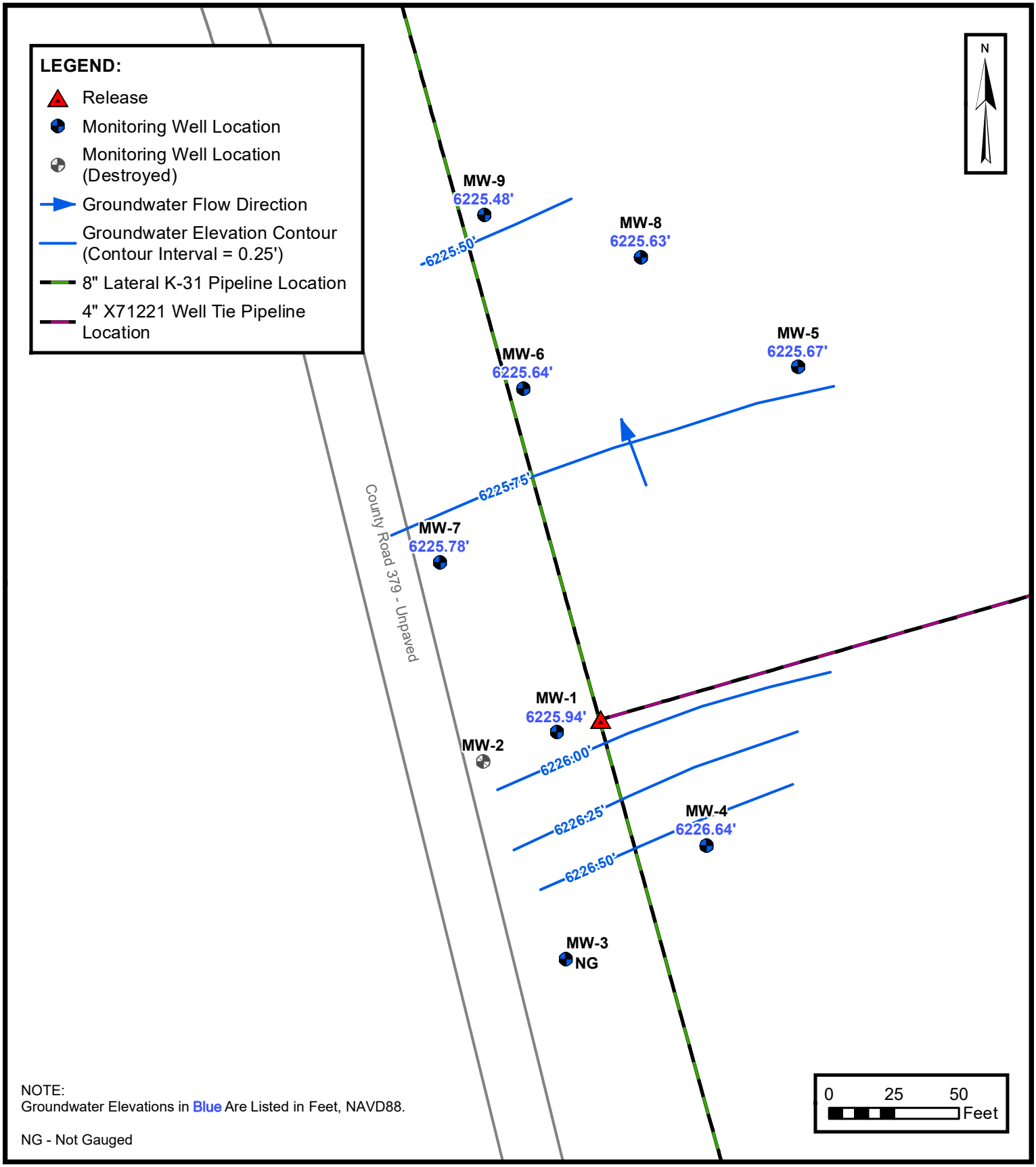
ENSOLUM
Environmental & Hydrogeologic Consultants

GROUNDWATER GRADIENT MAP
(JUNE 2018)

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 05B1226002

FIGURE
4A



NOTE:
Groundwater Elevations in Blue Are Listed in Feet, NAVD88.

NG - Not Gauged

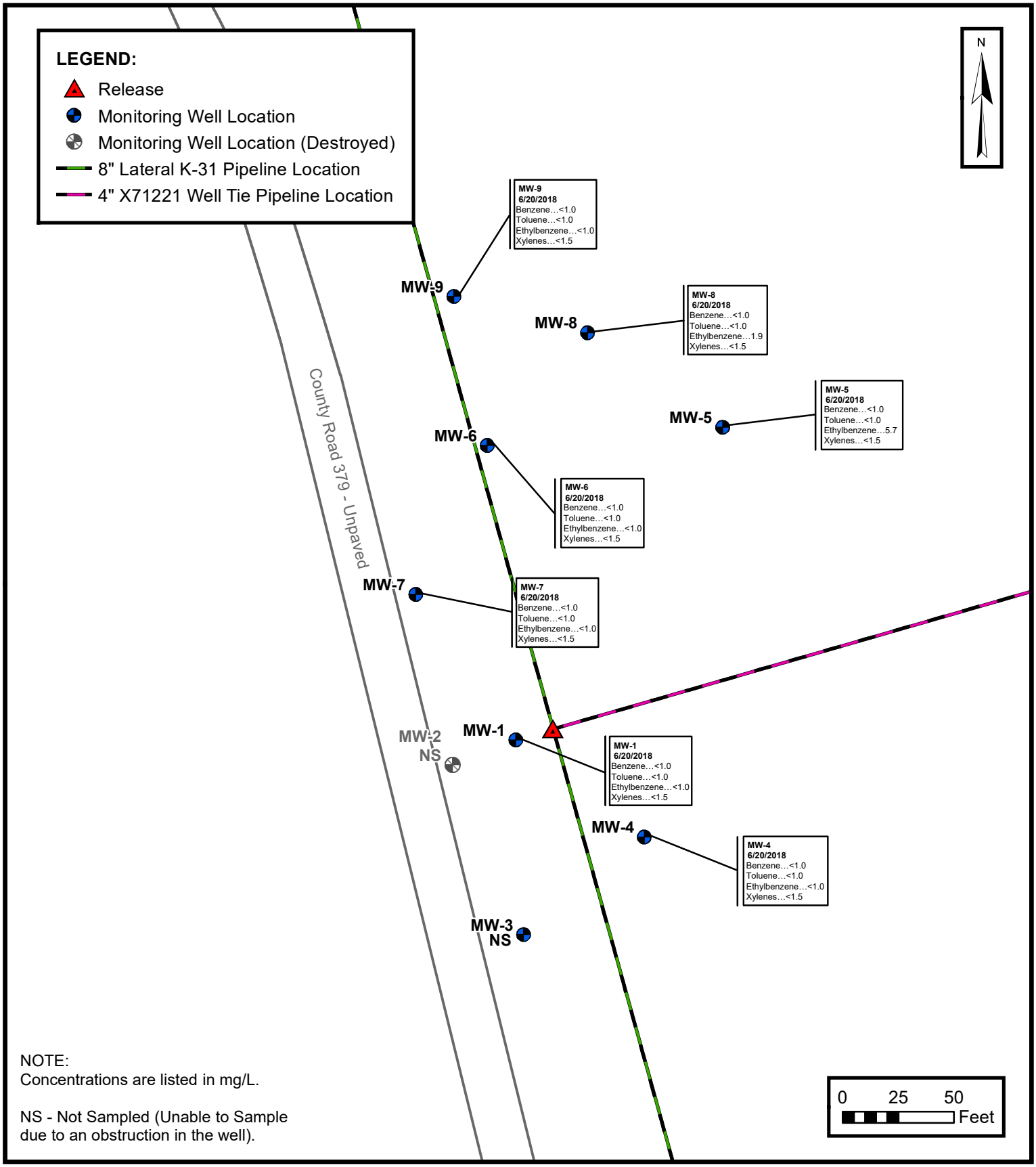
ENSOLUM
Environmental & Hydrogeologic Consultants

GROUNDWATER GRADIENT MAP
(JANUARY 2018)

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 05B1226002

FIGURE
4B



NOTE:
Concentrations are listed in mg/L.

NS - Not Sampled (Unable to Sample due to an obstruction in the well).

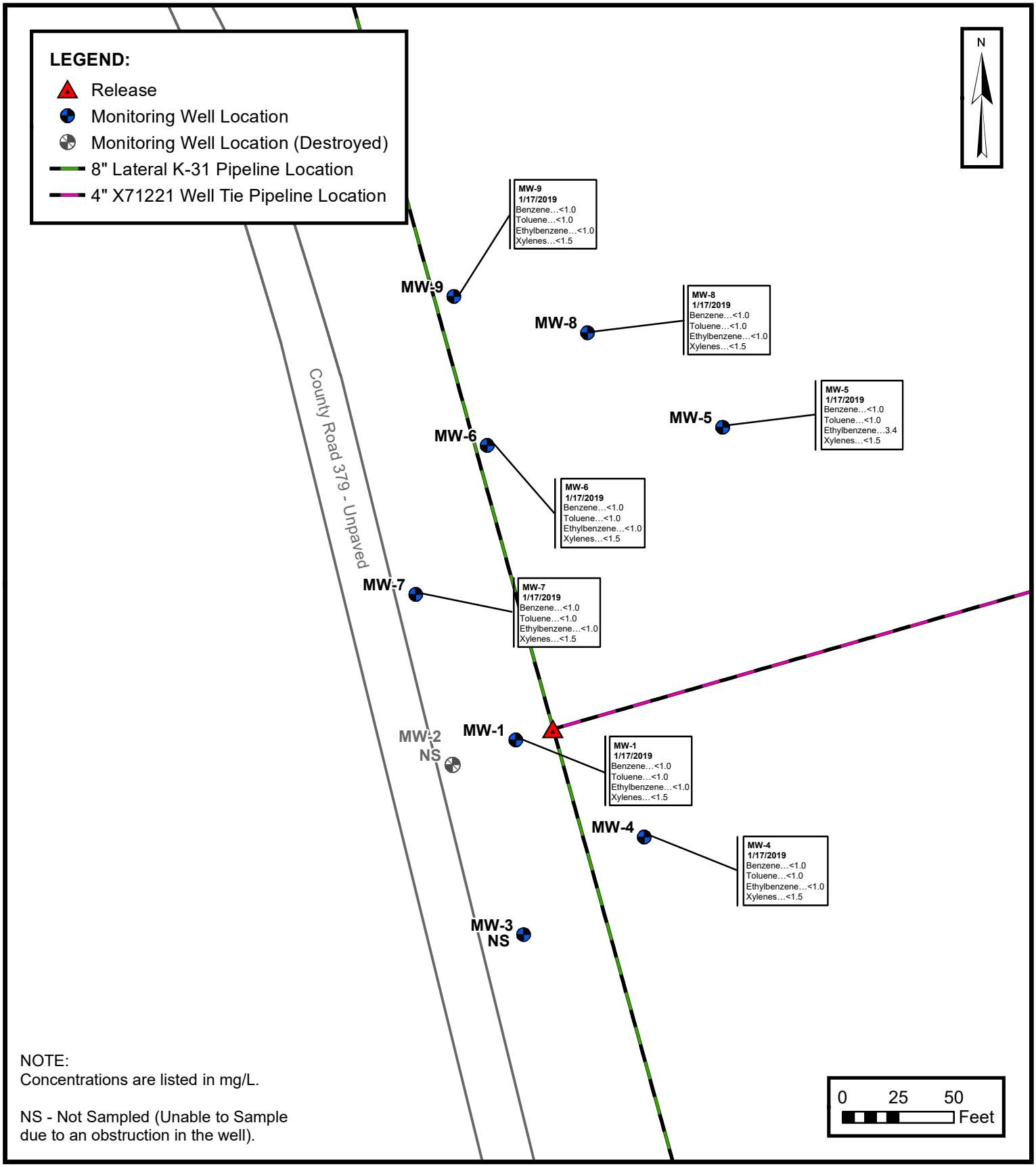
ENSOLUM
Environmental & Hydrogeologic Consultants

GROUNDWATER ANALYTICAL DATA MAP (JUNE 2018)

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 05B1226002

FIGURE
5A



NOTE:
Concentrations are listed in mg/L.

NS - Not Sampled (Unable to Sample due to an obstruction in the well).

ENSOLUM
Environmental & Hydrogeologic Consultants

GROUNDWATER ANALYTICAL DATA MAP (JANUARY 2019)

ENTERPRISE FIELD SERVICES, LLC
LATERAL K-31 (12/02/2011) PIPELINE RELEASE
SW ¼, S16 T25N R6W, Rio Arriba County, New Mexico
36.393827° N, 107.475065° W

PROJECT NUMBER: 05B1226002

FIGURE
5B

APPENDIX B

Tables

ENSOLUM

TABLE 1
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620
MW-1	9.5.12	**18**	2.9	3.3	25
	12.20.12	**11**	<2.0	<2.0	5.8
	3.21.13	**29**	14	<2.0	6.8
	9.4.13	**24**	3.0	<2.0	10
	12.9.13	**42**	20	10	45
	3.19.14	**17**	15	<1	6
	11.12.14	<1.0	<1.0	<1.0	<2.0
	6.17.15	<1.0	<1.0	<1.0	<2.0
	11.17.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	4.1	<1.0	<1.0	<2.0
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	1.8	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	<1.0	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5
MW-2	9.5.12	9.5	9.2	<2.0	30
	12.20.12	**17**	<2.0	<2.0	41
	3.21.13	**18**	<2.0	<2.0	18
	9.4.13	8.0	<2.0	<2.0	4.2
	12.9.13	**24**	13	11	49
	3.19.14	<1	<1	<1	<3
	11.12.14	Monitoring Well Apparently Destroyed			
	6.17.15				
	11.17.15				
	6.08.16				
	12.29.16				
	6.30.17				
	12.28.17				
	6.20.18				
	1.17.19				
MW-3	9.5.12	<2.0	<2.0	<2.0	<4.0
	12.20.12	<2.0	<2.0	<2.0	<4.0
	3.21.13	<2.0	<2.0	<2.0	<4.0
	9.4.13	5.4	<2.0	<2.0	<4.0
	12.9.13	**10**	15	9.7	37
	3.19.14	3.0	4.0	<1	<3
	11.12.14	<1.0	<1.0	<1.0	<2.0
	6.17.15	9.9	<1.0	<1.0	<2.0
	11.18.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	Unable to sample			
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	<1.0	<1.0	<1.0	<1.5
	12.28.17	Unable to sample			
	6.20.18	Unable to sample			
	1.17.19	Unable to sample			
MW-4	9.5.12	<2.0	<2.0	<2.0	<4.0
	12.20.12	**19**	<2.0	<2.0	<4.0
	3.21.13	4.8	<2.0	<2.0	<4.0
	9.4.13	<2.0	<2.0	<2.0	<4.0
	12.9.13	**42**	17	14	54
	3.19.14	<1	<1	<1	<3
	11.12.14	5.4	<1.0	<1.0	<2.0
	6.17.15	7.2	<1.0	<1.0	<2.0
	11.18.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	5.1	<1.0	<1.0	<2.0
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	<1.0	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	<1.0	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5

ENSOLUM

TABLE 1
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620
MW-5	9.5.12	**10**	<2.0	<2.0	<4.0
	12.20.12	**10**	<2.0	<2.0	<4.0
	3.21.13	9.0	<2.0	<2.0	<4.0
	9.4.13	9.3	<2.0	<2.0	<4.0
	12.9.13	**48**	9.3	9.7	36
	3.19.14	**27**	<1	2	<3
	11.12.14	<1.0	<1.0	<1.0	<2.0
	6.17.15	**52**	<1.0	1.4	<2.0
	11.18.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	**230**	<1.0	8.5	<2.0
	12.29.16	**14**	<1.0	2.1	<1.5
	6.30.17	2.4	<1.0	1.8	<2.0
	12.28.17	**42**	<1.0	11	<1.5
	6.20.18	<1.0	<1.0	5.7	<1.5
	1.17.19	<1.0	<1.0	3.4	<1.5
MW-6	9.5.12	**37**	8.3	<2.0	14
	12.20.12	**82**	5.8	<2.0	<4.0
	3.21.13	**130**	5.1	<2.0	<4.0
	9.4.13	**40**	22	<2.0	13
	12.9.13	**210**	20	12	51
	3.19.14	**77**	8.0	1.0	4.0
	11.12.14	**19**	<1.0	<1.0	<2.0
	6.17.15	<1.0	<1.0	<1.0	<2.0
	11.18.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	<1.0	<1.0	<1.0	<2.0
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	<1.0	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	<1.0	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5
MW-7	9.5.12	3.6	<2.0	<2.0	<4.0
	12.20.12	5.9	<2.0	<2.0	<4.0
	3.21.13	<2.0	<2.0	<2.0	<4.0
	9.4.13	6.2	<2.0	<2.0	<4.0
	12.9.13	**30**	17	14	56
	3.19.14	<1	<1	<1	<3
	11.12.14	<1.0	<1.0	<1.0	<2.0
	6.17.15	<1.0	<1.0	<1.0	<2.0
	11.17.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	<1.0	<1.0	<1.0	<2.0
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	<1.0	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	<1.0	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5
MW-8	9.5.12	**20**	<2.0	<2.0	<4.0
	12.20.12	**25**	<2.0	<2.0	<4.0
	3.21.13	**26**	<2.0	<2.0	<4.0
	9.4.13	**34**	<2.0	<2.0	<4.0
	12.9.13	**200**	14	11	46
	3.19.14	**57**	<1	<1	<3
	11.12.14	5.8	<1.0	<1.0	<2.0
	6.17.15	1.5	<1.0	<1.0	<2.0
	11.18.15	1.7	<1.0	<1.0	<2.0
	6.08.16	4.2	<1.0	<1.0	<2.0
	12.29.16	1.3	<1.0	<1.0	<1.5
	6.30.17	1.2	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	1.9	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5

ENSOLUM

TABLE 1
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		**10**	**750**	**750**	**620**
MW-9	9.5.12	<2.0	<2.0	<2.0	<4.0
	12.20.12	<2.0	<2.0	<2.0	<4.0
	3.21.13	<2.0	<2.0	<2.0	<4.0
	9.4.13	<2.0	<2.0	<2.0	<4.0
	12.9.13	4.0	7.1	6.0	24
	3.19.14	<1	<1	<1	<3
	11.12.14	<1.0	<1.0	<1.0	<2.0
	6.17.15	<1.0	<1.0	<1.0	<2.0
	11.17.15	<1.0	<1.0	<1.0	<2.0
	6.08.16	<1.0	<1.0	<1.0	<2.0
	12.29.16	<1.0	<1.0	<1.0	<1.5
	6.30.17	<1.0	<1.0	<1.0	<2.0
	12.28.17	<1.0	<1.0	<1.0	<1.5
	6.20.18	<1.0	<1.0	<1.0	<1.5
	1.17.19	<1.0	<1.0	<1.0	<1.5

Note: Concentrations in **bold** and yellow exceed the applicable WQCC GQS

µg/L = microgram per liter

<1.0 = the numeral (in this case "1.0") identifies the laboratory reporting limit or practical quantitation limit

ENSOLUM

TABLE 2
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ELEVATIONS

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness (feet)	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-1	9.5.12	ND	19.44	ND	6245.24	6225.80
	12.20.12	ND	19.02	ND		6226.22
	3.21.13	ND	18.59	ND		6226.65
	9.4.13	ND	19.49	ND		6225.75
	12.9.13	ND	18.80	ND		6226.44
	3.19.14	ND	18.40	ND		6226.84
	11.12.14	ND	19.11	ND		6226.13
	6.17.15	ND	18.70	ND		6226.54
	11.17.15	ND	19.08	ND		6226.16
	6.08.16	ND	18.80	ND		6226.44
	12.29.16	ND	19.18	ND		6226.06
	6.30.17	ND	19.13	ND		6226.11
	12.28.17	ND	19.16	ND		6226.08
	6.20.18	ND	19.45	ND		6225.79
	1.17.19	ND	19.30	ND		6225.94
MW-2	9.5.12	ND	16.69	ND	6242.58	6225.89
	12.20.12	ND	16.33	ND		6226.25
	3.21.13	ND	15.90	ND		6226.68
	9.4.13	ND	16.72	ND		6225.86
	12.9.13	ND	16.14	ND		6226.44
	3.19.14	ND	15.72	ND		6226.86
	11.12.14	Monitoring Well Apparently Destroyed				
	6.17.15					
	11.17.15					
	6.08.16					
	12.29.16					
	6.30.17					
	12.28.17					
	6.20.18					
	1.17.19					
MW-3	9.5.12	ND	18.93	ND	6245.48	6226.55
	12.20.12	ND	18.51	ND		6226.97
	3.21.13	ND	18.07	ND		6227.41
	9.4.13	ND	18.97	ND		6226.51
	12.9.13	ND	18.30	ND		6227.18
	3.19.14	ND	17.89	ND		6227.59
	11.12.14	ND	18.59	ND		6226.89
	6.17.15	ND	18.20	ND		6227.28
	11.17.15	ND	18.56	ND		6226.92
	6.08.16	ND	18.30	ND		6227.18
	12.29.16	ND	18.66	ND		6226.82
	6.30.17	ND	18.64	ND		6226.84
	12.28.17	NG	NG	NG		NG
	6.20.18	NG	NG	NG		NG
	1.17.19	NG	NG	NG		NG
MW-4	9.5.12	ND	17.55	ND	6244.08	6226.53
	12.20.12	ND	17.14	ND		6226.94
	3.21.13	ND	16.71	ND		6227.37
	9.4.13	ND	17.59	ND		6226.49
	12.9.13	ND	16.93	ND		6227.15
	3.19.14	ND	16.51	ND		6227.57
	11.12.14	ND	17.24	ND		6226.84
	6.17.15	ND	16.83	ND		6227.25
	11.17.15	ND	17.21	ND		6226.87
	6.08.16	ND	16.93	ND		6227.15
	12.29.16	ND	17.30	ND		6226.78
	6.30.17	ND	17.27	ND		6226.81
	12.28.17	ND	17.30	ND		6226.78
	6.20.18	ND	17.59	ND		6226.49
	1.17.19	ND	17.44	ND		6226.64

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TABLE 2
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ELEVATIONS

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness (feet)	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-5	9.5.12	ND	15.88	ND	6241.41	6225.53
	12.20.12	ND	15.44	ND		6225.97
	3.21.13	ND	15.00	ND		6226.41
	9.4.13	ND	15.91	ND		6225.50
	12.9.13	ND	15.20	ND		6226.21
	3.19.14	ND	14.81	ND		6226.60
	11.12.14	ND	15.54	ND		6225.87
	6.17.15	ND	15.14	ND		6226.27
	11.17.15	ND	15.50	ND		6225.91
	6.08.16	ND	15.22	ND		6226.19
	12.29.16	ND	15.60	ND		6225.81
	6.30.17	ND	15.59	ND		6225.82
	12.30.17	ND	15.57	ND		6225.84
	6.20.18	ND	15.59	ND		6225.82
	1.17.19	ND	15.74	ND		6225.67
MW-6	9.5.12	ND	17.41	ND	6242.91	6225.50
	12.20.12	ND	16.97	ND		6225.94
	3.21.13	ND	16.53	ND		6226.38
	9.4.13	ND	17.45	ND		6225.46
	12.9.13	ND	16.75	ND		6226.16
	3.19.14	ND	16.34	ND		6226.57
	11.12.14	ND	17.06	ND		6225.85
	6.17.15	ND	16.66	ND		6226.25
	11.17.15	ND	17.03	ND		6225.88
	6.08.16	ND	16.74	ND		6226.17
	12.29.16	ND	17.13	ND		6225.78
	6.30.17	ND	17.11	ND		6225.80
	12.28.17	ND	17.10	ND		6225.81
	6.20.18	ND	17.41	ND		6225.50
	1.17.19	ND	17.27	ND		6225.64
MW-7	9.5.12	ND	17.61	ND	6243.27	6225.66
	12.20.12	ND	17.18	ND		6226.09
	3.21.13	ND	16.74	ND		6226.53
	9.4.13	ND	17.65	ND		6225.62
	12.9.13	ND	16.96	ND		6226.31
	3.19.14	ND	16.55	ND		6226.72
	11.12.14	ND	17.29	ND		6225.98
	6.17.15	ND	16.87	ND		6226.40
	11.17.15	ND	17.25	ND		6226.02
	6.08.16	ND	16.96	ND		6226.31
	12.29.16	ND	17.36	ND		6225.91
	6.30.17	ND	17.30	ND		6225.97
	12.28.17	ND	17.32	ND		6225.95
	6.20.18	ND	17.62	ND		6225.65
	1.17.19	ND	17.49	ND		6225.78
MW-8	9.5.12	ND	16.55	ND	6242.01	6225.46
	12.20.12	ND	16.09	ND		6225.92
	3.21.13	ND	15.65	ND		6226.36
	9.4.13	ND	16.57	ND		6225.44
	12.9.13	ND	15.86	ND		6226.15
	3.19.14	ND	15.46	ND		6226.55
	11.12.14	ND	16.18	ND		6225.83
	6.17.15	ND	15.79	ND		6226.22
	11.17.15	ND	16.17	ND		6225.84
	6.08.16	ND	15.90	ND		6226.11
	12.29.16	ND	16.25	ND		6225.76
	6.30.17	ND	16.25	ND		6225.76
	12.28.17	ND	16.23	ND		6225.78
	6.20.18	ND	16.55	ND		6225.46
	1.17.19	ND	16.38	ND		6225.63

ENSOLUM

TABLE 2
Lateral K-31 Pipeline Release (12/02/2011)
GROUNDWATER ELEVATIONS

Well I.D.	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Product Thickness (feet)	TOC Elevations (feet AMSL)	Groundwater Elevation* (feet AMSL)
MW-9	9.5.12	ND	16.33	ND	6241.59	6225.26
	12.20.12	ND	15.84	ND		6225.75
	3.21.13	ND	15.39	ND		6226.20
	9.4.13	ND	16.32	ND		6225.27
	12.9.13	ND	15.61	ND		6225.98
	3.19.14	ND	15.21	ND		6226.38
	11.12.14	ND	15.95	ND		6225.64
	6.17.15	ND	15.52	ND		6226.07
	11.17.15	ND	15.88	ND		6225.71
	6.08.16	ND	15.60	ND		6225.99
	12.29.16	ND	15.98	ND		6225.61
	6.30.17	ND	15.97	ND		6225.62
	12.28.17	ND	15.94	ND		6225.65
	6.20.18	ND	16.27	ND		6225.32
	1.17.19	ND	16.11	ND		6225.48

BTOC - Below Top of Casing
TOC - Top of Casing
ND - Not Detected
NG - Not Gauged
AMSL - Above Mean Sea Level (North American Vertical Datum 1988)

APPENDIX C

Laboratory Data Sheets & Chain of Custody Documentation

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

June 25, 2018

Kyle Summers
APEX TITAN
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX

RE: Lateral K 31 2011 OrderNo.: 1806D41

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 7 sample(s) on 6/21/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1806D41**
Date Reported: **6/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-4
Project: Lateral K 31 2011
Collection Date: 6/20/2018 9:20:00 AM
Lab ID: 1806D41-001
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 3:46:49 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 3:46:49 PM	R52146
Ethylbenzene	ND	1.0		µg/L	1	6/21/2018 3:46:49 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 3:46:49 PM	R52146
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	6/21/2018 3:46:49 PM	R52146
Surr: Toluene-d8	104	70-130		%Rec	1	6/21/2018 3:46:49 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-1
Project: Lateral K 31 2011
Collection Date: 6/20/2018 9:50:00 AM
Lab ID: 1806D41-002
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 4:10:10 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 4:10:10 PM	R52146
Ethylbenzene	ND	1.0		µg/L	1	6/21/2018 4:10:10 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 4:10:10 PM	R52146
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	6/21/2018 4:10:10 PM	R52146
Surr: Toluene-d8	105	70-130		%Rec	1	6/21/2018 4:10:10 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-7
Project: Lateral K 31 2011
Collection Date: 6/20/2018 10:20:00 AM
Lab ID: 1806D41-003
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 4:33:28 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 4:33:28 PM	R52146
Ethylbenzene	ND	1.0		µg/L	1	6/21/2018 4:33:28 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 4:33:28 PM	R52146
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	6/21/2018 4:33:28 PM	R52146
Surr: Toluene-d8	105	70-130		%Rec	1	6/21/2018 4:33:28 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-6
Project: Lateral K 31 2011
Collection Date: 6/20/2018 10:50:00 AM
Lab ID: 1806D41-004
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 4:56:50 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 4:56:50 PM	R52146
Ethylbenzene	ND	1.0		µg/L	1	6/21/2018 4:56:50 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 4:56:50 PM	R52146
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	6/21/2018 4:56:50 PM	R52146
Surr: Toluene-d8	107	70-130		%Rec	1	6/21/2018 4:56:50 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-9
Project: Lateral K 31 2011
Collection Date: 6/20/2018 11:20:00 AM
Lab ID: 1806D41-005
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 5:20:15 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 5:20:15 PM	R52146
Ethylbenzene	ND	1.0		µg/L	1	6/21/2018 5:20:15 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 5:20:15 PM	R52146
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	6/21/2018 5:20:15 PM	R52146
Surr: Toluene-d8	101	70-130		%Rec	1	6/21/2018 5:20:15 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-8
Project: Lateral K 31 2011
Collection Date: 6/20/2018 11:50:00 AM
Lab ID: 1806D41-006
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 5:43:35 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 5:43:35 PM	R52146
Ethylbenzene	1.9	1.0		µg/L	1	6/21/2018 5:43:35 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 5:43:35 PM	R52146
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	6/21/2018 5:43:35 PM	R52146
Surr: Toluene-d8	108	70-130		%Rec	1	6/21/2018 5:43:35 PM	R52146

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-5
Project: Lateral K 31 2011
Collection Date: 6/20/2018 12:20:00 PM
Lab ID: 1806D41-007
Matrix: AQUEOUS
Received Date: 6/21/2018 7:11:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/21/2018 6:06:56 PM	R52146
Toluene	ND	1.0		µg/L	1	6/21/2018 6:06:56 PM	R52146
Ethylbenzene	5.7	1.0		µg/L	1	6/21/2018 6:06:56 PM	R52146
Xylenes, Total	ND	1.5		µg/L	1	6/21/2018 6:06:56 PM	R52146
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	6/21/2018 6:06:56 PM	R52146
Surr: Toluene-d8	105	70-130		%Rec	1	6/21/2018 6:06:56 PM	R52146

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1806D41**

25-Jun-18

Client: APEX TITAN

Project: Lateral K 31 2011

Sample ID	**100ng btex lcs**	SampType:	**LCS4**		TestCode:	**EPA Method 8260: Volatiles Short List**				
Client ID:	**BatchQC**	Batch ID:	**R52146**		RunNo:	**52146**				
Prep Date:		Analysis Date:	**6/21/2018**		SeqNo:	**1707858**	Units:	**µg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	112	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Xylenes, Total	62	1.5	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.1	70	130			
Surr: Toluene-d8	9.9		10.00		99.4	70	130			

Sample ID	**rb**	SampType:	**MBLK**		TestCode:	**EPA Method 8260: Volatiles Short List**				
Client ID:	**PBW**	Batch ID:	**R52146**		RunNo:	**52146**				
Prep Date:		Analysis Date:	**6/21/2018**		SeqNo:	**1707874**	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: 4-Bromofluorobenzene	11		10.00		111	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: APEX AZTEC | Work Order Number: 1806D41 | RcptNo: 1

Received By: Isaiah Ortiz 6/21/2018 7:11:00 AM IO

Completed By: Ashley Gallegos 6/21/2018 12:15:18 PM AG

Reviewed By: JO 6/21/18 Labeled by: JAB 06/21/18

Chain of Custody

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

Log In

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

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

Adjusted? 06/21/18

Checked by: JAB

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	1.8	Good	Not Present			

CHAIN OF CUSTODY RECORD

APEX

Office Location 606 S Rio Grande Suite A
Aztec NM 87410
Project Manager K Summers

Laboratory: Hall Environmental Lab
Address: 4901 Hawkins NE
Albuquerque NM 87109
Contact: A Freeman
Phone: 505-345-3975
PO/SO #:

Sampler's Name: Chad D'Agonti
Sampler's Signature:

Proj. No.: 725010112182
Project Name: Lateral K-31 (2011)

ANALYSIS REQUESTED: BTEX 8021

Lab use only
Due Date:
Temp. of coolers when received (C°): 1.8 1.4 0.3
1 | 2 | 3 X | 4 | 5
Page ____ of ____

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No/Type of Containers: VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
W	6/20/18	920			MW-4			3					1806D41-001
W	6/20/18	950			MW-1			3					-002
W	6/20/18	1020			MW-7			3					-003
W	6/20/18	1050			MW-6			3					-004
W	6/20/18	1120			MW-9			3					-005
W	6/20/18	1150			MW-8			3					-006
W	6/20/18	1220			MW-5			3					-007

Turn around time: ☑ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date	Time	Received by: (Signature)	Date	Time
	6/20/18	1524		6/20/18	1524
Christian Walt	6/20/18	182	courier	6/21/18	07:11

NOTES:
Bill to Apex
(Corp Rate)

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

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

January 22, 2019

Kyle Summers
APEX TITAN
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX

RE: Lateral K 31 2011 OrderNo.: 1901742

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 7 sample(s) on 1/18/2019 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 **1901742**
Date Reported: **1/22/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-001
Matrix: AQUEOUS

Client Sample ID: MW-9
Collection Date: 1/17/2019 9:00:00 AM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 3:40:45 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 3:40:45 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 3:40:45 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 3:40:45 AM	B57143
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	1/22/2019 3:40:45 AM	B57143
Surr: Toluene-d8	101	70-130		%Rec	1	1/22/2019 3:40:45 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Client Sample ID: MW-8
Project: Lateral K 31 2011
Collection Date: 1/17/2019 9:50:00 AM
Lab ID: 1901742-002
Matrix: AQUEOUS
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 4:09:00 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 4:09:00 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 4:09:00 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 4:09:00 AM	B57143
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	1/22/2019 4:09:00 AM	B57143
Surr: Toluene-d8	103	70-130		%Rec	1	1/22/2019 4:09:00 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-003 **Matrix:** AQUEOUS

Client Sample ID: MW-6
Collection Date: 1/17/2019 10:35:00 AM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 4:37:16 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 4:37:16 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 4:37:16 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 4:37:16 AM	B57143
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	1/22/2019 4:37:16 AM	B57143
Surr: Toluene-d8	102	70-130		%Rec	1	1/22/2019 4:37:16 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-004 **Matrix:** AQUEOUS

Client Sample ID: MW-7
Collection Date: 1/17/2019 11:25:00 AM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 5:05:31 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 5:05:31 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 5:05:31 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 5:05:31 AM	B57143
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	1/22/2019 5:05:31 AM	B57143
Surr: Toluene-d8	100	70-130		%Rec	1	1/22/2019 5:05:31 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-005 **Matrix:** AQUEOUS

Client Sample ID: MW-1
Collection Date: 1/17/2019 12:10:00 PM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 5:33:46 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 5:33:46 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 5:33:46 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 5:33:46 AM	B57143
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	1/22/2019 5:33:46 AM	B57143
Surr: Toluene-d8	103	70-130		%Rec	1	1/22/2019 5:33:46 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-006 **Matrix:** AQUEOUS

Client Sample ID: MW-4
Collection Date: 1/17/2019 12:45:00 PM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 6:02:02 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 6:02:02 AM	B57143
Ethylbenzene	ND	1.0		µg/L	1	1/22/2019 6:02:02 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 6:02:02 AM	B57143
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	1/22/2019 6:02:02 AM	B57143
Surr: Toluene-d8	99.1	70-130		%Rec	1	1/22/2019 6:02:02 AM	B57143

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: APEX TITAN
Project: Lateral K 31 2011
Lab ID: 1901742-007
Matrix: AQUEOUS
Client Sample ID: MW-5
Collection Date: 1/17/2019 1:40:00 PM
Received Date: 1/18/2019 7:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	1/22/2019 7:27:28 AM	B57143
Toluene	ND	1.0		µg/L	1	1/22/2019 7:27:28 AM	B57143
Ethylbenzene	3.4	1.0		µg/L	1	1/22/2019 7:27:28 AM	B57143
Xylenes, Total	ND	1.5		µg/L	1	1/22/2019 7:27:28 AM	B57143
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	1	1/22/2019 7:27:28 AM	B57143
Surr: Toluene-d8	100	70-130		%Rec	1	1/22/2019 7:27:28 AM	B57143

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1901742**

22-Jan-19

Client: APEX TITAN

Project: Lateral K 31 2011

Sample ID **100ng lcs2** SampType: **LCS** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **LCSW** Batch ID: **B57143** RunNo: **57143**

Prep Date: Analysis Date: **1/21/2019** SeqNo: **1911565** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	19	1.0	20.00	0	95.1	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.9		10.00		98.8	70	130			

Sample ID **1901742-006ams** SampType: **MS** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **MW-4** Batch ID: **B57143** RunNo: **57143**

Prep Date: Analysis Date: **1/22/2019** SeqNo: **1911572** 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	19	1.0	20.00	0	96.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	9.8		10.00		98.2	70	130			

Sample ID **1901742-006amsd** SampType: **MSD** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **MW-4** Batch ID: **B57143** RunNo: **57143**

Prep Date: Analysis Date: **1/22/2019** SeqNo: **1911573** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130	3.38	20	
Toluene	18	1.0	20.00	0	90.3	70	130	6.60	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		109	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		114	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		98.9	70	130	0	0	

Sample ID **rb2** SampType: **MBLK** TestCode: **EPA Method 8260: Volatiles Short List**

Client ID: **PBW** Batch ID: **B57143** RunNo: **57143**

Prep Date: Analysis Date: **1/22/2019** SeqNo: **1911576** 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								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1901742**

22-Jan-19

Client: APEX TITAN
Project: Lateral K 31 2011

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **B57143**	RunNo: **57143**
Prep Date:	Analysis Date: **1/22/2019**	SeqNo: **1911576** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		111	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: APEX AZTEC | Work Order Number: 1901742 | RcptNo: 1

Received By: Isaiah Ortiz 1/18/2019 7:50:00 AM I.O.

Completed By: Isaiah Ortiz 1/18/2019 9:24:07 AM I.O.

Reviewed By: JO 1/18/19

CB: DAD 1/18/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# 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 ☐	Checked by: DAD 1/18/19
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

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	2.1	Good	Yes			

CHAIN OF CUSTODY RECORD

APEX

Office Location: 606 S Rio Grande Suite A, Aztec, NM 87410

Project Manager: K Summers

Laboratory: Hall Environmental Analysis Laboratory

Address: 4901 Hawkins NE, Albuquerque, NM 87109

Contact: A. Freeman

Phone: 505-345-3975

PO/SO #: 725040112182

Sampler's Name: Renee Deechilly

Sampler's Signature:

Proj. No.: 725040112182

Project Name: Lateral K-31 (2011)

Lab use only
Due Date:

Temp. of coolers when received (C°): 2.1 C

1 2 3 4 5

Page 1 of 1

ANALYSIS REQUESTED: BTEX 8021

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No/Type of Containers: VOA	AG 1 L	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
W	11/7/19	900			MW-9			3					1901742-001
W	11/7/19	950			MW-8			3					-002
W	11/7/19	1035			MW-6			3					-003
W	11/7/19	1125			MW-7			3					-004
W	11/7/19	1210			MW-1			3					-005
W	11/7/19	1245			MW-4			3					-006
W	11/7/19	1340			MW-5			3					-007

Turn around time: [X] Normal [ ] 25% Rush [ ] 50% Rush [ ] 100% Rush

Relinquished by (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/7/19	1714		11/07/19	1710
	11/7/19	1956	courier	11/8/19	07:50

NOTES:
Bill to Apex (corporate rate)

Copy Tom Long (EPROD) when sending results

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; AG - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other _____