PCNG 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:

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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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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 (HgCl₂).

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 μ g/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 μ g/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.

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 Apex cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this scope of services. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Apex's findings and recommendations are based solely upon data available to Apex at the time of these services.

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

Project No. 725040112287



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FIGURE 2

Site Vicinity Map

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

Z \Dallas South\Drafting\2016\725040112220\Figure 2.mxd Modified 2/9/2018 by jsimpson NAD 1983 2011 StatePlane New Mexico Central FIPS 3002 Ft US Coordinate System



Z\Dallas South\Drafting\2016\725040112220\Figure 3.mxd Modified 2/9/2018 by jsimpson NAD 1983 2011 StatePlane New Mexico Central FIPS 3002 Ft US Coordinate System





Z\Dallas South\Drafting\2016\725040112220\Figure 4B.mxd Modified 2/9/2018 by jsimpson NAD 1983 2011 StatePlane New Mexico Central FIPS 3002 Ft US Coordinate System







Z\Dallas South\Drafting\2016\725040112220\Figure 5B.mxd Modified 2/9/2018 by jsimpson NAD 1983 2011 StatePlane New Mexico Central FIPS 3002 Ft US Coordinate System



Z:\Dallas South\Drafting\2016\725040112220\Figure 5C.mxd Modified 2/9/2018 by jsimpson NAD 1983 2011 StatePlane New Mexico Central FIPS 3002 Ft US Coordinate System



APPENDIX B

Tables



		Latera	T al K-7 Septem ROUNDWATER	ABLE 1 Iber 2012 Pipeli ANALYTICAL SUM	ne Release MMARY			
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)
w Mexico Water Qua Groundwater Q	lity Control Commission uality Standards	10	750	750	620	NE	NE	NE
			Monitoring	Wells Installed by AES		- All and a set of the		
	11.20.13	35	140	5.3	77	0.69	<1.0	NA
	2.18.14	34	96	4	58	NA	NA	NA
MW-1	11.11.14	39	240	10	170	NA	NA	NA
	6.23.15	7.4	14	<1.0	8.9	NA	NA	NA
		1	Monitor well remo	oved to allow soil rer	mediation during	August 2015		
	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
MW-2	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
		1	Monitor well remo	oved to allow soil rer	mediation during	August 2015		
	11.20.13	15	31	<2.0	17	0.25	<1.0	NA
	2.18.14	21	33	<1.0	21	NA	NA	NA
MW-3	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
		1	Monitor well remo	oved to allow soil rer	mediation during	August 2015		
	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
MW-4	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
		ſ	Monitor well remo	oved to allow soil rer	mediation during	August 2015		
	11.20.13	90	340	9.6	200	1.7	<1.0	NA
	2.18.14	54	200	10	150	NA	NA	NA
MW-5	11.11.14			Unable to	remove bailer f	rom well		
	6.23.15			Unable to	remove bailer f	rom well		

Monitor well removed to allow soil remediation during August 2015

Ne



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 Qua Groundwater G	ality Control Commission Quality Standards	10	750	750	620	NE	NE	NE
			Monitoring	Wells Installed by Ape	x	and the state of the		
	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
MW-1A	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
	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
MW-2A	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
	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
MW-3A	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
	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
MW-4A	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
	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
MW-5A	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 Qua Groundwater Q	lity Control Commission Quality Standards	10	750	750	620	NE	NE	NE
	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
MW-6A	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 Establised

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



			TABLE 2			
	Late	ral K-7 Sept	ember 2012 F	Pipeline Rele	ase	
	Late	GROUN	DWATER ELEV	ATIONS		
	Dete	Darreth An		Bradwat	TOO Floorting	- Constant and
well I.D.	Date	Product	Depth to water	Thickness	TOC Elevations	Flevation
		(feet BTOC)	(feet BTOC)	(feet)	(feet AMSL)	(feet AMSL)
Constant State		((()	((,
	11.20.13	ND	29.34	ND		6160.78
	2.18.14	ND	29.32	ND	6100.12	6160.80
MW-1	11.11.14	ND	30.14	ND	0190.12	6159.98
	6.23.15	ND	30.26	ND		6159.86
	8.00.15	Monitor	well removed to	allow soil remed	diation during Aug	gust 2015
	11.20.13	ND	29.19	ND		6160.99
	2.18.14	ND	29.17	ND	6190 18	6161.01
MW-2	11.11.14	ND	29.98	ND	0100.10	6160.20
	6.23.15	ND	30.11	ND		6160.07
	8.00.15	Monitor	well removed to	allow soil remed	diation during Aug	gust 2015
	11.20.13	ND	29.61	ND		6160.50
	2.18.14	ND	29.59	ND	6190.11	6160.52
MVV-3	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 soll remed	liation during Au	Just 2015
	11.20.13	ND	28.67	ND		6160.58
MAN A	2.18.14	ND	28.65	ND	6189.25	6160.60
10100-4	6.02.15	ND	29.49	ND		6159.76
	0.23.15	Monitor	29.00	allow soil romor	liation during Au	0159.07
	11 20 12	ND	20.29			6160.69
	2 18 14	ND	30.35	ND	6191.06	6160.71
MW-5	11 11 14	ND	31.20	ND	0101.00	6159.86
	6.23.15		Unable	to remove bailer	from well	0100.00
	8.00.15	Monitor	well removed to	allow soil remed	diation during Au	aust 2015
	12.13.16	ND	30.84	ND	I	6159.31
	3.28.17	ND	30.44	ND		6159.71
MW-1A	7.03.17	ND	30.82	ND	6190.15	6159.33
	10.23.17	ND	30.59	ND		6159.56
	12.14.17	ND	30.50	ND		6159.65
	12.13.16	ND	30.44	ND		6159.81
	3.28.17	ND	30.03	ND		6160.22
MW-2A	7.03.17	ND	30.39	ND	6190.25	6159.86
	10.23.17	ND	30.16	ND		6160.09
	12.14.17	ND	30.05	ND		6160.20
	12.13.16	ND	31.64	ND		6159.85
	3.28.17	ND	31.25	ND		6160.24
MW-3A	7.03.17	ND	31.63	ND	6191.49	6159.86
	10.23.17	ND	31.40	ND	4	6160.09
	12.14.17	ND	31.27	ND		6160.22
	12.13.16	ND	31.63	ND		6160.09
	3.28.17	ND	31.24	ND	6104 70	6160.48
IVIVV-4A	7.03.17	ND	31.64	ND	6191.72	6160.08
	10.23.17		31.41		4	6160.42
	12.14.17	ND	31.30	ND		0100.42



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)
	12.13.16	ND	29.42	ND		6159.66
	3.28.17	ND	29.04	ND]	6160.04
MW-5A	7.03.17	ND	29.42	ND	6189.08	6159.66
	10.23.17	ND	29.20	ND		6159.88
	12.14.17	ND	29.09	ND		6159.99
	12.13.16	ND	29.79	ND		6159.33
	3.28.17	ND	29.40	ND		6159.72
MW-6A	7.03.17	ND	29.77	ND	6189.12	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

OrderNo.: 1707090

Dear Kyle Summers:

RE: Lateral K-7 (2012)

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 <u>www.hallenvironmental.com</u> 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,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Env	viro	nmental Analysi	s Laborato	ory, Iı	ıc.			L	ab Order: 170709 Date Reported: 8/1	0 1/2017	
CLIENT: Project:		Apex Titan Lateral K-7 (2012)					L٤	ıb C)rder: 170'	7090	
Lab ID:		1707090-001			(Collectio	on Date:	7/3	3/2017 11:55:00	AM	
Client Sam	ole II): MW-3A					Matrix:	AC	DUEOUS		
Analyses			Docult	DOI	Qual	Unite		DE	Data Analyzad	D	stah ID
Analyses			Kesuit	rųL	Quai	Units		Dr	Date Analyzeu	Da	
EPA METH	OD 8	260: VOLATILES SHOR	TLIST						A	nalyst	RAA
Benzene			ND	1.0		µg/L		1	7/10/2017 2:40:0	0 PM	SL4410
Toluene			ND	1.0		µg/L		1	7/10/2017 2:40:0	0 PM	SL441C
Ethylbenze	ene		ND	1.0		µg/L		1	7/10/2017 2:40:0	0 PM	SL441C
Xylenes, T	otal		ND	1.5		µg/L		1	7/10/2017 2:40:0	0 PM	SL441C
Surr: 1,2	2-Dich	loroethane-d4	110	70-130		%Rec		1	7/10/2017 2:40:0	0 PM	SL441C
Surr: 4-E	Bromo	fluorobenzene	107	70-130	1	%Rec		1	7/10/2017 2:40:0	0 PM	SL441C
Surr: Dit	oromo	fluoromethane	113	70-130	1	%Rec		1	7/10/2017 2:40:0	0 PM	SL441C
Surr: To	luene	-d8	102	70-130		%Rec		1	7/10/2017 2:40:0	0 PM	SL4410
Lab ID:		1707090-002			(Collectio	on Date:	7/3	3/2017 12:35:00	PM	
Client Sam	ple II	D: MW-4A					Matrix:	A(QUEOUS		
Analyses			Result	PQL	Qual	Units		DF	Date Analyzed	Ba	atch ID
EPA METH		260: VOLATILES SHOR	TLIST						A	nalyst	RAA
Benzene			ND	1.0	1	ua/L		1	7/10/2017 3:05:0	0 PM	SL4410
Toluene			ND	1.0		µa/L		1	7/10/2017 3:05:0	0 PM	SL4410
Ethylbenze	ene		ND	1.0)	µa/L		1	7/10/2017 3:05:0	0 PM	SL4410
Xvlenes, T	otal		ND	1.5		µa/L		1	7/10/2017 3:05:0	0 PM	SL4410
Surr: 1.2	2-Dich	loroethane-d4	111	70-130)	%Rec		1	7/10/2017 3:05:0	0 PM	SL4410
Surr: 4-E	Bromo	ofluorobenzene	105	70-130	1	%Rec		1	7/10/2017 3:05:0	0 PM	SL4410
Surr: Dil	oromo	fluoromethane	117	70-130	1	%Rec		1	7/10/2017 3:05:0	0 PM	SL4410
Surr: To	luene	-d8	101	70-130	1	%Rec		1	7/10/2017 3:05:0	0 PM	SL4410
Lab ID:		1707090-003				Collecti	on Date:	7/3	3/2017 1:15:00 P	M	
Client Sam	ple II	D: MW-2A					Matrix:	A	QUEOUS		
Analyses			Result	PQL	Qual	Units		DF	Date Analyzed	Ba	atch ID
EPA METH		260: VOLATILES SHOR	TLIST						A	nalyst	RAA
Benzene			ND	1.0)	µg/L		1	7/10/2017 3:29:0	0 PM	SL4410
Toluene			ND	1.0	1	µg/L		1	7/10/2017 3:29:0	0 PM	SL4410
Ethylbenze	ene		ND	1.0)	µg/L		1	7/10/2017 3:29:0	0 PM	SL4410
Xylenes, T	otal		ND	1.5	;	µg/L		1	7/10/2017 3:29:0	0 PM	SL4410
Surr: 1,2	2-Dich	loroethane-d4	109	70-130)	%Rec		1	7/10/2017 3:29:0	0 PM	SL4410
Surr: 4-E	Bromo	ofluorobenzene	106	70-130)	%Rec		1	7/10/2017 3:29:0	0 PM	SL4410
Surr: Dil	oromo	fluoromethane	113	70-130)	%Rec		1	7/10/2017 3:29:0	0 PM	SL4410
Surr: To	luene	-d8	99.9	70-130)	%Rec		1	7/10/2017 3:29:0	0 PM	SL4410
Refe	er to t	he QC Summary report a	nd sample logir	h checkl	ist for f	lagged (QC data a	and j	preservation info	rmatic	en.
Qualifiers:	*	Value exceeds Maximum Co	ntaminant Level.		E	3 Analy	te detected	l in th	he associated Method	Blank	
	D	Sample Diluted Due to Matri	x		H	E Value	e above qua	intita	tion range		
	Н	Holding times for preparation	or analysis exceeded	ed	J	J Analy	te detected	belo	ow quantitation limits	Par	relof A
	ND	Not Detected at the Reporting	g Limit		H	P Samp	ole pH Not	In Ra	ange	1 43	50 1 01 4

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Analytical Report

Hall Envi	ro	nmental Analysi	s Laborat	ory, Ir	ıc.			Lab Order: Date Report	1707090 ed: 8/1/2	2017	
CLIENT: Project:		Apex Titan Lateral K-7 (2012)					Lab	Order:	17070)90	
Lab ID:		1707090-004			(Collection	Date: 7/	3/2017 1:5	5:00 PM	[
Client Sample	e ID	: MW-5A				M	atrix: A	OUEOUS			
Analyses			Docult	POI	Qual	Unite	DI	Data An	alvzad	Ro	tch ID
Analyses			Kesun	TQL	Quai	Omts	DI	Date All	aryzeu	Da	
EPA METHO	D 8	260: VOLATILES SHOR	TLIST						Ana	alyst:	RAA
Benzene			ND	1.0		µg/L	1	7/10/201	7 3:54:00	PM	SL4410
Toluene			ND	1.0		µg/L	1	7/10/201	7 3:54:00	PM	SL441C
Ethylbenzene	е		ND	1.0		µg/L	1	7/10/201	7 3:54:00	PM	SL4410
Xylenes, Tota	al		ND	1.5		µg/L	1	7/10/201	7 3:54:00	PM	SL4410
Surr: 1,2-D	Dichl	oroethane-d4	114	70-130		%Rec	1	7/10/201	7 3:54:00	PM	SL4410
Surr: 4-Bro	omo	fluorobenzene	106	70-130		%Rec	1	7/10/201	7 3:54:00	PM	SL4410
Surr: Dibro	omof	luoromethane	116	70-130		%Rec	1	7/10/201	7 3:54:00	PM	SL4410
Surr: Tolue	ene-	d8	103	70-130		%Rec	1	7/10/201	7 3:54:00	PM	SL4410
Lab ID:		1707090-005			(Collection	Date: 7/	3/2017 2:3	5:00 PM	[
Client Sample	e ID): MW-1A				Μ	atrix: A	QUEOUS			
Analyses			Result	PQL	Qual	Units	DI	7 Date An	alyzed	Ba	tch ID
EPA METHO	D 8	260: VOLATILES SHOR	TLIST						Ana	alyst:	RAA
Benzene			ND	1.0		ua/l	1	7/10/201	7 4.19.00	PM	SI 4410
Toluene			ND	1.0		ua/L	1	7/10/201	7 4:19:00	PM	SL4410
Ethylbenzene	e		ND	1.0		ua/L	1	7/10/201	7 4:19:00	PM	SL4410
Xylenes, Tota	al		ND	1.5		µg/L	1	7/10/201	7 4:19:00	PM	SL4410
Surr: 1.2-E	Dichl	oroethane-d4	112	70-130		%Rec	1	7/10/201	7 4:19:00	PM	SL4410
Surr: 4-Bro	omo	fluorobenzene	109	70-130		%Rec	1	7/10/201	7 4:19:00	PM	SL4410
Surr: Dibro	omot	fluoromethane	116	70-130		%Rec	1	7/10/201	7 4:19:00	PM	SL4410
Surr: Tolue	ene-	d8	102	70-130		%Rec	1	7/10/201	7 4:19:00	PM	SL4410
Lab ID:		1707090-006			(Collection	Date: 7/	3/2017 3:2	5:00 PM	[
Client Sample	e ID): MW-6A				Μ	atrix: A	QUEOUS			
Analyses			Result	PQL	Qual	Units	DI	F Date An	alyzed	Ba	tch ID
ΕΡΑ ΜΕΤΗΟ	D 8	260: VOLATILES SHOR	TLIST						Ana	alyst:	RAA
Benzene			ND	1.0		ua/L	1	7/10/201	7 5:33:00	PM	SL4410
Toluene			ND	1.0		ua/L	1	7/10/201	7 5:33:00	PM	SL4410
Ethylbenzene	е		ND	1.0		µg/L	1	7/10/201	7 5:33:00	PM	SL4410
Xylenes, Tota	al		ND	1.5		µg/L	1	7/10/201	7 5:33:00	PM	SL4410
Surr: 1,2-E	Dichl	oroethane-d4	112	70-130		%Rec	1	7/10/201	7 5:33:00	PM	SL4410
Surr: 4-Bro	omo	fluorobenzene	105	70-130		%Rec	1	7/10/201	7 5:33:00	PM	SL4410
Surr: Dibro	omot	fluoromethane	117	70-130		%Rec	1	7/10/201	7 5:33:00	PM	SL4410
Surr: Tolue	ene-	d8	102	70-130		%Rec	1	7/10/201	7 5:33:00	PM	SL4410
Refer	to t	he QC Summary report a	and sample logi	n checkli	st for f	lagged QC	data and	preservatio	on inform	natio	n.
Qualifiers:	*	Value exceeds Maximum Con	ntaminant Level.		E	3 Analyte o	detected in	the associated	l Method E	Blank	
-	D	Sample Diluted Due to Matri	x		F	E Value ab	ove quantit	ation range			
	Н	Holding times for preparation	or analysis exceed	ded	J	Analyte of	detected bel	ow quantitati	on limits	Doc	a) of A
٢	ND	Not Detected at the Reporting	g Limit		I	Sample p	oH Not In R	ange		1 48	C 2 01 4

ND Not Detected at the Reporting Limit PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Analytical Report

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:

Apex Titan Lateral K-7 (2012)

Sample ID 100ng Ics	Samp		s	Test	Code: E	A Method	8260: Volatile	s Short I	ist	
	D	RunNo: 44107								
Dress Dates	Dato Analysis F	11D. 3L	44107	Runno. 44107						
Prep Date:	Analysis L	Date: 11	10/2017	5	eqino: 1	391701	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	Samp	Гуре: МЕ	BLK	Test	Code: EF	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	R	unNo: 4	4107							
Prep Date:	Analysis [Date: 7/	10/2017	S	eqNo: 1	391702	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 11		10.00 10.00		105 107	70 70	130 130			
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	11 11 11		10.00 10.00 10.00		105 107 110	70 70 70	130 130 130			
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8	11 11 11 10		10.00 10.00 10.00 10.00		105 107 110 103	70 70 70 70	130 130 130 130			
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8	11 11 11 10 Samp		10.00 10.00 10.00 10.00	Tes	105 107 110 103	70 70 70 70	130 130 130 130 8260: Volatil e	es Short L	ist	
Sur: 4-Bromofluorobenzene Sur: Dibromofluoromethane Sur: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A	11 11 11 10 Samp ⁻ Batc	Гуре: MS	10.00 10.00 10.00 10.00 5 44107	Tesi	105 107 110 103 tCode: EF	70 70 70 70 PA Method	130 130 130 130 8260: Volatile	es Short L	ist	
Sur: 4-Bromofluorobenzene Sur: Dibromofluoromethane Sur: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date:	11 11 11 10 Samp ⁻ Batc Analysis [Гуре: М h ID: SL Date: 7/	10.00 10.00 10.00 10.00 5 44107 10/2017	Tesi R S	105 107 110 103 Code: Ef Code: 44 SeqNo: 1	70 70 70 70 PA Method 4107 391742	130 130 130 130 8260: Volatile Units: μg/L	es Short L	ist	
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte	11 11 11 10 Samp ⁻ Batc Analysis I Result	Гуре: М \$ h ID: SL Date: 7/ PQL	10.00 10.00 10.00 10.00 5 .44107 10/2017 SPK value	Tesi R S SPK Ref Val	105 107 110 103 Code: Ef Code: Ef Code: 1 Code: 1 Code: 1	70 70 70 PA Method 4107 391742 LowLimit	130 130 130 8260: Volatile Units: μg/L HighLimit	s Short L %RPD	.ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluorobenzene Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene	11 11 11 10 Samp [®] Batc Analysis I Result 9.2	Гуре: М \$ h ID: SL Date: 7/ PQL 1.0	10.00 10.00 10.00 5 .44107 10/2017 SPK value 8.500	Tesi R S SPK Ref Val 0	105 107 110 103 tCode: EF tunNo: 4 seqNo: 1: %REC 108	70 70 70 PA Method 4107 391742 LowLimit 70	130 130 130 8260: Volatile Units: μg/L HighLimit 130	%RPD	.ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluorobenzene Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene	11 11 11 10 Samp ⁻ Batc Analysis I Result 9.2 8.2	Type: MS h ID: SL Date: 7/ PQL 1.0 1.0	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500	Tesi R S SPK Ref Val 0 0	105 107 110 103 Code: EF CunNo: 4 SeqNo: 1: %REC 108 96.2	70 70 70 PA Method 4107 391742 LowLimit 70 70	130 130 130 8260: Volatile Units: μg/L HighLimit 130 130	es Short L %RPD	.ist RPDLimit	Qual
Sur: 4-Bromofluorobenzene Sur: Dibromofluorobenzene Sur: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene Ethylbenzene	11 11 11 10 Samp ⁻ Batc Analysis I Result 9.2 8.2 8.1	Type: MS h ID: SL Date: 7/ PQL 1.0 1.0 1.0	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500 8.500	Tesi R SPK Ref Val 0 0 0	105 107 110 103 COde: EF CunNo: 4 SeqNo: 1 %REC 108 96.2 94.7	70 70 70 70 PA Method 4107 391742 LowLimit 70 70 70 70	130 130 130 8260: Volatile Units: µg/L HighLimit 130 130 130	es Short L %RPD	.ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total	11 11 11 10 Samp Batc Analysis I Result 9.2 8.2 8.1 25	Type: MS h ID: SL Date: 7/ PQL 1.0 1.0 1.0 1.0 1.5	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500 8.500 25.50	Test R SPK Ref Val 0 0 0 0	105 107 110 103 COde: EF CunNo: 4 SeqNo: 1 %REC 108 96.2 94.7 97.9	70 70 70 70 PA Method 4107 391742 LowLimit 70 70 70 70 70	130 130 130 8260: Volatile Units: µg/L HighLimit 130 130 130 130	es Short L %RPD	.ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluorobenzene Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 1,2-Dichloroethane-d4	11 11 11 10 Samp Batc Analysis [<u>Result</u> 9.2 8.2 8.1 25 11	Type: MS h ID: SL Date: 7 / PQL 1.0 1.0 1.0 1.5	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500 8.500 25.50 10.00	Test R SPK Ref Val 0 0 0 0 0 0	105 107 110 103 COde: EF SunNo: 44 SeqNo: 13 %REC 108 96.2 94.7 97.9 114	70 70 70 PA Method 4107 391742 LowLimit 70 70 70 70 70 70	130 130 130 8260: Volatile Units: µg/L HighLimit 130 130 130 130 130	%RPD	ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	11 11 11 10 Samp Batc Analysis I Result 9.2 8.2 8.1 25 11 11	Type: MS h ID: SL Date: 7 / PQL 1.0 1.0 1.0 1.5	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500 8.500 25.50 10.00 10.00	Test R SPK Ref Val 0 0 0 0 0 0	105 107 110 103 COde: EF SunNo: 4 SeqNo: 1: %REC 108 96.2 94.7 97.9 114 107	70 70 70 PA Method 4107 391742 LowLimit 70 70 70 70 70 70 70 70	130 130 130 8260: Volatile Units: μg/L HighLimit 130 130 130 130 130 130	es Short L %RPD	ist RPDLimit	Qual
Surr: 4-Bromofluorobenzene Surr: Dibromofluorobenzene Surr: Toluene-d8 Sample ID 1707090-005ams Client ID: MW-1A Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	11 11 11 10 Samp Batc Analysis I Result 9.2 8.2 8.2 8.1 25 11 11 12	Fype: MS h ID: SL Date: 7 / PQL 1.0 1.0 1.0 1.5	10.00 10.00 10.00 5 44107 10/2017 SPK value 8.500 8.500 8.500 25.50 10.00 10.00 10.00	Test R SPK Ref Val 0 0 0 0 0 0	105 107 110 103 Code: EF SunNo: 4 SeqNo: 1: %REC 108 96.2 94.7 97.9 114 107 118	70 70 70 PA Method 4107 391742 LowLimit 70 70 70 70 70 70 70 70 70	130 130 130 8260: Volatile Units: μg/L HighLimit 130 130 130 130 130 130 130	%RPD	.ist RPDLimit	Qual

Qualifiers:

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

Page 3 of 4

WO#: 1707090

01-Aug-17

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

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

Sample ID 1707090-005ams	d SampT	ype: MS	D	Test	TestCode: EPA Method 8260: Volatiles Short List					
Client ID: MW-1A	Batch	n ID: SL	44107	R	RunNo: 44107					
Prep Date:	Analysis D)ate: 7/	10/2017	S	eqNo: 1	391743	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.
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 4

01-Aug-17



HALL ENVIRONMENTAL ANALYSIS LABORATORY	Environmental A Albuq TEL: 505-345-3975 F Website: www.hall	tnalysis Laborat 4901 Hawkins querque, NM 87 FAX: 505-345-41 lenvironmental.c	NE 109 Samp 107	ele Log-In Check List
Client Name: APEX AZTEC	Work Order Number:	1707090		RoptNo: 1
Received By: Andy Freeman 7 Completed By: Andy Jansson 7 Reviewed By: ST2-C 07/05//7	7/4/2017 9:30:00 AM 7/5/2017 8:49:36 AM 7		and for the second seco	
 Chain of Custody 1. Custody seals intact on sample bottles? 2. Is Chain of Custody complete? 3. How was the sample delivered? 		Yes □ Yes ✔ <u>Counier</u>	No [] No []	Not Present ☑ Not Present □
4. Was an attempt made to cool the samples?		Yes 🔽	No 🗌	
5. Were all samples received at a temperature of	of >0° C to 6.0°C	Yes 🗹	No 🗌	
6. Sample(s) in proper container(s)?		Yes 🗹	No 🗌	
 7. Sufficient sample volume for indicated test(s) 8. Are samples (except VOA and ONG) properly 9. Was preservative added to bottles? 	? r preserved?	Yes 🗹 Yes 🗹	No 🗌 No 🗍 No 🗹	NA 🗔
10.VOA vials have zero headspace? 11. Were any sample containers received broker	17	Yes V 513 Yes	117 No 🗌 No 🗹 =	No VOA Vials
 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) 13. Are matrices correctly identified on Chain of C 14. Is it clear what analyses were requested? 15. Were all holding times able to be met? 	Custody?	Yes 🗹 Yes 🗹 Yes 🗹	No [] No [] No [] No []	bottles checked for pH: (<2 or >12 unless noted) Adjusted? Checked by:
(If no, notify customer for authorization.) Special Handling (if applicable) 16. Was client notified of all discrepancies with th Person Notified:	is order? Date	Yes 🗌	No 🗆	NA 🗹
By Whom: Regarding: Client Instructions: 17. Additional remarks: 18. <u>Cooler Information</u> <u>Cooler No</u> Temp °C Condition Sea 1 2.3 Good Yes	Via: [eMall P	Phone Fax Signed By	
Page 1 of 1				

						CHAIN OF CUSTODY RECOF
				ANALYSIS /		Lab use only
	Laboratory: Hall			REQUESTED		
IAPEX	Address: ABG	INM		/	///	
Office LocationAztec, NM		1		/)		when received (C [*]): -2,3
·	Contact: A.Fr	remain		//	///	14 2 3 4 5
	Phone:			7	///	/ / / Pageof
Project Manager K.Summers	PO/SO #:					
Sampler's Name Range Deechilly	Sampler's Signature	1		AT /	' / / /	
Proj. No. Project Name	7 0 . 0	No/Type of Containe	rs	67/	///	
Cateral K-	F doring	× 0+ 0- 8	8.0		[[]]	1707090
Matrix Date Time m a identifying Ma p b	rks of Sample(s) and d	25 25 25 CC	PA			Lab Sample ID (Lab Use Only)
W 7317 1155 MU	J-3.A	3		X		-00
1 1 235 M	N-YA					-002
1315 Mu	V-2A					_003
1355 M	W-5.4					-004
1435 MU	V-IA					5
V V 1525 M	W-6A	\checkmark		\checkmark		-006
	ARC					
	1413					
	50% Buch D 100% Buch					
Beinguished by (Signature) Date: A D M /	Time: Received by: (Signa	ture) D	ate:/	Time: NOTES	5: 11 J	100
Relinquished by (Signature) Date:	Time: Received by (Signa	ture) D	ate:	Time:	BILTO) stores
Relinquished by (Signature) Date:	Time: Received by: (Signa	iture) C	ate:	Time:	Conpi	ovate late
Relinquished by (Signature) Date:	Time: Received by: (Signa	ture) D	ate:	Time:		
Matrix WW - Wastewater W - Water	S - Soil SD - Solid L - Liquid Class 1 Liter 250 ml -	d A - Air Bag	C - Char	rcoal tube SL - slude	ge O - Oil	

Apex TITAN, Inc. • 606 S. Rio Grande, Suite A, Downstairs • Aztec, New Mexico 87410 • Office: 505-334-5200 • Fax: 505-334-5204



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

OrderNo.: 1709D30

Dear Kyle Summers:

RE: Lateral K-7 (2012)

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 <u>www.hallenvironmental.com</u> 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,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan			Client Samj	ple 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 Qua	l 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 B4595
Toluene	ND	1.0	µg/L	1 9/28/2017 12:35:40 PM B4595
Ethylbenzene	ND	1.0	µg/L	1 9/28/2017 12:35:40 PM B4595
Xylenes, Total	ND	2.0	µg/L	1 9/28/2017 12:35:40 PM B4595
Surr: 4-Bromofluorobenzene	116	72.5-140	%Rec	1 9/28/2017 12:35:40 PM B4595

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 7
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report Lab Order 1709D30

Date Reported: 9/29/2017

CLIENT: Apex Titan Client Sample ID: MW-3A Project: Lateral K-7 (2012) Collection Date: 9/22/2017 11:45:00 AM 1709D30-002 Lab ID: 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 9/28/2017 12:59:18 PM B45959 µg/L 1 Ethylbenzene ND 1.0 µg/L 9/28/2017 12:59:18 PM B45959 1 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.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	e of range due to dilution or matrix W Sample container tem	

Hall Environmental Analysis Laboratory, Inc.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan		0	lient San	ple ID: MW-4A
Project: Lateral K-7 (2012)			Collectio	n Date: 9/22/2017 12:25:00 PM
Lab ID: 1709D30-003	Matrix:	AQUEOUS	Receive	d 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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 7
	ND	Not Detected at the Reporting Limit	Р	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-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 B4595		
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		

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 7
	ND	Not Detected at the Reporting Limit	Р	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 temperatu		Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan		(Client Sam	ple ID: MW-6A
Project: Lateral K-7 (2012)			Collection	Date: 9/22/2017 1:55:00 PM
Lab ID: 1709D30-005	Matrix:	AQUEOUS	Receive	I 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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method B	lank	
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range		
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 5 of 7	
	ND Not Detected at the Reporting Limit		Р	Sample pH Not In Range	1 age 5 01 7	
	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-5A					
Project: Lateral K-7 (2012)			Collection	Date: 9/2	22/2017 2:50:00 PM	
Lab ID: 1709D30-006	Matrix:	AQUEOUS	Received	Date: 9/2	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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 6 of 7
	ND	Not Detected at the Reporting Limit	Р	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 SUI	MMARY REPORT	
Hall Env	vironmental Analysis Laboratory, I	nc.

Client:Apex TitanProject:Lateral K-7 (2012)

Sample ID RB	SampT	ype: ME	BLK	Test	Code: El	PA Method	8021B: Volat	iles		
Client ID: PBW	Batch	n ID: B4	5959	R	unNo: 4	5959				
Prep Date:	Analysis D)ate: 9/	28/2017	S	eqNo: 1	461626	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	Samp1	ype: LC	S	Tes	tCode: E	PA Method	8021B: Volat	iles		
Sample ID 100NG BTEX LCS Client ID: LCSW	SampT Batch	ype: LC	S 5959	Tes	tCode: E	PA Method 5959	8021B: Volat	iles		
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date:	SampT Batch Analysis D	ype: LC h ID: B4 Date: 9/	S 5959 28/2017	Tes F S	Code: E RunNo: 4 SeqNo: 1	PA Method 5959 461627	8021B: Volat Units: μg/L	iles		
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date: Analyte	S SampT Batch Analysis D Result	ype: LC h ID: B4 Date: 9/ PQL	5959 28/2017 SPK value	Tes F S SPK Ref Val	Code: E RunNo: 4 SeqNo: 1 %REC	PA Method 5959 461627 LowLimit	8021B: Volat Units: μg/L HighLimit	iles %RPD	RPDLimit	Qual
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date: Analyte Benzene	S SampT Batch Analysis D Result 20	ype: LC h ID: B4 Date: 9/ PQL 1.0	S 5959 28/2017 SPK value 20.00	Tes F S SPK Ref Val 0	Code: E RunNo: 4 GeqNo: 1 <u>%REC</u> 101	PA Method 5959 461627 LowLimit 71.7	8021B: Volat Units: µg/L HighLimit 126	iles %RPD	RPDLimit	Qual
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date: Analyte Benzene Toluene	S SampT Batch Analysis D Result 20 20	Type: LC h ID: B4 Date: 9/ PQL 1.0 1.0	S 5959 28/2017 SPK value 20.00 20.00	Tes F S SPK Ref Val 0 0	Code: E RunNo: 4 BeqNo: 1 %REC 101 100	PA Method 5959 461627 LowLimit 71.7 73.3	8021B: Volat Units: μg/L HighLimit 126 119	iles %RPD	RPDLimit	Qual
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date: Analyte Benzene Toluene Ethylbenzene	SampT Batch Analysis D Result 20 20 21	Type: LC h ID: B4 Date: 9/ PQL 1.0 1.0 1.0	S 5959 28/2017 SPK value 20.00 20.00 20.00	Tes F S SPK Ref Val 0 0 0	Code: E RunNo: 4 SeqNo: 1 %REC 101 100 107	PA Method 5959 461627 LowLimit 71.7 73.3 80	8021B: Volat Units: µg/L HighLimit 126 119 120	iles %RPD	RPDLimit	Qual
Sample ID 100NG BTEX LCS Client ID: LCSW Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total	SampT Batch Analysis D Result 20 20 21 64	Type: LC h ID: B4 Date: 9/ PQL 1.0 1.0 1.0 2.0	S 5959 28/2017 SPK value 20.00 20.00 20.00 60.00	Tes F S SPK Ref Val 0 0 0 0 0	Code: E RunNo: 4 SeqNo: 1 %REC 101 100 107 106	PA Method 5959 461627 LowLimit 71.7 73.3 80 80	8021B: Volat Units: µg/L HighLimit 126 119 120 120	iles %RPD	RPDLimit	Qual

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

WO#: **1709D30**

29-Sep-17

Page 7 of 7

HALL ENVIRONN ANALYSIS LABORATO	MENTAL DRY	Hall Environmental Albu Albu TEL: 505-345-3975 Website: www.hal	Analys 490 querq FAX: Ilenvir	sis Laboratory 1 Hawkins NE ue, NM 87109 505-345-4107 onmental.com	Sar	nple Log-In Check List
Client Name: APE	X AZTEC	Work Order Number:	1709	9D30		RcptNo: 1
Received By: An	dy Freeman	9/23/2017 2:30:00 PM		2	mbel	-
Completed By: An	ne Thorne	9/25/2017 8:27:48 AM			n N	
Reviewed By:	IMO 4	25/2017		2	Anne Mr	
Chain of Custody	2					
1. Is Chain of Custod	y complete?		Yes	\checkmark	No 🗌	Not Present
2. How was the samp	ble delivered?		Cou	rier		
Log In 3. Was an attempt ma	ade to cool the samples?		Yes	\checkmark	No 🗌	NA 🗌
4. Were all samples re	eceived at a temperature o	f >0° C to 6.0°C	Yes		No 🗌	
5. Sample(s) in prope	er container(s)?		Yes		No 🗌	
6. Sufficient sample ve	olume for indicated test(s)?	?	Yes	\checkmark	No 🗌	
7. Are samples (except	ot VOA and ONG) properly	preserved?	Yes	\checkmark	No 🗌	
8. Was preservative a	dded to bottles?		Yes		No 🗹	NA 🗌
9. VOA vials have zer	o headspace?		Yes	\checkmark	No 🗌	No VOA Vials
10. Were any sample of	containers received broken	?	Yes		No 🗹	# of preserved bottles checked
11. Does paperwork ma (Note discrepancies	atch bottle labels? s on chain of custody)		Yes		No 🗌	for pH: (<2 or >12 unless noted)
12. Are matrices correc	ctly identified on Chain of C	ustody?	Yes	\checkmark	No 🗌	Adjusted?
13. Is it clear what anal	lyses were requested?		Yes	\checkmark	No 🗌	
14. Were all holding tim (If no, notify custom	nes able to be met? ner for authorization.)		Yes	\checkmark	No 🗌	Checked by:
Special Handling	(if applicable)					
15. Was client notified	of all discrepancies with th	is order?	Yes		No 🗌	NA 🗹
Person Notifi	ied:	Date			u alta da faista an	
By Whom:	<u> </u>	Via:	eM	ail 🗌 Phon	e 🗌 Fax	In Person
Regarding:			n, Print, Royal And	ne antenen e jour hand an de en alantean er verangele ha		Advancement and a first of the constrained of the material and the material and the first of the material and the and the material and the materi
Client Instruc	ctions:					
16. Additional remarks	s: * Cirstoric Sec	als preserve	4	inta et	-	
17. <u>Cooler Information</u>						1
1 3.1	Good Yes	ai intact Seal No S	eal D	ate Sig	ned By	1

						CHAIN OF CUSTODY RECORD
×	Hall Enu Laboratory: Analys	ironmental	574	ANALYSI: REQUES	S TED	Lab use only Due Date:
IAPEX	Address 4901 Ha	Wins ME)			1 1 1
Office ocation	Albuque nous n	IM 87100	7			/ / Temp. of coolers O / C when received (C°):
LODIO S. Riolarando, Suite A	Contact: A Freen	100				
Anter NIM 87411)	Phone: 505- 31	1- 297	5			
Project Manager & Sidim m Brg	PO/20 # 72504	112:287		À	+ / / / /	
Sampler's Name	Sampler's Signature			H		
Ranee Deechilly 6	Ridulis	1		- R		
Proj. No. / Project Name	(2010)	No/Type of Cont	ainers	2		
725040112287 Lateral K-F	(2012)			1 7 /		
Matrix Date Time O r Identifying Mari	ks of Sample(s)	A/G 250	Glass Jar P/O			Lab Sample ID (Lab Use Only)
W 9/22/17/1045 MW	-1A	3		X		1709230001
W 9/20/17 1145 MW	-3A	3		X		702
W 9/22/17 1225 MM	1-4A	3		X		703
W 9/23/17 1317 MI	N-24	3		X		704
W 9/22/17 1255 MU	N-GA	2		X		-105
W 9122112 1450 MA	MEA	3		1		101-
	VV-574			X		
	HARS .					
	IV I PAD					
Turn around time Normal 25% Rush	50% Rush 🔲 100% Rush					
Relinquished by (Signature) Date:	ime: Received by (Signe	iture)	Date:	Time:	NOTES:	
Relinquished by (Signature) Date:	ime: Received by (Signa	ture)	Date:	Time:	Bill to A	tpex
Belinguished by (Signature)	ime: Beceived by: (Stans	(L	7/ 4/17 Date:	1930 Time:	ie	poraterate
	Theory of the course of the co		Date.	Time.		
Relinquished by (Signature) Date: T	ime: Received by: (Signa	iture)	Date:	Time:	3.100	
Matrix WW - Wastewater W - Water S	- Soil SD - Solid L - Liquit	d A - Air Bag	C - Char	rcoal tube	SL - sludge O - Oil	N

Apex TITAN, Inc. • 606 S. Rio Grande, Suite A, Downstairs • Aztec, New Mexico 87410 • Office: 505-334-5200 • Fax: 505-334-5204



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquergue, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

December 22, 2017

Kyle Summers Apex Titan 606 S. Rio Grande Suite A Aztec, NM 87410 TEL: (505) 716-2787 FAX

OrderNo.: 1712969

RE: Lateral K-7 (2012)

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 <u>www.hallenvironmental.com</u> 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,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report	
Lab Order 1712969	

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 Qu	al Units	DF	Date Analyzed	Batch			
EPA METHOD 8260: VOLATILES S	HORT 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			

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 8
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report Lab Order 1712969

Date Reported: 12/22/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan			Client Samp	le ID: M	W-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 Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SH	ORT 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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 8
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report	
Lab Order 1712969	

12/20/2017 2:08:38 PM R47932

12/20/2017 2:08:38 PM R47932

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 PQL Qual Units **DF** Date Analyzed Analyses Result Batch **EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: AG 12/20/2017 2:08:38 PM R47932 Benzene ND 1.0 µg/L 1 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

70-130

70-130

%Rec

%Rec

1

1

99.1

99.7

Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

Surr: Toluene-d8

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 8
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report	
Lab Order 1712969	

CLIENT: Apex Titan			Client Sampl	e ID: MV	W-1A	
Project: Lateral K-7 (2012)			Collection	Date: 12/	14/2017 11:55:00 AM	
Lab ID: 1712969-004	Matrix: A	AQUEOUS	Received	Date: 12/	15/2017 7:30:00 AM	
Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SI	ORT 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

Hall Environmental Analysis Laboratory, Inc.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 8
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report	
Lab Order 1712969	

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Apex Titan			Client Samp	le ID: M	W-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 Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SH	ORT 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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 8
	ND	Not Detected at the Reporting Limit	Р	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

Analytical Report	
Lab Order 1712969	

Hall Environmental Analysis Laboratory, Inc. Client Sample ID: MW-6A CLIENT: Apex Titan **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 Qua	l Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT	T 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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 6 of 8
	ND	Not Detected at the Reporting Limit	Р	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.

Client: Ap Project: La

Apex Titan Lateral K-7 (2012)

Sample ID 10	00ng btex lcs	SampT	ype: LC	S4	TestCode: EPA Method 8260: Volatiles Short List						
Client ID: B	BatchQC	Batch	n ID: R4	7932	RunNo: 47932						
Prep Date:		Analysis D	ate: 12	2/20/2017	S	eqNo: 1	535335	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-Bromofl	fluorobenzene	9.1		10.00		90.9	70	130			
Surr: Toluene-d	d8	10		10.00		100	70	130			
Sample ID rt	b	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8260: Volatile	es Short L	.ist	
Client ID: P	PBW	Batch	n ID: R4	7932	R	RunNo: 4	7932				
Prep Date:		Analysis D	ate: 12	2/20/2017	S	eqNo: 1	535338	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-Bromofl	fluorobenzene	9.7		10.00		97.2	70	130			
Surr: Toluene-o	d8	9.7		10.00		97.2	70	130			
				Sample ID 1712984-001BMS SampType: MS4 TestCode: EPA Method 8260: Volatiles Short List							
Sample ID 1	712984-001BMS	SampT	ype: MS	54	Tes	tCode: El	PA Method	8260: Volatil	es Short L	.ist	
Sample ID 1 Client ID: B	712984-001BMS BatchQC	Samp1 Batcl	ype: M S	54 7932	Tes	tCode: El RunNo: 4	PA Method 7932	8260: Volatil	es Short L	.ist	
Sample ID 1 Client ID: B Prep Date:	712984-001BMS BatchQC	SampT Batch Analysis D	ype: MS n ID: R4 Date: 12	54 7932 2/20/2017	Tes F S	tCode: El RunNo: 4 SeqNo: 1	PA Method 7932 535373	8260: Volatile Units: µg/L	es Short L	ist	
Sample ID 1 Client ID: B Prep Date: Analyte	712984-001BMS 3atchQC	Samp Batch Analysis D Result	Type: MS n ID: R4 Date: 12 PQL	54 7932 2/20/2017 SPK value	Tes F S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 7932 535373 LowLimit	8260: Volatil α Units: μ g/L HighLimit	es Short L %RPD	.ist RPDLimit	Qual
Sample ID 1' Client ID: B Prep Date: Analyte Benzene	712984-001BMS BatchQC	SampT Batc Analysis D Result 30000	Type: MS n ID: R4 Date: 12 PQL 500	54 7932 2/20/2017 SPK value 10000	Tes F S SPK Ref Val 20800	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7	PA Method 7932 535373 LowLimit 80	8260: Volatile Units: µg/L HighLimit 120	%RPD	ist RPDLimit	Qual
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene	712984-001BMS BatchQC	Samp Batcl Analysis E Result 30000 36000	Type: MS n ID: R4 Date: 12 PQL 500 500	54 7932 2/20/2017 SPK value 10000 10000	Tes F SPK Ref Val 20800 30710	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5	PA Method 7932 535373 LowLimit 80 80	8260: Volatile Units: µg/L HighLimit 120 120	es Short L %RPD	ist RPDLimit	Qual
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene	712984-001BMS BatchQC	Samp Batcl Analysis I Result 30000 36000 12000	Type: MS n ID: R4 Date: 12 PQL 500 500 500	54 7932 2/20/2017 SPK value 10000 10000 10000	Tes F SPK Ref Val 20800 30710 3174	tCode: El RunNo: 4 SeqNo: 1 <u>%REC</u> 90.7 48.5 86.9	PA Method 7932 535373 LowLimit 80 80 80 80	8260: Volatile Units: µg/L HighLimit 120 120 120	es Short L %RPD	ist RPDLimit	Qual S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total	712984-001BMS 3atchQC	Samp Batcl Analysis E Result 30000 36000 12000 40000	ype: MS n ID: R4 Date: 12 PQL 500 500 500 750	54 7932 2/20/2017 SPK value 10000 10000 10000 30000	Tes F SPK Ref Val 20800 30710 3174 15670	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5	PA Method 7932 535373 LowLimit 80 80 80 80 80 80	8260: Volatile Units: μg/L HighLimit 120 120 120 120	es Short L %RPD	ist RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofi	fluorobenzene	Samp Batc Analysis E Result 30000 36000 12000 40000 4300	ype: MS n ID: R4 Date: 12 PQL 500 500 500 750	54 7932 2/20/2017 SPK value 10000 10000 30000 5000	Tes F SPK Ref Val 20800 30710 3174 15670	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2	PA Method 7932 535373 LowLimit 80 80 80 80 80 70	8260: Volatile Units: μg/L HighLimit 120 120 120 120 120 130	es Short L %RPD	ist RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofi Surr: Toluene-	fluorobenzene	Samp Batcl Analysis D Result 30000 36000 12000 40000 4300 4900	ype: MS n ID: R4 Date: 1 2 PQL 500 500 500 750	54 7932 2/20/2017 SPK value 10000 10000 10000 30000 5000 5000	Tes F SPK Ref Val 20800 30710 3174 15670	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6	PA Method 7932 535373 LowLimit 80 80 80 80 80 70 70 70	8260: Volatile Units: µg/L HighLimit 120 120 120 120 130 130	%RPD	RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene-C Sample ID 1	1712984-001BMS BatchQC fluorobenzene d8	Samp Batc Analysis E Result 30000 36000 12000 40000 4300 4900 Samp	ype: MS n ID: R4 Date: 12 PQL 500 500 500 750	54 7932 2/20/2017 SPK value 10000 10000 30000 5000 5000 5000	Tes F SPK Ref Val 20800 30710 3174 15670 Tes	tCode: EI RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: EI	PA Method 7932 535373 LowLimit 80 80 80 80 70 70 70 PA Method	8260: Volatile Units: μg/L HighLimit 120 120 120 120 130 130 8260: Volatile	es Short L %RPD	ist RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromofi Surr: Toluene-(Sample ID 1 Client ID: B	1712984-001BMS BatchQC fluorobenzene -d8 1712984-001BMSE BatchQC	Samp Batcl Analysis I Result 30000 36000 12000 40000 4300 4300 4300 5 Samp Batcl	ype: MS n ID: R4 Date: 12 PQL 500 500 500 750	54 7932 2/20/2017 SPK value 10000 10000 10000 30000 5000 5000 5000	Tes F SPK Ref Val 20800 30710 3174 15670 Tes	tCode: EI RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: EI RunNo: 4	PA Method 7932 535373 LowLimit 80 80 80 80 70 70 70 PA Method 7932	8260: Volatile Units: μg/L HighLimit 120 120 120 120 130 130 8260: Volatile	es Short L %RPD	ist RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene-d Sample ID 1 Client ID: B Prep Date:	fluorobenzene d8 712984-001BMS fluorobenzene d8 712984-001BMSE BatchQC	Samp Batc Analysis E Result 30000 36000 12000 40000 4300 40000 4300 4900 D Samp Batc Analysis E	Type: MS n ID: R4 Date: 12 500 500 500 750 Type: MS n ID: R4 Date: 12	54 7932 2/20/2017 SPK value 10000 10000 30000 5000 5000 5000 5000 5	Tes F SPK Ref Val 20800 30710 3174 15670 Tes F S	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: El RunNo: 4 SeqNo: 1	PA Method 7932 535373 LowLimit 80 80 80 80 70 70 PA Method 7932 535374	8260: Volatile Units: μg/L HighLimit 120 120 120 120 130 130 8260: Volatile Units: μg/L	es Short L %RPD	ist RPDLimit	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene-c Sample ID 1 Client ID: B Prep Date: Analyte	1712984-001BMS BatchQC fluorobenzene -d8 1712984-001BMSE BatchQC	Samp Batcl Analysis I Result 30000 36000 12000 40000 4300 4300 4900 Samp Batcl Analysis I Result	ype: MS n ID: R4 PQL 500 500 500 750 750 Type: MS n ID: R4 Date: 12 PQL	54 7932 2/20/2017 SPK value 10000 10000 30000 5000 5000 5000 5000 5	Tes 5 5 5 5 7 7 8 7 8 7 8 7 8 7 8 7 8 8 8 7 8	tCode: El RunNo: 4 SeqNo: 1: %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: El RunNo: 4 SeqNo: 1 %REC	PA Method 7932 535373 LowLimit 80 80 80 80 80 70 70 70 PA Method 7932 535374 LowLimit	8260: Volatili Units: μg/L HighLimit 120 120 120 120 130 130 8260: Volatili Units: μg/L HighLimit	es Short L %RPD es Short L %RPD	ist RPDLimit ist	Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene-C Sample ID 1 Client ID: B Prep Date: Analyte Benzene	1712984-001BMS BatchQC fluorobenzene d8 1712984-001BMSE BatchQC	Samp Batcl Analysis I Result 30000 36000 12000 40000 4300 4300 4900 Samp Batcl Analysis I Result 28000	ype: MS n ID: R4 PQL 500 500 750 750 750 750 750 750 750 750	54 7932 2/20/2017 SPK value 10000 10000 30000 5000 5000 5000 5000 5	Tes F SPK Ref Val 20800 30710 3174 15670 Tes F SPK Ref Val 20800	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: El RunNo: 4 SeqNo: 1 %REC 76.7	PA Method 7932 535373 LowLimit 80 80 80 80 80 70 70 70 PA Method 7932 535374 LowLimit 80	8260: Volatili Units: μg/L HighLimit 120 120 120 120 130 130 8260: Volatili Units: μg/L HighLimit 120	es Short L %RPD es Short L %RPD 4.81	ist RPDLimit ist RPDLimit 0	Qual S S Qual S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene-C Sample ID 1 Client ID: B Prep Date: Analyte Benzene Toluene	1712984-001BMS BatchQC fluorobenzene -d8 1712984-001BMSE BatchQC	Samp Batcl Analysis E Result 30000 36000 12000 40000 4300 4300 4900 Samp Batcl Analysis E Result 28000 33000	ype: MS n ID: R4 PQL 500 500 750 750 Fype: MS n ID: R4 Date: 12 PQL 500 500	54 7932 2/20/2017 SPK value 10000 10000 30000 5000 5000 5000 5000 5	Tes 5 5 5 5 5 7 6 7 6 7 7 6 7 7 6 7 7 6 7 7 8 7 7 8 5 7 7 8 7 8 7 7 8 7 8 7 8 7	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: El RunNo: 4 SeqNo: 1 %REC 76.7 25.4	PA Method 7932 535373 LowLimit 80 80 80 80 80 70 70 70 PA Method 7932 535374 LowLimit 80 80	8260: Volatili Units: µg/L HighLimit 120 120 120 120 130 130 8260: Volatili Units: µg/L HighLimit 120 120	es Short L %RPD es Short L %RPD 4.81 6.72	ist RPDLimit ist RPDLimit 0 0	Qual S S Qual S S
Sample ID 1' Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 4-Bromoff Surr: Toluene- Sample ID 1 Client ID: B Prep Date: Analyte Benzene Toluene Ethylbenzene	fluorobenzene d8 I712984-001BMSE BatchQC	Samp Batcl Analysis E Result 30000 36000 12000 40000 4300 4900 9 Samp Batcl Analysis E Result 28000 33000 11000	Type: MS or ID: R4 Date: 12 PQL 500 500 500 500 750 Fype: MS MID: R4 Date: 12 PQL 500 500 500 500 500 500 500 500 500	54 7932 2/20/2017 SPK value 10000 10000 30000 5	Tes 5 5PK Ref Val 20800 30710 3174 15670 Tes 5 5PK Ref Val 20800 30710 3174	tCode: El RunNo: 4 SeqNo: 1 %REC 90.7 48.5 86.9 79.5 86.2 98.6 tCode: El RunNo: 4 SeqNo: 1 %REC 76.7 25.4 80.6	PA Method 7932 535373 LowLimit 80 80 80 80 70 70 70 PA Method 7932 535374 LowLimit 80 80 80	8260: Volatile Units: µg/L HighLimit 120 120 120 120 130 130 8260: Volatile Units: µg/L HighLimit 120 120 120	es Short L %RPD es Short L %RPD 4.81 6.72 5.47	ist RPDLimit ist RPDLimit 0 0 0	Qual S S Qual S 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 Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1712969 22-Dec-17

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

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

Sample ID 1712984-001BMSD	SampType: M	SD4	TestCode: EPA Method 8260: Volatiles Short List						
Client ID: BatchQC	Batch ID: R	47932	R	unNo: 4	7932				
Prep Date:	Analysis Date: 1	2/20/2017	S	eqNo: 1	535374	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
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

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22-Dec-17

WO#: 1712969

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental A Albuq TEL: 505-345-3975 F Website: www.hall	nalysis 4901 werque FAX: 50 enviroi	Laboratory Hawkins NE 2, NM 87109 05-345-4107 amental.com	Sam	ple Log-In Check List
Client Name: APEX AZTEC	Work Order Number:	17129	69		RcptNo: 1
Received By:Anne ThorneCompleted By:Michelle GarciaReviewed By:DDS	12/15/2017 7:30:00 AM 12/15/2017 2:52:41 PM しこししらして		-1	Ann H- Minus Ga	nue
 Chain of Custody 1. Custody seals intact on sample bottles? 2. Is Chain of Custody complete? 3. How was the sample delivered? 		Yes Yes <u>Cour</u>	r ✓ Mer	02/13 No No	Not Present
Log In				No. 🖂	NA 🗔
4. Was an attempt made to cool the samples?		Yes	V		
5. Were all samples received at a temperature	of >0° C to 6.0°C	Yes	\checkmark	No	NA
6. Sample(s) in proper container(s)?		Yes	\checkmark	No	
7. Sufficient sample volume for indicated test(s	3)?	Yes	✓	No	
8. Are samples (except VOA and ONG) proper	ly preserved?	Yes	~	No	
9. Was preservative added to bottles?		Yes		No 🗸	NA
10. VOA vials have zero headspace?		Yes	v	No	No VOA Vials
11. Were any sample containers received broke	en?	Yes		No 🗸	# of preserved
12. Does paperwork match bottle labels?		Yes	\checkmark	No	for pH:
(Note discrepancies on chain of custody)	Custodu2	Vac	1	No	Adjusted?
14 Is it clear what analyses were requested?	Custody	Ves	~	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes	V	No	Checked by:
Special Handling (if applicable)					
16. Was client notified of all discrepancies with	this order?	Yes		No	NA 🗸
Person Notified:	Date	af urladon nan	AND A CONTRACTOR OF THE OWNER.	an a	
By Whom:	Via:	eMa	il 🗌 Phor	ne 🗌 Fax	In Person
Regarding:					
Client Instructions:					
17. Additional remarks:					
18. <u>Cooler Information</u>					
Cooler No Temp °C Condition Se	eal Intact Seal No S	eal Da	ite Sig	gned By	
1 1.0 Good Yes	5				
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