

PCVG 1428038939



**GROUNDWATER MONITORING REPORT
(JULY, SEPTEMBER, AND DECEMBER 2017 SAMPLING EVENTS)**

Property:

**Lateral K-7 Pipeline Release (2012)
NW ¼, S27 T26N R7W
Rio Arriba County, New Mexico
OCD RP: 3R-451**

August 3, 2018
Apex Project No. 725040112287

Prepared for:

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

NMOCB
NOV 29 2018
DISTRICT III

Prepared by:



Raneer Deechilly
Project Scientist



Kyle Summers, CPG
Branch Manager/ Senior Geologist



**Groundwater Monitoring Report
(July, September, and December 2017 Sampling Events)
Lateral K-7 Pipeline Release (2012)
Executive Summary**

Groundwater monitoring events were conducted at the Lateral K-7 (2012) pipeline release site, referred to hereinafter as the "Site", during July, September, and December 2017. The Site is located within the Enterprise Field Services, LLC (Enterprise) pipeline right-of-way (ROW) in the northwest (NW) 1/4 of Section 27, Township 26 North, Range 7 West, in Rio Arriba County, New Mexico. The Site is located on land managed by the United States Bureau of Land Management (BLM). The Site is surrounded by rangeland that is periodically interrupted by oil and gas production and gathering facilities, including the Enterprise Lateral K-7 natural gas gathering pipeline which traverses the area from approximately north to south.

On August 30, 2012, a release of natural gas and associated pipeline liquids was discovered at the Site. During September 2012, field screening of soil samples collected from the pipeline repair excavation and four (4) test pits completed outside the excavation indicated petroleum hydrocarbon affected soils were present at the Site. During December 2012, Animas Environmental Services, LLC (AES) advanced eight (8) soil borings (SB-1 through SB-8) at the Site to delineate the extent of petroleum hydrocarbon affected soil and potentially impacted groundwater. Samples collected from the soil borings exhibited concentrations of constituents of concern (COCs) in soil 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 October 2013, AES advanced five (5) additional soil borings which were completed as groundwater monitoring wells. COCs were subsequently identified in groundwater samples collected from the monitoring wells at concentrations that exceed the WQCC GQSs.

Following a pipeline modification event at the Site during August 2015, Enterprise elected to perform additional corrective action activities to remove residual petroleum hydrocarbon affected soils. During corrective action activities, all on-Site monitoring wells were plugged and abandoned (P&A'd) to allow the excavation of affected soils.

During November 2016, Apex advanced six (6) soil borings at the Site and completed the soil borings as monitoring wells MW-1A through MW-6A. Sample results from the soil borings did not indicate COCs in excess of EMNRD OCD standards. Groundwater analytical results from groundwater samples collected from the monitoring wells during the December 2016 and March 2017 sampling events did not indicate COC concentrations above the applicable WQCC GQSs (*Supplemental Environmental Site Investigation and Groundwater Sampling Report (November/December 2016 and March 2017, dated August 16, 2017)*).

The objectives of the groundwater monitoring events described herein are to further evaluate groundwater conditions at the Site with respect to WQCC GQSs and demonstrate natural attenuation following the removal of affected soils. Findings and recommendations based on these activities are as follows:

- During completion of the July, September, and December 2017 sampling events, one (1) groundwater sample was collected from each monitoring well utilizing low-flow sampling techniques.



- Based on gauging data, the groundwater flow direction at the Site is primarily to the north/northwest, with an apparent gradient of approximately 0.008 feet per foot (ft/ft).
- During the July, September, and December 2017 sampling event, the groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit benzene, toluene, ethylbenzene, or total xylenes concentrations above the applicable WQCC GQSs.

Apex offers the following recommendations:

- Report the groundwater sampling results to the New Mexico EMNRD OCD;
- Continue quarterly groundwater sampling events to monitor/confirm successful natural attenuation for a total of eight (8) quarterly events after which administrative closure for the Site will be requested; and,
- Determine if the New Mexico EMNRD OCD requires additional analyses for these future groundwater sampling events to support administrative closure of the Site.

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*Need additional
mw installed
in MW SA Area*



GROUNDWATER MONITORING REPORT (JULY, SEPTEMBER, AND DECEMBER 2017 SAMPLING EVENTS)

Lateral K-7 Pipeline Release (2012)

NW ¼, S27 T26N R7W
Rio Arriba County, New Mexico
OCD RP: 3R-451

Apex Project No. 725040112287

1.0 INTRODUCTION

1.1 Site Description & Background

The Lateral K-7 (2012) pipeline release site, referred to hereinafter as the "Site", is located within the Enterprise Field Services, LLC (Enterprise) pipeline right-of-way (ROW) in the northwest (NW) ¼ of Section 27, Township 26 North, Range 7 West, in Rio Arriba County, New Mexico (36.46422N, 107.56505W). The Site is located on land managed by the United States Bureau of Land Management (BLM). The Site is surrounded by rangeland that is periodically interrupted by oil and gas production and gathering facilities, including the Enterprise Lateral K-7 natural gas gathering pipeline which traverses the area from approximately north to south.

A release of natural gas and associated pipeline liquids was discovered at the Site on August 30, 2012. Animas Environmental Services, LLC (AES) collected five (5) soil samples from the pipeline repair excavation and eight (8) soil samples from four (4) "test pits" completed outside the excavation. Based on initial field screening results, constituent of concern (COC) concentrations were present in soil above the New Mexico Energy, Minerals and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) *Remediation Action Levels (RALs)*. These activities are documented in the *Release Report for the Lateral K-7 September 2012 Release, dated September 26, 2012 – AES*.

During November 2012, AES performed delineation activities to evaluate the extent of petroleum hydrocarbon affected soils and potentially impacted groundwater, which resulted in the advancement and sampling of eight (8) soil borings (SB-1 through SB-8). Laboratory analytical results identified benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations and combined total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) concentrations that exceeded applicable New Mexico EMNRD OCD *RALs* in soil borings SB-3 and SB-8. Groundwater analytical results for groundwater samples collected from the soil borings SB-1 through SB-6 identified benzene and toluene (SB-3W) concentrations above the applicable New Mexico Water Quality Control Commission (WQCC) *Groundwater Quality Standard (GQS)* (*Continued Site Assessment Report, dated February 25, 2013 – AES*).

During October 2013, AES performed additional delineation activities by advancing five (5) soil borings (SB-9 through SB-13) which were completed as groundwater monitoring wells MW-1 through MW-5. At these locations, COCs were not identified in soils at concentrations above the New Mexico EMNRD OCD *RALs*, however benzene concentrations in groundwater were identified above the applicable New Mexico WQCC *GQS* at monitoring wells MW-1, MW-3, and MW-5 (*Groundwater Investigation Report, dated March 19, 2014 – AES*).

On February 18, 2014, AES conducted a groundwater monitoring event. The resulting analytical results indicate COC concentrations exceeding the WQCC GQS for benzene in monitoring wells MW-1, MW-3, and MW-5.

On November 11, 2014 and June 23, 2015, Apex TITAN, Inc. (Apex) conducted groundwater monitoring events at the Site. Groundwater samples were not obtained from monitoring well MW-5 due to an obstruction within the well casing. During the November 2014 sampling event, benzene concentrations exceeded the WQCC GQS at monitoring wells MW-1 and MW-3. During the June 2015 sampling event, no COC concentrations were identified above the WQCC GQSs.

During August 2015, after completing pipeline modification activities at the Site, Enterprise performed additional excavation at the Site to remove residual petroleum hydrocarbon affected soils. Approximately 1,841 cubic yards of petroleum hydrocarbon affected soils were transported to a New Mexico EMNRD OCD-approved landfarm for treatment/disposal. During corrective action activities, monitoring wells MW-1 through MW-5 were plugged and abandoned (P&A'd) to allow the excavation of the affected soils (*Corrective Action Report - Lateral K-7 Pipeline Release (8/30/2012), dated January 21, 2016 – Apex*).

During November 2016, Apex performed site investigation activities to reestablish the monitoring well network that was removed during 2015 remediation activities. Six (6) soil borings were advanced and completed as monitoring wells (MW-1A through MW-6A). Soil samples collected from the soil borings did not indicate COC concentrations above the applicable New Mexico EMNRD OCD RALs. Groundwater analytical results from groundwater samples collected from the monitoring wells during the December 2016 and March 2017 sampling events did not indicate COC concentrations above the applicable WQCC GQSs (*Supplemental Environmental Site Investigation and Groundwater Sampling Report (November/December 2016 and March 2017, dated August 16, 2017)*).

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to crude oil/condensate releases, the New Mexico OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the New Mexico EMNRD OCD rules, specifically New Mexico Administrative Code (NMAC) 19.15.29 *Release Notification*. These guidance documents establish investigation and abatement action requirements for release sites subject to reporting and/or corrective action.

The Site location is depicted on **Figure 1 of Appendix A** which was reproduced from a portion of the 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 in relation to pertinent structures and general Site boundaries, is included as **Figure 3 of Appendix A**.

1.2 Objectives

The objectives of the groundwater monitoring events are to further evaluate groundwater conditions at the Site and demonstrate successful natural attenuation following the removal of affected soils.



2.0 GROUNDWATER MONITORING

2.1 Groundwater Sampling Program

During July, September, and December 2017, Apex collected groundwater samples from each monitoring well (MW-1A through MW-6A) at the Site. 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). NAPL was not detected at any of the monitoring well locations.

Monitoring wells MW-1A through MW-6A were micro-purged utilizing 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. It does not necessarily refer to the flow rate of water discharged at the surface which can be affected by flow regulators or restrictions. 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.

Groundwater samples were collected in laboratory supplied containers, labeled/sealed using laboratory supplied labels and custody seals, and stored on ice in a cooler. The 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 Program

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

A summary of the analytes, sample matrix, sample frequency, and EPA-approved methods for all three (3) sampling events are presented in the following table.

Analytes	Sample Matrix	No. of Samples	EPA Method
BTEX	Groundwater	18	SW-846 8021/8260

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

2.3 Groundwater Flow Direction

Each of the monitoring wells was previously surveyed to establish top-of-casing (TOC) elevations. Prior to sample collection, Apex gauged the depth to fluids in each monitoring well. The groundwater flow direction at the Site is generally toward the north/northwest, with an average gradient of 0.008 feet per foot (ft/ft).

Groundwater water measurements collected during the July, September, and December 2017 sampling event (as well as historical data) are presented with TOC elevations in **Table 2 (Appendix B)**. Groundwater gradient maps for the July, October, and December 2017 gauging events are included as **Figures 4A, 4B, and 4C (Appendix A)**.

2.4 Groundwater Data Evaluation

Apex compared BTEX concentrations or laboratory practical quantitation limits (PQLs) associated with the groundwater samples collected from the monitoring wells during the July, September, and December 2017 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 Standard Exceedance Zone maps are provided as **Figures 5A, 5B, and 5C of Appendix A**.

July, September, and December 2017 Sample Results:

The July, September, and December 2017 groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit benzene concentrations above the laboratory PQLs, which are below the WQCC GQSs of 10 µg/L.

The July, September, and December 2017 groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit toluene concentrations above the laboratory PQLs, which are below the WQCC GQSs of 750 µg/L.

The July, September, and December 2017 groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit ethylbenzene concentrations above the laboratory PQLs, which are below the WQCC GQSs of 750 µg/L.

The July, September, and December groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit total xylenes concentrations above the laboratory PQLs, which are below the WQCC GQSs of 620 µg/L.

No data qualifier flags were associated with the July, September, and December 2017 analytical results.

3.0 FINDINGS

Groundwater monitoring events were conducted at the Lateral K-7 (2012) pipeline release Site during July, September, and December 2017. The objectives of the groundwater monitoring events are to further evaluate groundwater conditions at the Site and demonstrate successful natural attenuation following the removal of affected soils.

- Based on gauging data, the groundwater flow direction at the Site is primarily to the north, with an apparent gradient of approximately 0.008 ft/ft.
- During the July, September, and December 2017 sampling event, the groundwater samples collected from monitoring wells MW-1A through MW-6A did not exhibit BTEX concentrations above the applicable WQCC GQSs.

4.0 RECOMMENDATIONS

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

- Report the groundwater sampling results to the New Mexico EMNRD OCD;
- Continue quarterly groundwater sampling events to monitor/confirm successful natural attenuation for a total of eight (8) quarterly events after which administrative closure for the Site will be requested; and,
- Determine if the New Mexico EMNRD OCD requires additional analyses for these future groundwater sampling events to support administrative closure of the Site.

5.0 STANDARD OF CARE, LIMITATIONS & RELIANCE

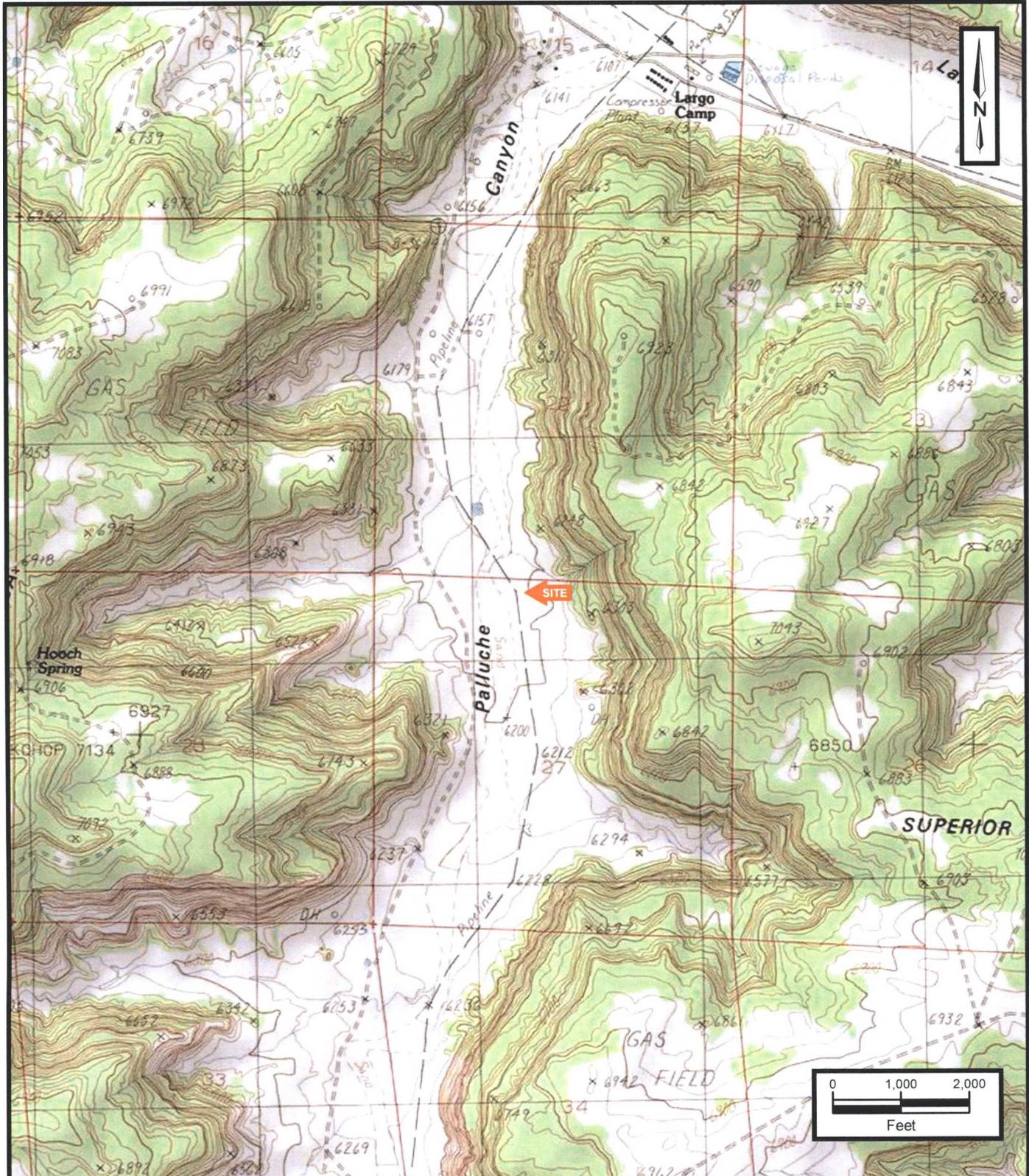
Apex's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Apex makes no warranties, expressed or implied, as to the services performed hereunder. Additionally, Apex does not warrant the work 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.

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This report has been prepared for the exclusive use of Enterprise, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the expressed written authorization of Enterprise and Apex. 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 proposal, the report, and Apex's Agreement. The limitation of liability defined in the agreement is the aggregate limit of Apex's liability to the client.

APPENDIX A

Figures



Lateral K-7 (2012) Pipeline Release
 NW 1/4 S27, T26N, R7W
 Rio Arriba County, New Mexico
 36.46422 N, 107.56505 W



Apex TITAN, Inc.
 606 South Rio Grande, Suite A
 Aztec, New Mexico 87410
 Phone: (505) 334-5200
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FIGURE 1
Topographic Map

Service Layer Credits:
 Copyright © 2013 National Geographic Society, i-cubed, Smouse
 Mesa New Mexico 7.5-Minute Quadrangle 1985

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Lateral K-7 (2012) Pipeline Release
 NW 1/4 S27, T26N, R7W
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 36.46422 N, 107.56505 W

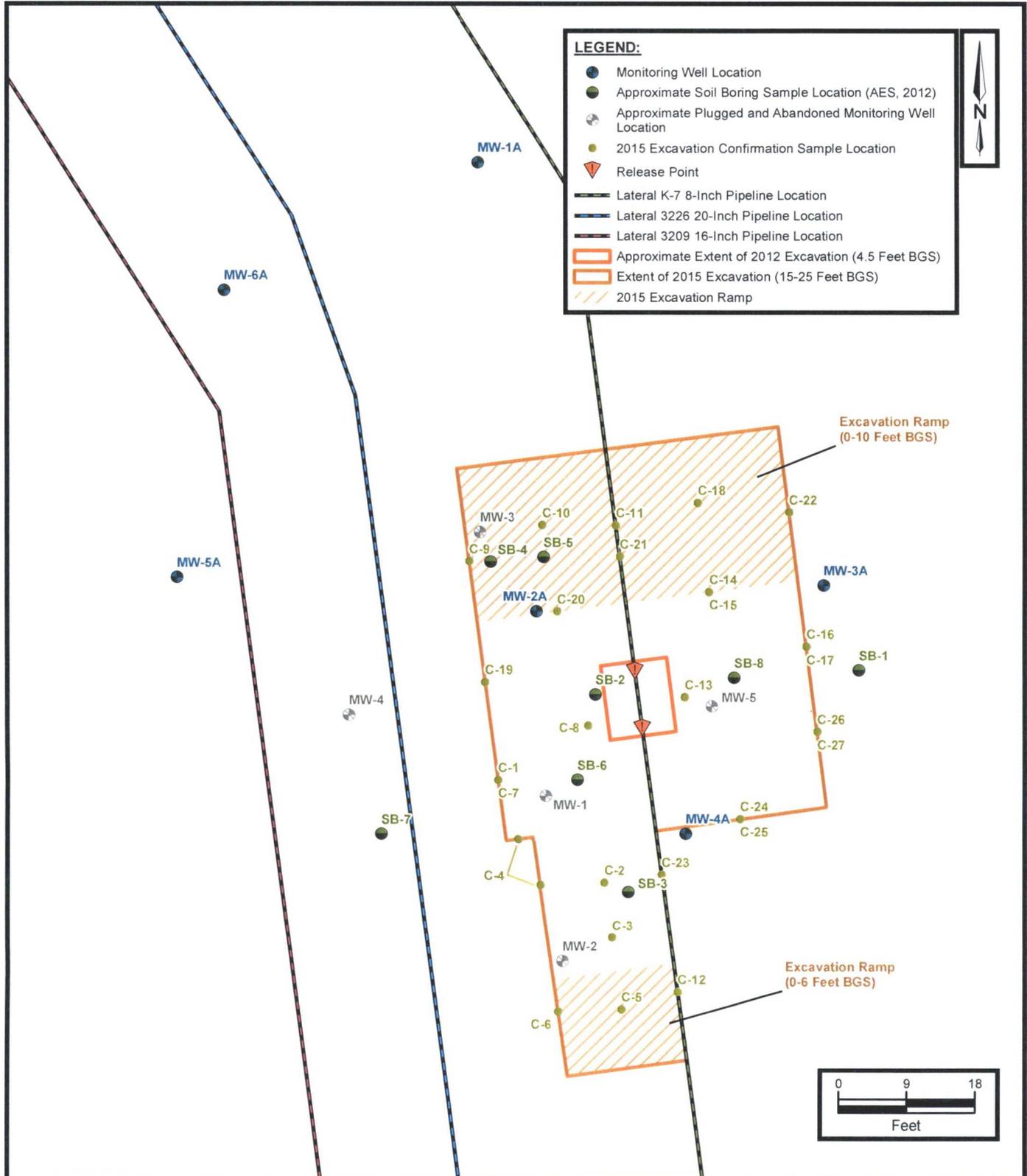
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FIGURE 2
Site Vicinity Map

Service Layer Credits
 Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, Source
 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,
 USGS, AeroGRID, IGN, and the GIS User Community, Aerial Photograph
 February 2016



Lateral K-7 (2012) Pipeline Release
 NW 1/4 S27, T26N, R7W
 Rio Arriba County, New Mexico
 36.46422 N, 107.56505 W



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FIGURE 3
Site Map

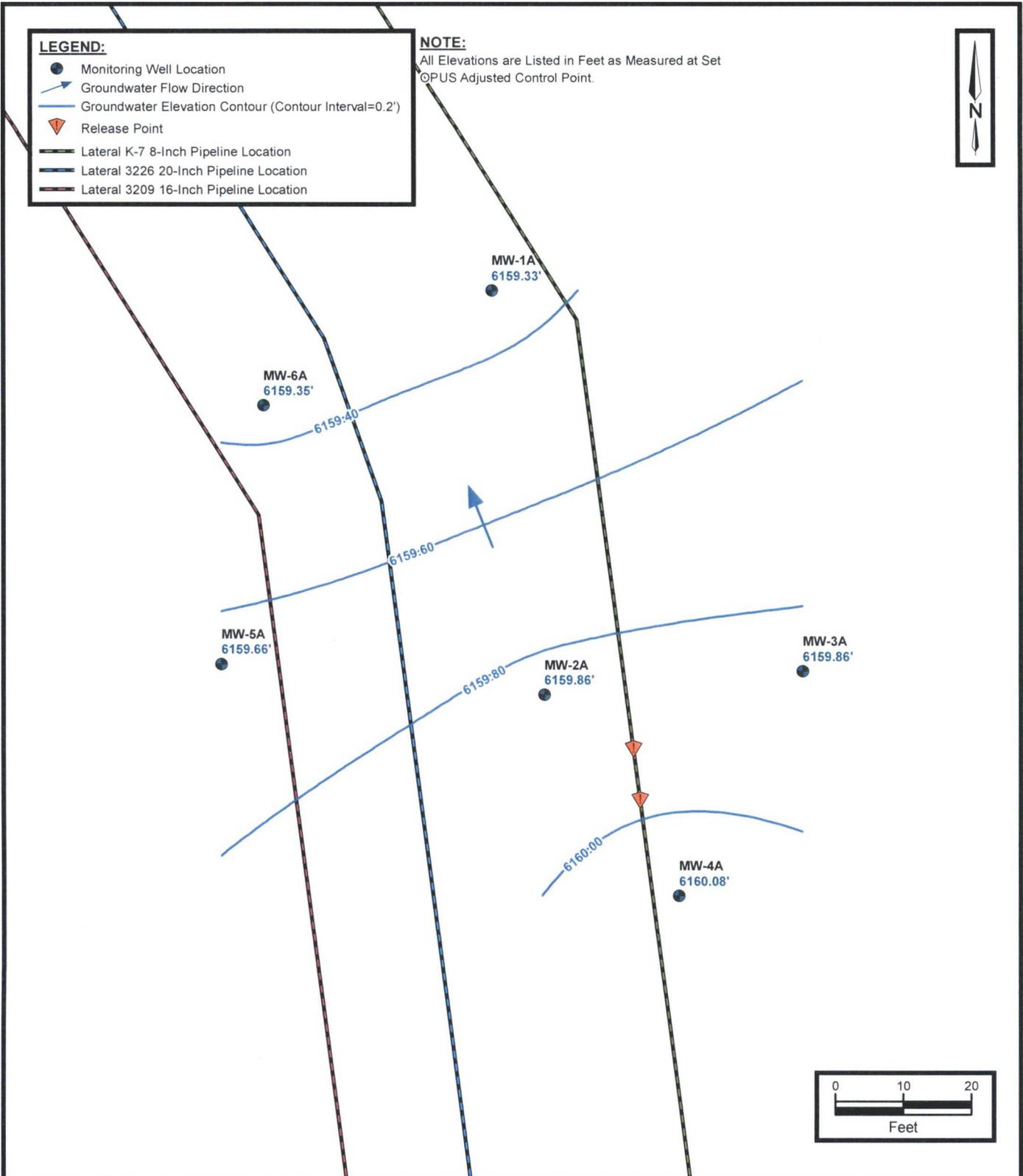
Project No. 725040112287

LEGEND:

- Monitoring Well Location
- Groundwater Flow Direction
- Groundwater Elevation Contour (Contour Interval=0.2')
- ▽ Release Point
- Lateral K-7 8-Inch Pipeline Location
- Lateral 3226 20-Inch Pipeline Location
- Lateral 3209 16-Inch Pipeline Location

NOTE:

All Elevations are Listed in Feet as Measured at Set OPUS Adjusted Control Point.



Lateral K-7 (2012) Pipeline Release
NW 1/4 S27, T26N, R7W
Rio Arriba County, New Mexico
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FIGURE 4A
Groundwater Gradient Map
July 2017

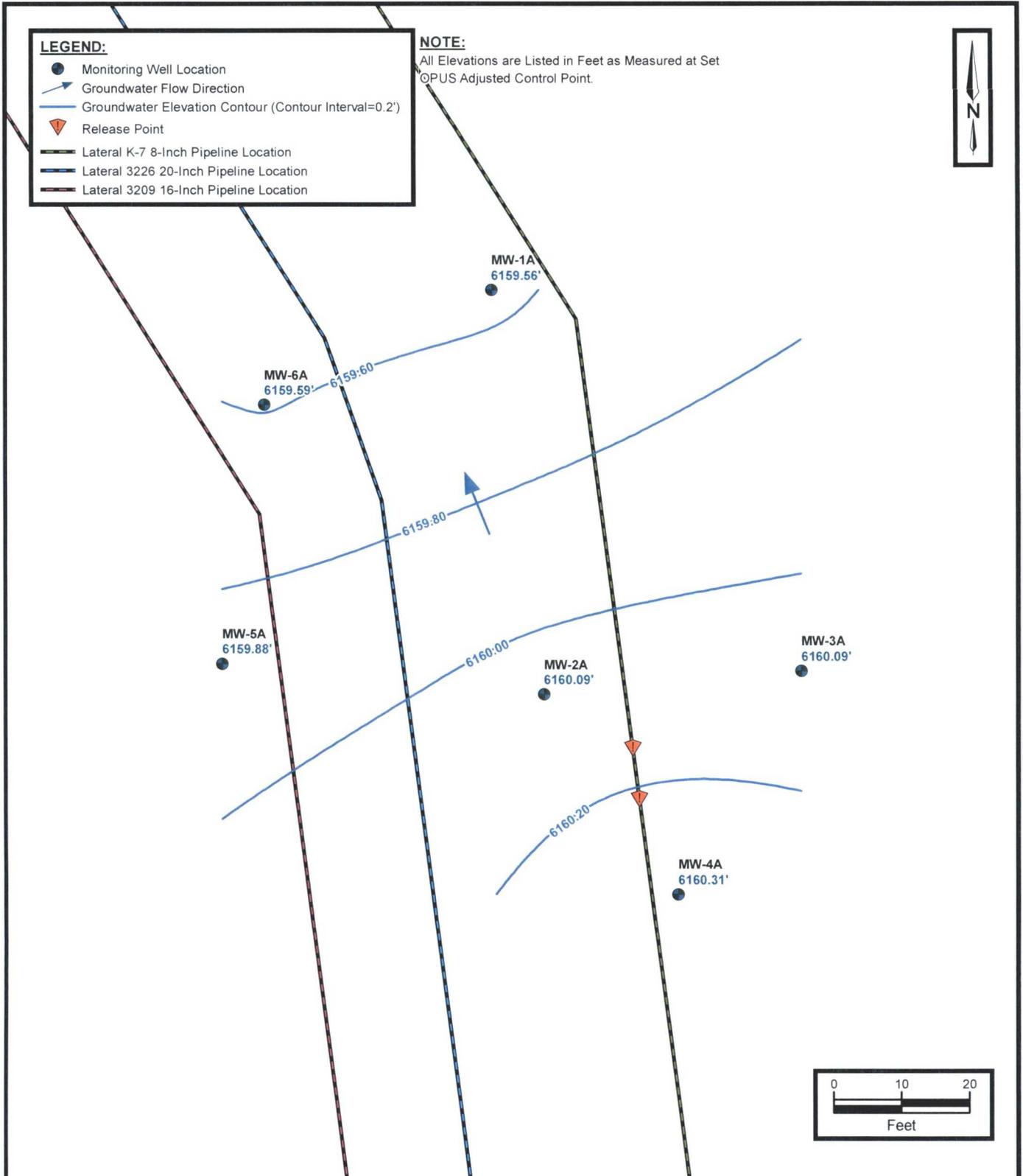
Project No. 725040112287

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- Groundwater Elevation Contour (Contour Interval=0.2')
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- Lateral K-7 8-Inch Pipeline Location
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OPUS Adjusted Control Point.



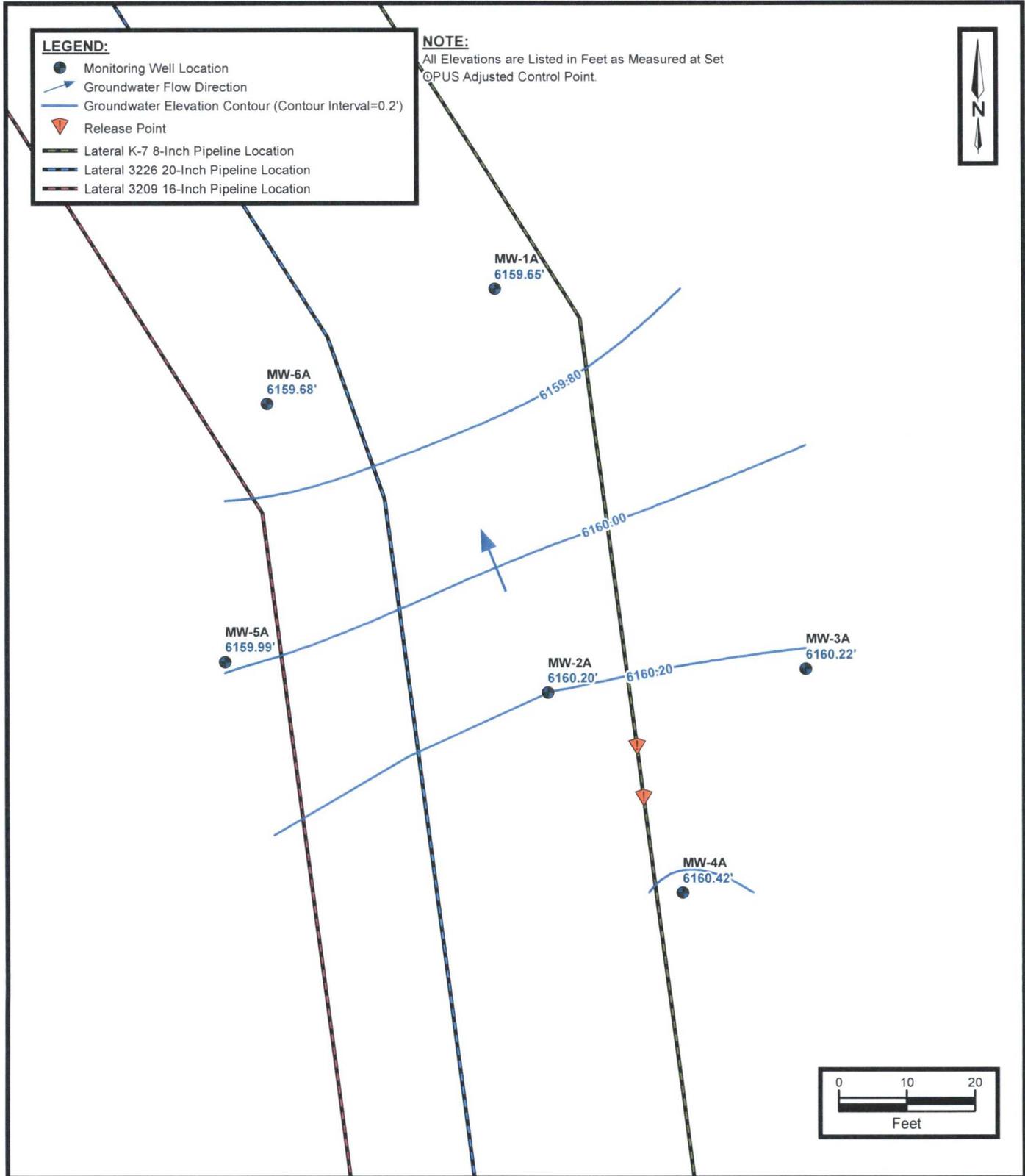
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FIGURE 4B
Groundwater Gradient Map
October 2017

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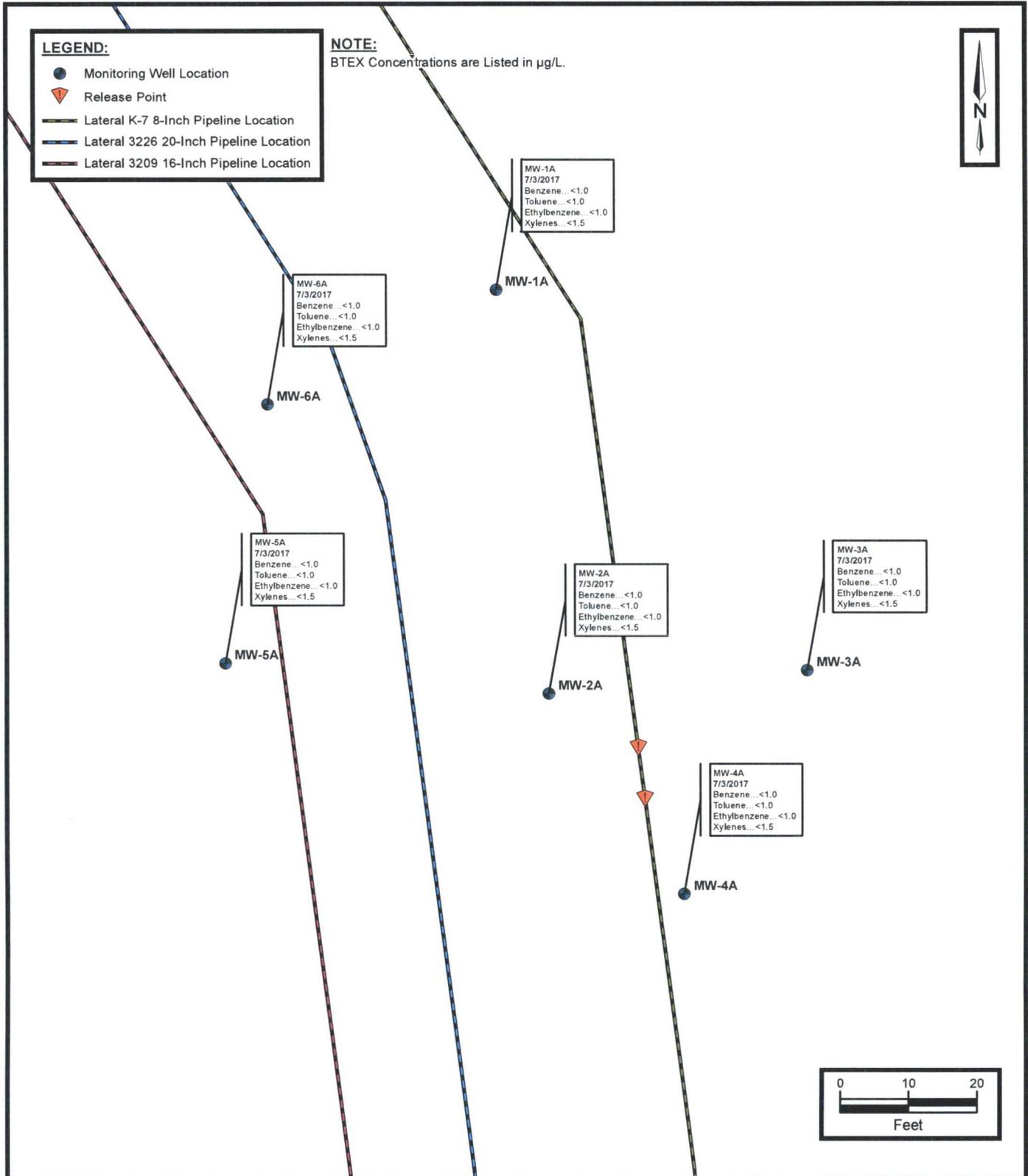
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FIGURE 4C
Groundwater Gradient Map
December 2017



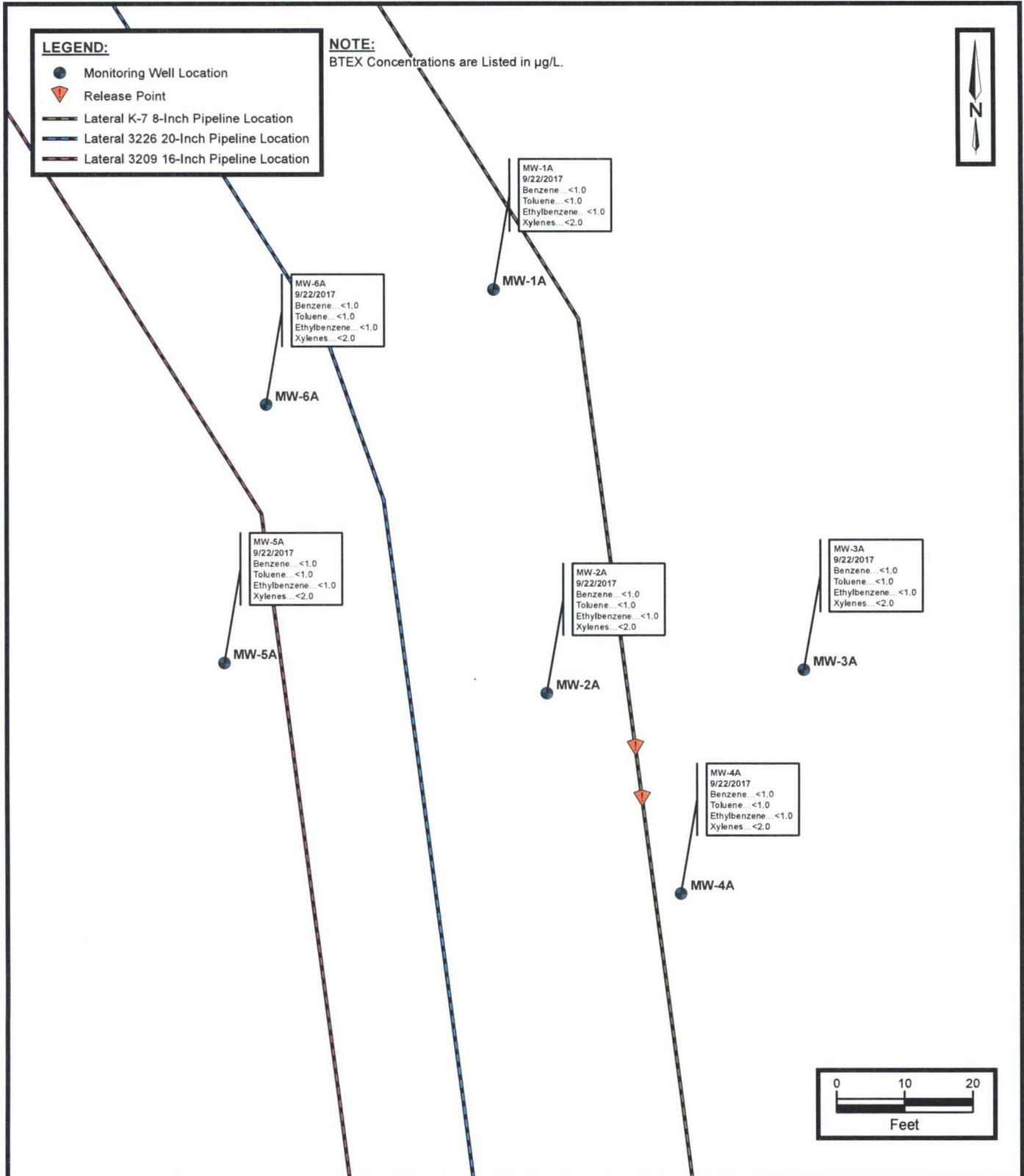
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FIGURE 5A
Groundwater Analytical Data Map
July 2017

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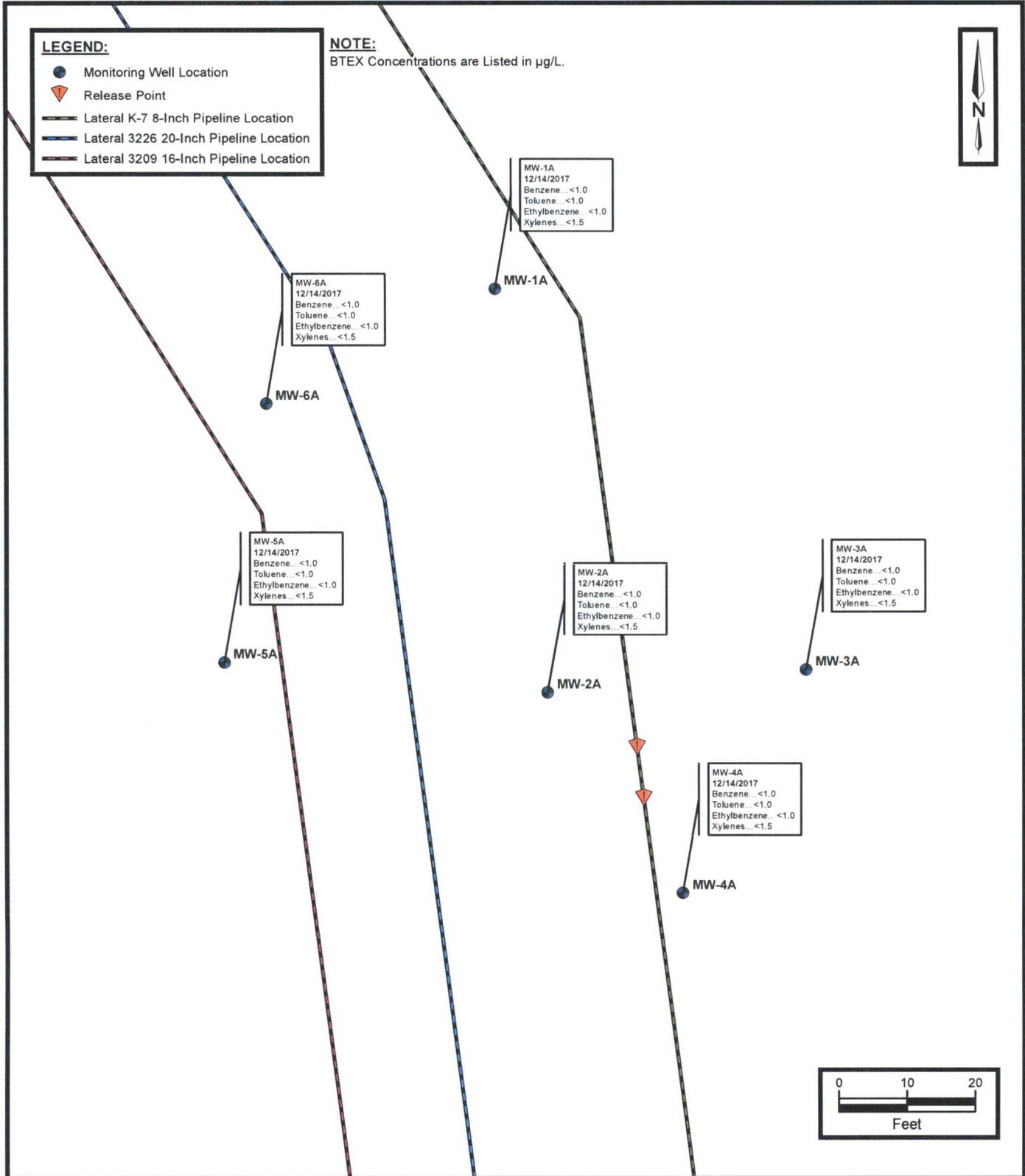
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FIGURE 5B
Groundwater Analytical Data Map
September 2017

Project No. 725040112287



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 Rio Arriba County, New Mexico
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FIGURE 5C
Groundwater Analytical Data Map
December 2017

Project No. 725040112287

APPENDIX B

Tables



TABLE 1
Lateral K-7 September 2012 Pipeline Release
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)	TPH MRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE	NE
Monitoring Wells Installed by AES								
MW-1	11.20.13	35	140	5.3	77	0.69	<1.0	NA
	2.18.14	34	96	4	58	NA	NA	NA
	11.11.14	39	240	10	170	NA	NA	NA
	6.23.15	7.4	14	<1.0	8.9	NA	NA	NA
Monitor well removed to allow soil remediation during August 2015								
MW-2	11.20.13	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	NA
	2.18.14	<1.0	<1.0	<1.0	<3.0	NA	NA	NA
	11.11.14	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	6.23.15	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
Monitor well removed to allow soil remediation during August 2015								
MW-3	11.20.13	15	31	<2.0	17	0.25	<1.0	NA
	2.18.14	21	33	<1.0	21	NA	NA	NA
	11.11.14	11	26	<1.0	18	NA	NA	NA
	6.23.15	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
Monitor well removed to allow soil remediation during August 2015								
MW-4	11.20.13	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	NA
	2.18.14	<1.0	<1.0	<1.0	<3.0	NA	NA	NA
	11.11.14	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	6.23.15	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
Monitor well removed to allow soil remediation during August 2015								
MW-5	11.20.13	90	340	9.6	200	1.7	<1.0	NA
	2.18.14	54	200	10	150	NA	NA	NA
	11.11.14	Unable to remove bailer from well						
	6.23.15	Unable to remove bailer from well						
Monitor well removed to allow soil remediation during August 2015								



TABLE 1
Lateral K-7 September 2012 Pipeline Release
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)	TPH MRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE	NE
Monitoring Wells Installed by Apex								
MW-1A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
MW-2A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
MW-3A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
MW-4A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
MW-5A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA



TABLE 1
Lateral K-7 September 2012 Pipeline Release
GROUNDWATER ANALYTICAL SUMMARY

Sample I.D.	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH GRO (mg/L)	TPH DRO (mg/L)	TPH MRO (mg/L)
New Mexico Water Quality Control Commission Groundwater Quality Standards		10	750	750	620	NE	NE	NE
MW-6A	12.13.16	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
	3.28.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	7.03.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA
	9.22.17	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	12.14.17	<1.0	<1.0	<1.0	<1.5	NA	NA	NA

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

µg/L= micrograms per liter

mg/L= milligrams per liter

NA = Not Analyzed

NE= Not Established

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



TABLE 2
Lateral K-7 September 2012 Pipeline Release
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	11.20.13	ND	29.34	ND	6190.12	6160.78
	2.18.14	ND	29.32	ND		6160.80
	11.11.14	ND	30.14	ND		6159.98
	6.23.15	ND	30.26	ND		6159.86
	8.00.15	Monitor well removed to allow soil remediation during August 2015				
MW-2	11.20.13	ND	29.19	ND	6190.18	6160.99
	2.18.14	ND	29.17	ND		6161.01
	11.11.14	ND	29.98	ND		6160.20
	6.23.15	ND	30.11	ND		6160.07
	8.00.15	Monitor well removed to allow soil remediation during August 2015				
MW-3	11.20.13	ND	29.61	ND	6190.11	6160.50
	2.18.14	ND	29.59	ND		6160.52
	11.11.14	ND	30.41	ND		6159.70
	6.23.15	ND	30.52	ND		6159.59
	8.00.15	Monitor well removed to allow soil remediation during August 2015				
MW-4	11.20.13	ND	28.67	ND	6189.25	6160.58
	2.18.14	ND	28.65	ND		6160.60
	11.11.14	ND	29.49	ND		6159.76
	6.23.15	ND	29.58	ND		6159.67
	8.00.15	Monitor well removed to allow soil remediation during August 2015				
MW-5	11.20.13	ND	30.38	ND	6191.06	6160.68
	2.18.14	ND	30.35	ND		6160.71
	11.11.14	ND	31.20	ND		6159.86
	6.23.15	Unable to remove bailer from well				
	8.00.15	Monitor well removed to allow soil remediation during August 2015				
MW-1A	12.13.16	ND	30.84	ND	6190.15	6159.31
	3.28.17	ND	30.44	ND		6159.71
	7.03.17	ND	30.82	ND		6159.33
	10.23.17	ND	30.59	ND		6159.56
	12.14.17	ND	30.50	ND		6159.65
MW-2A	12.13.16	ND	30.44	ND	6190.25	6159.81
	3.28.17	ND	30.03	ND		6160.22
	7.03.17	ND	30.39	ND		6159.86
	10.23.17	ND	30.16	ND		6160.09
	12.14.17	ND	30.05	ND		6160.20
MW-3A	12.13.16	ND	31.64	ND	6191.49	6159.85
	3.28.17	ND	31.25	ND		6160.24
	7.03.17	ND	31.63	ND		6159.86
	10.23.17	ND	31.40	ND		6160.09
	12.14.17	ND	31.27	ND		6160.22
MW-4A	12.13.16	ND	31.63	ND	6191.72	6160.09
	3.28.17	ND	31.24	ND		6160.48
	7.03.17	ND	31.64	ND		6160.08
	10.23.17	ND	31.41	ND		6160.31
	12.14.17	ND	31.30	ND		6160.42



TABLE 2
Lateral K-7 September 2012 Pipeline Release
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-5A	12.13.16	ND	29.42	ND	6189.08	6159.66
	3.28.17	ND	29.04	ND		6160.04
	7.03.17	ND	29.42	ND		6159.66
	10.23.17	ND	29.20	ND		6159.88
	12.14.17	ND	29.09	ND		6159.99
MW-6A	12.13.16	ND	29.79	ND	6189.12	6159.33
	3.28.17	ND	29.40	ND		6159.72
	7.03.17	ND	29.77	ND		6159.35
	10.23.17	ND	29.53	ND		6159.59
	12.14.17	ND	29.44	ND		6159.68

BTOC - below top of casing
 TOC - top of casing
 AMSL - above mean sea level
 ND - Not Detected

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

August 01, 2017

Kyle Summers

Apex Titan

606 S. Rio Grande Suite A

Aztec, NM 87410

TEL: (505) 716-2787

FAX

RE: Lateral K-7 (2012)

OrderNo.: 1707090

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/4/2017 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 11, 2017.

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. 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. All samples are reported as received unless otherwise indicated.

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

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1707090

Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan
Project: Lateral K-7 (2012)

Lab Order: 1707090**Lab ID:** 1707090-001**Collection Date:** 7/3/2017 11:55:00 AM**Client Sample ID:** MW-3A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 2:40:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 2:40:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 2:40:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 2:40:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	7/10/2017 2:40:00 PM	SL441C
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	7/10/2017 2:40:00 PM	SL441C
Surr: Dibromofluoromethane	113	70-130		%Rec	1	7/10/2017 2:40:00 PM	SL441C
Surr: Toluene-d8	102	70-130		%Rec	1	7/10/2017 2:40:00 PM	SL441C

Lab ID: 1707090-002**Collection Date:** 7/3/2017 12:35:00 PM**Client Sample ID:** MW-4A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 3:05:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 3:05:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 3:05:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 3:05:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	1	7/10/2017 3:05:00 PM	SL441C
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	7/10/2017 3:05:00 PM	SL441C
Surr: Dibromofluoromethane	117	70-130		%Rec	1	7/10/2017 3:05:00 PM	SL441C
Surr: Toluene-d8	101	70-130		%Rec	1	7/10/2017 3:05:00 PM	SL441C

Lab ID: 1707090-003**Collection Date:** 7/3/2017 1:15:00 PM**Client Sample ID:** MW-2A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 3:29:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 3:29:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 3:29:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 3:29:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	7/10/2017 3:29:00 PM	SL441C
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	7/10/2017 3:29:00 PM	SL441C
Surr: Dibromofluoromethane	113	70-130		%Rec	1	7/10/2017 3:29:00 PM	SL441C
Surr: Toluene-d8	99.9	70-130		%Rec	1	7/10/2017 3:29:00 PM	SL441C

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	Page 1 of 4
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative 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	

Analytical Report

Lab Order: 1707090

Date Reported: 8/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan
Project: Lateral K-7 (2012)

Lab Order: 1707090**Lab ID:** 1707090-004**Collection Date:** 7/3/2017 1:55:00 PM**Client Sample ID:** MW-5A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 3:54:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 3:54:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 3:54:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 3:54:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	1	7/10/2017 3:54:00 PM	SL441C
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	7/10/2017 3:54:00 PM	SL441C
Surr: Dibromofluoromethane	116	70-130		%Rec	1	7/10/2017 3:54:00 PM	SL441C
Surr: Toluene-d8	103	70-130		%Rec	1	7/10/2017 3:54:00 PM	SL441C

Lab ID: 1707090-005**Collection Date:** 7/3/2017 2:35:00 PM**Client Sample ID:** MW-1A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 4:19:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 4:19:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 4:19:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 4:19:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/10/2017 4:19:00 PM	SL441C
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	7/10/2017 4:19:00 PM	SL441C
Surr: Dibromofluoromethane	116	70-130		%Rec	1	7/10/2017 4:19:00 PM	SL441C
Surr: Toluene-d8	102	70-130		%Rec	1	7/10/2017 4:19:00 PM	SL441C

Lab ID: 1707090-006**Collection Date:** 7/3/2017 3:25:00 PM**Client Sample ID:** MW-6A**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/10/2017 5:33:00 PM	SL441C
Toluene	ND	1.0		µg/L	1	7/10/2017 5:33:00 PM	SL441C
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 5:33:00 PM	SL441C
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 5:33:00 PM	SL441C
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/10/2017 5:33:00 PM	SL441C
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	7/10/2017 5:33:00 PM	SL441C
Surr: Dibromofluoromethane	117	70-130		%Rec	1	7/10/2017 5:33:00 PM	SL441C
Surr: Toluene-d8	102	70-130		%Rec	1	7/10/2017 5:33:00 PM	SL441C

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	Page 2 of 4
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative 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#: 1707090

01-Aug-17

Client: Apex Titan
Project: Lateral K-7 (2012)

Sample ID 100ng Ics	SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batch ID: SL44107		RunNo: 44107							
Prep Date:	Analysis Date: 7/10/2017		SeqNo: 1391701		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			
Toluene	20	1.0	20.00	0	98.8	70	130			
Ethylbenzene	20	1.0	20.00	0	99.6	70	130			
Xylenes, Total	60	1.5	60.00	0	99.3	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Sample ID RB	SampType: MBLK		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: PBW	Batch ID: SL44107		RunNo: 44107							
Prep Date:	Analysis Date: 7/10/2017		SeqNo: 1391702		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		105	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID 1707090-005ams	SampType: MS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: MW-1A	Batch ID: SL44107		RunNo: 44107							
Prep Date:	Analysis Date: 7/10/2017		SeqNo: 1391742		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.2	1.0	8.500	0	108	70	130			
Toluene	8.2	1.0	8.500	0	96.2	70	130			
Ethylbenzene	8.1	1.0	8.500	0	94.7	70	130			
Xylenes, Total	25	1.5	25.50	0	97.9	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		114	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	12		10.00		118	70	130			
Surr: Toluene-d8	10		10.00		101	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 Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1707090

01-Aug-17

Client: Apex Titan
Project: Lateral K-7 (2012)

Sample ID	1707090-005amsd	SampType:	MSD	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	MW-1A	Batch ID:	SL44107	RunNo:	44107					
Prep Date:		Analysis Date:	7/10/2017	SeqNo:	1391743	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	8.9	1.0	8.500	0	104	70	130	3.96	20	
Toluene	8.0	1.0	8.500	0	93.6	70	130	2.75	20	
Ethylbenzene	7.7	1.0	8.500	0	91.1	70	130	3.95	0	
Xylenes, Total	24	1.5	25.50	0	93.8	70	130	4.35	0	
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130	0	0	
Surr: Dibromofluoromethane	12		10.00		118	70	130	0	0	
Surr: Toluene-d8	10		10.00		102	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 Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



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: 1707090

RcptNo: 1

Received By: Andy Freeman 7/4/2017 9:30:00 AM *Andy*

Completed By: Andy Jansson 7/5/2017 8:49:36 AM *Andy*

Reviewed By: *SR* 07/05/17

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Courier

Log In

- 4. Was an attempt made to cool the samples? Yes No NA
- 5. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA
- 6. Sample(s) in proper container(s)? Yes No
- 7. Sufficient sample volume for indicated test(s)? Yes No
- 8. Are samples (except VOA and ONG) properly preserved? Yes No
- 9. Was preservative added to bottles? Yes No NA
- 10. VOA vials have zero headspace? Yes No No VOA Vials
- 11. Were any sample containers received broken? Yes No
- 12. Does paperwork match bottle labels? Yes No # of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
- 13. Are matrices correctly identified on Chain of Custody? Yes No Adjusted? _____
- 14. Is it clear what analyses were requested? Yes No
- 15. Were all holding times able to be met? Yes No Checked by: _____
(If no, notify customer for authorization.)

Special Handling (if applicable)

- 16. Was client notified of all discrepancies with this order? Yes No NA

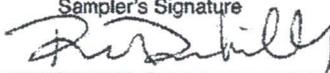
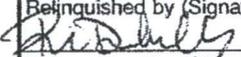
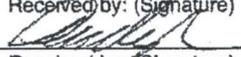
Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

CHAIN OF CUSTODY RECORD

 APEX Office Location <u>Aztec, NM</u>		Laboratory: <u>Hall</u> Address: <u>ABQ, NM</u>		ANALYSIS REQUESTED <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> BTEX Base </div>										Lab use only Due Date:					
		Contact: <u>A. Freeman</u> Phone:												Temp. of coolers when received (C°): <u>23</u>					
Project Manager <u>K Summers</u>		PO/SO #:		Sampler's Name <u>Ranee Deechilly</u>		Sampler's Signature 												Page <u>1</u> of <u>1</u>	
Proj. No.		Project Name <u>Lateral K-7 2012</u>				No/Type of Containers										Lab Sample ID (Lab Use Only) <u>1707090</u>			
Matrix	Date	Time	COED	Garb	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1L	250 ml	Glass Jar	P/O							
W	7/3/17	1155			MW-3A			3					X	-001					
		1235			MW-4A									-002					
		1315			MW-2A									-003					
		1355			MW-5A									-004					
		1435			MW-1A									-005					
		1525			MW-6A									-006					
NFS																			
Turn around time <input checked="" type="checkbox"/> Normal <input type="checkbox"/> 25% Rush <input type="checkbox"/> 50% Rush <input type="checkbox"/> 100% Rush																			
Relinquished by (Signature) 		Date: <u>7/3/17</u> Time: <u>1800</u>		Received by (Signature) 		Date: <u>7/4/17</u> Time: <u>0930</u>		NOTES: <u>Bill to Apex corporate rate</u>											
Relinquished by (Signature)		Date: Time:		Received by (Signature)		Date: Time:													
Relinquished by (Signature)		Date: Time:		Received by (Signature)		Date: Time:													
Relinquished by (Signature)		Date: Time:		Received by (Signature)		Date: Time:													

Matrix Container: WW - Wastewater, W - Water, S - Soil, SD - Solid, L - Liquid, A - Air Bag, C - Charcoal tube, SL - sludge, O - Oil
 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
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 29, 2017

Kyle Summers

Apex Titan

606 S. Rio Grande Suite A

Aztec, NM 87410

TEL: (505) 716-2787

FAX

RE: Lateral K-7 (2012)

OrderNo.: 1709D30

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 6 sample(s) on 9/23/2017 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 #NM0190

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Apex Titan**Client Sample ID:** MW-1A**Project:** Lateral K-7 (2012)**Collection Date:** 9/22/2017 10:45:00 AM**Lab ID:** 1709D30-001**Matrix:** AQUEOUS**Received Date:** 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 12:35:40 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 12:35:40 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 12:35:40 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 12:35:40 PM	B45959
Surr: 4-Bromofluorobenzene	116	72.5-140		%Rec	1	9/28/2017 12:35:40 PM	B45959

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting 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-3A
 Project: Lateral K-7 (2012) Collection Date: 9/22/2017 11:45:00 AM
 Lab ID: 1709D30-002 Matrix: AQUEOUS Received Date: 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 12:59:18 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 12:59:18 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 12:59:18 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 12:59:18 PM	B45959
Surr: 4-Bromofluorobenzene	117	72.5-140		%Rec	1	9/28/2017 12:59:18 PM	B45959

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting 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-4A

Project: Lateral K-7 (2012)

Collection Date: 9/22/2017 12:25:00 PM

Lab ID: 1709D30-003

Matrix: AQUEOUS

Received Date: 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 1:22:52 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 1:22:52 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 1:22:52 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 1:22:52 PM	B45959
Surr: 4-Bromofluorobenzene	112	72.5-140		%Rec	1	9/28/2017 1:22:52 PM	B45959

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting 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-2A

Project: Lateral K-7 (2012)

Collection Date: 9/22/2017 1:10:00 PM

Lab ID: 1709D30-004

Matrix: AQUEOUS

Received Date: 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 4:08:06 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 4:08:06 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 4:08:06 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 4:08:06 PM	B45959
Surr: 4-Bromofluorobenzene	117	72.5-140		%Rec	1	9/28/2017 4:08:06 PM	B45959

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

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting 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-6A
Project: Lateral K-7 (2012) **Collection Date:** 9/22/2017 1:55:00 PM
Lab ID: 1709D30-005 **Matrix:** AQUEOUS **Received Date:** 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 4:31:43 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 4:31:43 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 4:31:43 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 4:31:43 PM	B45959
Surr: 4-Bromofluorobenzene	118	72.5-140		%Rec	1	9/28/2017 4:31:43 PM	B45959

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

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting 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-5A
 Project: Lateral K-7 (2012) Collection Date: 9/22/2017 2:50:00 PM
 Lab ID: 1709D30-006 Matrix: AQUEOUS Received Date: 9/23/2017 2:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/28/2017 4:55:19 PM	B45959
Toluene	ND	1.0		µg/L	1	9/28/2017 4:55:19 PM	B45959
Ethylbenzene	ND	1.0		µg/L	1	9/28/2017 4:55:19 PM	B45959
Xylenes, Total	ND	2.0		µg/L	1	9/28/2017 4:55:19 PM	B45959
Surr: 4-Bromofluorobenzene	118	72.5-140		%Rec	1	9/28/2017 4:55:19 PM	B45959

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

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting 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#: 1709D30

29-Sep-17

Client: Apex Titan
Project: Lateral K-7 (2012)

Sample ID RB	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBW	Batch ID: B45959	RunNo: 45959								
Prep Date:	Analysis Date: 9/28/2017	SeqNo: 1461626			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	24		20.00		119	72.5	140			

Sample ID 100NG BTEX LCS	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSW	Batch ID: B45959	RunNo: 45959								
Prep Date:	Analysis Date: 9/28/2017	SeqNo: 1461627			Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	71.7	126			
Toluene	20	1.0	20.00	0	100	73.3	119			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Xylenes, Total	64	2.0	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	24		20.00		118	72.5	140			

Qualifiers:

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

Sample Log-In Check List

Client Name: APEX AZTEC

Work Order Number: 1709D30

RcptNo: 1

Received By: Andy Freeman 9/23/2017 2:30:00 PM

Andy Freeman

Completed By: Anne Thorne 9/25/2017 8:27:48 AM

Anne Thorne

Reviewed By: IMO 9/25/2017

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

of preserved bottles checked for pH: _____
 (<2 or >12 unless noted)
 Adjusted? _____
 Checked by: _____

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: *Custody seals present & intact

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Yes			



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

December 22, 2017

Kyle Summers

Apex Titan

606 S. Rio Grande Suite A

Aztec, NM 87410

TEL: (505) 716-2787

FAX

RE: Lateral K-7 (2012)

OrderNo.: 1712969

Dear Kyle Summers:

Hall Environmental Analysis Laboratory received 6 sample(s) on 12/15/2017 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan	Client Sample ID: MW-3A
Project: Lateral K-7 (2012)	Collection Date: 12/14/2017 9:10:00 AM
Lab ID: 1712969-001	Matrix: AQUEOUS Received Date: 12/15/2017 7:30:00 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	12/20/2017 1:22:36 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 1:22:36 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 1:22:36 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 1:22:36 PM	R47932
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	12/20/2017 1:22:36 PM	R47932
Surr: Toluene-d8	93.7	70-130		%Rec	1	12/20/2017 1:22:36 PM	R47932

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

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

CLIENT: Apex Titan

Client Sample ID: MW-4A

Project: Lateral K-7 (2012)

Collection Date: 12/14/2017 10:10:00 AM

Lab ID: 1712969-002

Matrix: AQUEOUS

Received Date: 12/15/2017 7:30:00 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	12/20/2017 1:45:38 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 1:45:38 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 1:45:38 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 1:45:38 PM	R47932
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	12/20/2017 1:45:38 PM	R47932
Surr: Toluene-d8	98.0	70-130		%Rec	1	12/20/2017 1:45:38 PM	R47932

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

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting 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-2A

Project: Lateral K-7 (2012)

Collection Date: 12/14/2017 11:10:00 AM

Lab ID: 1712969-003

Matrix: AQUEOUS

Received Date: 12/15/2017 7:30:00 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	12/20/2017 2:08:38 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 2:08:38 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 2:08:38 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 2:08:38 PM	R47932
Surr: 4-Bromofluorobenzene	99.1	70-130		%Rec	1	12/20/2017 2:08:38 PM	R47932
Surr: Toluene-d8	99.7	70-130		%Rec	1	12/20/2017 2:08:38 PM	R47932

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	Page 3 of 8
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative 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-1A

Project: Lateral K-7 (2012)

Collection Date: 12/14/2017 11:55:00 AM

Lab ID: 1712969-004

Matrix: AQUEOUS

Received Date: 12/15/2017 7:30:00 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	12/20/2017 2:31:38 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 2:31:38 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 2:31:38 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 2:31:38 PM	R47932
Surr: 4-Bromofluorobenzene	97.7	70-130		%Rec	1	12/20/2017 2:31:38 PM	R47932
Surr: Toluene-d8	96.3	70-130		%Rec	1	12/20/2017 2:31:38 PM	R47932

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

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

Analytical Report

Lab Order 1712969

Date Reported: 12/22/2017

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Apex Titan**Client Sample ID:** MW-5A**Project:** Lateral K-7 (2012)**Collection Date:** 12/14/2017 12:55:00 PM**Lab ID:** 1712969-005**Matrix:** AQUEOUS**Received Date:** 12/15/2017 7:30:00 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	12/20/2017 2:54:28 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 2:54:28 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 2:54:28 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 2:54:28 PM	R47932
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	1	12/20/2017 2:54:28 PM	R47932
Surr: Toluene-d8	99.6	70-130		%Rec	1	12/20/2017 2:54:28 PM	R47932

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

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting 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-6A

Project: Lateral K-7 (2012)

Collection Date: 12/14/2017 1:50:00 PM

Lab ID: 1712969-006

Matrix: AQUEOUS

Received Date: 12/15/2017 7:30:00 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	12/20/2017 3:17:28 PM	R47932
Toluene	ND	1.0		µg/L	1	12/20/2017 3:17:28 PM	R47932
Ethylbenzene	ND	1.0		µg/L	1	12/20/2017 3:17:28 PM	R47932
Xylenes, Total	ND	1.5		µg/L	1	12/20/2017 3:17:28 PM	R47932
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	1	12/20/2017 3:17:28 PM	R47932
Surr: Toluene-d8	96.4	70-130		%Rec	1	12/20/2017 3:17:28 PM	R47932

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	Page 6 of 8
	D Sample Diluted Due to Matrix	E Value above quantitation range	
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative Limit	RL Reporting 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#: 1712969

22-Dec-17

Client: Apex Titan
Project: Lateral K-7 (2012)

Sample ID	100ng btex lcs		SampType: LCS4	TestCode: EPA Method 8260: Volatiles Short List						
Client ID:	BatchQC		Batch ID: R47932	RunNo: 47932						
Prep Date:			Analysis Date: 12/20/2017	SeqNo: 1535335		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	80	120			
Toluene	21	1.0	20.00	0	106	80	120			
Ethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	62	1.5	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID	rb		SampType: MBLK	TestCode: EPA Method 8260: Volatiles Short List						
Client ID:	PBW		Batch ID: R47932	RunNo: 47932						
Prep Date:			Analysis Date: 12/20/2017	SeqNo: 1535338		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	9.7		10.00		97.2	70	130			
Surr: Toluene-d8	9.7		10.00		97.2	70	130			

Sample ID	1712984-001BMS		SampType: MS4	TestCode: EPA Method 8260: Volatiles Short List						
Client ID:	BatchQC		Batch ID: R47932	RunNo: 47932						
Prep Date:			Analysis Date: 12/20/2017	SeqNo: 1535373		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	30000	500	10000	20800	90.7	80	120			
Toluene	36000	500	10000	30710	48.5	80	120			S
Ethylbenzene	12000	500	10000	3174	86.9	80	120			
Xylenes, Total	40000	750	30000	15670	79.5	80	120			S
Surr: 4-Bromofluorobenzene	4300		5000		86.2	70	130			
Surr: Toluene-d8	4900		5000		98.6	70	130			

Sample ID	1712984-001BMSD		SampType: MSD4	TestCode: EPA Method 8260: Volatiles Short List						
Client ID:	BatchQC		Batch ID: R47932	RunNo: 47932						
Prep Date:			Analysis Date: 12/20/2017	SeqNo: 1535374		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	28000	500	10000	20800	76.7	80	120	4.81	0	S
Toluene	33000	500	10000	30710	25.4	80	120	6.72	0	S
Ethylbenzene	11000	500	10000	3174	80.6	80	120	5.47	0	
Xylenes, Total	37000	750	30000	15670	72.2	80	120	5.70	0	S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1712969

22-Dec-17

Client: Apex Titan
Project: Lateral K-7 (2012)

Sample ID	1712984-001BMSD	SampType:	MSD4	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	R47932	RunNo:	47932					
Prep Date:		Analysis Date:	12/20/2017	SeqNo:	1535374	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	4200		5000		84.3	70	130	0	0	
Surr: Toluene-d8	4900		5000		97.4	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 Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: **APEX AZTEC**

Work Order Number: **1712969**

RcptNo: **1**

Received By: **Anne Thorne** 12/15/2017 7:30:00 AM

Completed By: **Michelle Garcia** 12/15/2017 2:52:41 PM

Reviewed By: **DDS** 12/19/17

Anne Thorne
Michelle Garcia

Chain of Custody

1. Custody seals intact on sample bottles? Yes No Not Present
2. Is Chain of Custody complete? Yes No Not Present
3. How was the sample delivered? Courier

avg 02/13/18

Log In

4. Was an attempt made to cool the samples? Yes No NA
5. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA
6. Sample(s) in proper container(s)? Yes No
7. Sufficient sample volume for indicated test(s)? Yes No
8. Are samples (except VOA and ONG) properly preserved? Yes No
9. Was preservative added to bottles? Yes No NA
10. VOA vials have zero headspace? Yes No No VOA Vials
11. Were any sample containers received broken? Yes No
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes No
13. Are matrices correctly identified on Chain of Custody? Yes No
14. Is it clear what analyses were requested? Yes No
15. 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:

Special Handling (if applicable)

16. 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: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

CHAIN OF CUSTODY RECORD



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

Laboratory: Hall Environmental Analysis Laboratory
Address: 4901 Hawkins NE
Albuquerque, NM 87109
Contact: Al Freeman
Phone: 505-345-3975
PO/SO #: 725040112287

ANALYSIS REQUESTED

Lab use only
Due Date:
Temp. of coolers when received (C°): 1.0
1 2 3 4 5
Page 1 of 1

Project Manager K. Summers
Sampler's Name Ranee Deechilly
Sampler's Signature Ranee Deechilly

Proj. No. 725040112287
Project Name Lateral K-7 2012
No/Type of Containers

Matrix	Date	Time	Co	Op	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1L	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
W	12/14/17	910			MW-3A			3					1712969 - 001
W	12/14/17	1010			MW-4A			3					- 002
W	12/14/17	1110			MW-2A			3					- 003
W	12/14/17	1135			MW-1A			3					- 004
W	12/14/17	1255			MW-5A			3					- 005
W	12/14/17	1350			MW-6A			3					- 006
<u>MP3</u>													

Turn around time Normal 25% Rush 50% Rush 100% Rush

Relinquished by (Signature) <u>Ranee Deechilly</u>	Date: <u>12/14/17</u>	Time: <u>1822</u>	Received by (Signature) <u>[Signature]</u>	Date: <u>12/14/17</u>	Time: <u>1822</u>
Relinquished by (Signature) <u>[Signature]</u>	Date: <u>12/14/17</u>	Time: <u>1911</u>	Received by (Signature) <u>[Signature]</u>	Date: <u>12/15/17</u>	Time: <u>0730</u>
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:

NOTES:
Bill to Apex
Corporate rate

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