

Soil Assessment Report

Avalon Compressor Station Release 2RP-4848 Eddy County, New Mexico

ETC Texas Pipeline, LTD.





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1. Introduction

GHD is pleased to present this Soil Assessment Report to ETC Texas Pipeline, LTD. (ETC) for the Avalon Compressor Station release location (hereafter referred to as the "Site"). The Site is located on land owned by the State of New Mexico in Unit K, Section 20, Township 26 South, Range 28 East, approximately 14-miles south of Malaga, in southern Eddy County, New Mexico (refer to Figure 1). The coordinates of the release location are Latitude 32.026186 and Longitude - 104.117172. The release occurred on the northwest portion of the Site on the caliche covered surface.

2. NMOCD Closure Requirement Criteria for Soils

Subsurface investigation activities were completed in accordance with the revised and reissued Guidelines for Remediation of Leaks, Spills, and Releases Rule 19.15.29 New Mexico Administrative Code (NMAC) from the NMOCD issued on August 14, 2018. The following criteria from Table 1 (below) within NMAC 19.15.29.12 was utilized to determine site-specific screening limits:

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/I TDS	Constituent	Limit*
<u>≤</u> 50 feet	Chloride**	600 mg/kg
	TPH	
	(GRO+DRO+MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg
* Numerical limits or natural background level, whichever is	areater	

" Numerical limits or natural background level, whichever is greater.

** This applies to release of produced water or other fluids which may contain chloride.

Localized depth to groundwater was estimated at a depth of approximately 15 to 20 feet below ground surface (bgs) based on depth to water records available on the United States Geological Survey (USGS) National Water System Information map. The nearest well to the site is approximately 1.38 miles to the west. Well records showing groundwater measurement data are included in Appendix A. Information available from various sources including the Petroleum Recovery Research Center (PRRC) Mapping Portal and the United States Geological Survey (USGS) Current Water Database for the Nation concludes:

- a) the depth to groundwater at the Site is less than 50-feet bgs;
- b) the site is not within 300 feet of any continuously flowing watercourse;
- c) the site is not within 200 feet of any lakebed, sinkhole or playa lake;
- d) the site is not within 300 feet of an occupied permanent residence, school, etc.;
- e) the site is not within 500 feet of a spring or private, domestic fresh water well;
- f) the site is not within 1,000 feet of any fresh water well or spring;

- g) the site is not within incorporated municipal boundaries or within a defined municipal fresh water well field;
- h) the site is not within 300 feet of a wetland;
- i) the site is not within an area overlying a subsurface mine;
- j) the site is not within an unstable area; and
- k) the site is not within a 100-year floodplain.

Consequently, the anticipated site-specific screening limits based on currently available data to be applied to this location by the NMOCD based on the revised Rule are <u>10 mg/kg for benzene</u>, <u>50 mg/kg for total benzene</u>, toluene, ethylbenzene, and total xylenes (BTEX), 100 mg/kg for total petroleum hydrocarbon (TPH) including gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (MRO), and 600 mg/kg for chloride.

Additionally, per NMAC19.15.29.13 (Restoration, Reclamation, and Re-vegetation), the impacted area must be remediated a minimum of 4-feet bgs with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Soil cover must consist of topsoil at a thickness comparable to background topsoil thicknesses, or one foot of suitable earthen material capable of establishing and maintaining vegetation at the site. Reclamation is considered complete when all disturbed areas have established vegetative cover with a life-form ratio of plus or minus 50 percent of pre-remedial levels, and plant cover of a minimum of 70 percent of previous levels, excluding noxious weeds.

3. **Project Information and Background**

According to the New Mexico Oil Conservation Division (NMOCD) Release Notification and Corrective Action Form C-141 submitted to the agency by ETC, the release occurred on July 5, 2018 and was reported to the Artesia District II NMOCD office on July 9, 2018 (see attached C-141 included in Appendix B). Remediation Permit (RP) 2RP-4848 was assigned to this release incident by the NMOCD Artesia office.

The release was determined to have originated from a closed tank equalizing valve tank hatch. Approximately 5.0 barrels of condensate and 2.0 barrels of water were released with zero barrels recovered. The impacted area was approximated as 47' x 50' x 6" and was contained on the "pad", with no off-site impact. The New Mexico State Land Office (NMSLO) was also notified on July 6, 2018.

4. 2018 Soil Sampling

Following the release, ETC collected six (6) surface soil samples (V1 through V4, H1 4" and H2 4") ranging from 4 to 6 inches in the release area on July 6, 2018. The soil samples were sent to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico for chloride analysis by EPA Method 300, TPH by EPA Method 8015M/D, and volatiles EPA Method 8021B. Analytical results for the shallow surface soil samples are presented on Table 1.

GHD conducted further investigation in July and August 2018. Prior to mobilizing drilling equipment to the Site, the soil boring locations were pre-marked and a New Mexico 811 One-Call utility locate was completed at least 48 hours prior to start of work. The initial investigation was completed on July 10, 2018, and four borings (HA-1, HA-2, HA-3, and HA-4) were advanced to two (2) feet via a hand auger and field screened for chloride and volatile organic compounds (VOCs). Chloride screening was accomplished in the field by mixing soil samples with distilled water, then testing the rinsate using Hach chloride test strips. VOCs were field screening with a photoionization detector (PID) calibrated to isobutylene. Due to the hard nature of the soil, the use of a trackhoe was determined necessary to continue additional soil assessment activities.

On July 12, 2018, GHD and GHD subcontractor, JMJ Services (JMJ) mobilized to the Site to begin soil sampling activities of the five test pit areas (TP-1 through TP-5) co-located next to the previous hand auger locations to assess hydrocarbons and chloride concentrations in soil near the release point. Each sample was field screened for chloride and hydrocarbons. Chloride screening was accomplished in the field by mixing soil samples with distilled water, then testing the rinsate using Hach chloride test strips, and hydrocarbons were field screened utilizing a PID.

Soils samples were collected for laboratory analysis from TP-1, TP-3, TP-4, and TP-5 at 2 feet and 4 feet bgs. TP-2 was advanced to 8 feet bgs based on field screening results. Soil samples were packed into laboratory prepared jars and stored in a cooler with ice. The soil samples were sent to Hall Environmental Analysis Laboratory, Inc. (HEALS) in Albuquerque, New Mexico for chloride analysis by EPA Method 300, TPH by EPA Method 8015M/D, and BTEX by EPA Method 8021B.

Based on analytical results associated with TP-2, further investigation was warranted to vertically delineation TPH concentrations. Test Pit-7 was advanced on August 20, 2018 directly adjacent to TP-2 to a depth of 12 feet bgs. The soil interval was field screened and a soil sample was collected at the 12 foot interval and submitted to Hall for chloride analysis by EPA Method 300 and TPH.

4.1 Soil Sampling Analytical Results

Analytical results are summarized in Table 1 and the distribution of analytical results is presented in map view on Figure 2.

- Soil analytical results for chloride, benzene, and total BTEX in soil samples were below the NMOCD screening criteria (600, 10, and 50 mg/kg, respectively) with the exception of the surface soil samples (V1 through V4, H1 4" and H2 4" at 4 to 6 inches) collected by ETC.
- TPH was detected above the NMOCD screening criteria for total TPH (100 mg/kg) within all of the ETC surface samples (V1 through V4, H1 4" and H2 4" - at 4 to 6 inches) and TP-2 at a depth of 8 feet bgs (589 mg/kg). However, the soil sample analyzed from TP-7 directly adjacent at 12 feet bgs did not report TPH above reporting limits.

The 2018 soil laboratory analytical reports are included in Appendix C.

5. Summary of Findings

Evaluation of the analytical data obtained from soil assessment and delineation activities performed from July and August 2018 indicate horizontal and vertical delineation of chloride, TPH, and BTEX impacts has been achieved at the Site to support remediation activities.

5.1 2018 Remediation Activities

Lateral and horizontal soil delineation have been completed at the Site. Soil remediation activities (excavation) per NMAC 19.15.29.13 associated with elevated surface concentrations of total BTEX, TPH, and chloride, and TPH concentrations at 8 feet bgs at TP-2 will be conducted at the Site following NMOCD approval of the 2018 Remediation Work Plan attached as Appendix D of this report.

Submitted by:

GHD Services, Inc.

attait

Christine Mathews, Project Manager

2 2

Scott Foord, P.G., Senior Project Manager



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Figures

GHD | Soil Assessment Report| 11135250-14(1)







ETC TEXAS PIPELINE, LTD. EDDY COUNTY, NEW MEXICO AVALON COMPRESSOR 2RP-4848

11135250-14 Nov 8, 2018

FIGURE 1

SITE LOCATION MAP

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1113----\11135250-ETC Field Services\11135250-14(000)GN-DL001.dwg

Figure 2 Sample Location Map



Source: Image © 2018 Google - Imagery Date: October 1, 2014





ETC TEXAS PIPELINE, LTD. EDDY COUNTY, NEW MEXICO AVALON COMPRESSOR 2RP-4848

SOIL SAMPLE LOCATION

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1113----\11135250-ETC Field Services\11135250-14(000)GN-DL001.dwg

H.	A-1	IP-1			
Date	07/10/18	07/1	2/18		
Depth	2'	2'	4'		
TPH		2.4	20.9		
hloride	344	<1.0	<1.0		

Ν	O	7	Έ	S	

Avalon Compressor

- 1. All site locations are approximate.
- 2. All results are in milligrams per kilogram (mg/kg).

LEGEND

	Test Pit Location	
	ETC Initial Surface Samples (See Table for Results)	
\bigcirc	Approximate Release Area	
	Produced Water Line	
Depth	Depth of Sample (feet)	
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes Concentration (mg/kg)	
TPH	Total Petroleum Hydrocarbons Concentration (mg/kg)	
GRO	TPH as Gasoline Range Organics	
DRO	TPH as Diesel Range Organics	
	Indicates Field Screen (FS)	

Lat/Long: 32.026224° North, 104.117843° West

11135250-14 Nov 8, 2018





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Table 1 Avalon Compressor Station 2RP-4848 - Summary of Soil Field Screen and Analytical Data

Eddy	County,	New	Mexi	со
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Area	Sample ID	Depth (feet)	Date	Benzene	Toluene	Ethylbenzene	Xylenes	втех	TPH (GRO)	TPH (DRO)	TPH (MRO)	Total TPH	Total TPH Field Screen (ppm)	Chloride	Chloride Field Screen ppm
	S-11135250-14-071218-MG-TP-1-2	2	7/12/18	<0.025	<0.050	<0.050	<0.099	<0.224	<5.0	<10.0	<51.0	<66.0	2.4	42	<1.0
Test Pit 1	HA-1-2	2	7/10/18												344
	S-11135250-14-071218-MG-TP-1-4	4	7/12/18	<0.024	<0.048	<0.048	<0.095	<0.215	<4.8	<10.0	<50.0	<64.8	20.9	34	<1.0
	S-11135250-14-071218-MG-TP-2-2	2	7/12/18	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<10.0	<50.0	<64.6	14.9	300	92
	HA-2-2	2	7/10/18												164
Test Pit 2	TP-2-4	4	7/12/18										1,530		224
	TP-2-6	6	7/12/18	-	-		-	-	-	-	-		787	-	164
	S-11135250-14-071218-MG-TP-2-8	8	7/12/18	<0.024	<0.047	<0.047	<0.095	<0.213	69	290	230	589	652	230	112
	S-11135250-14-071218-MG-TP-3-2	2	7/12/18	NA	NA	NA	NA		NA	NA	NA		1.2	430	360
Test Pit 3	HA-3-2	2	7/10/18												260
	S-11135250-14-071218-MG-TP-3-4	4	7/12/18	NA	NA	NA	NA		NA	NA	NA		0.6	70	<1.0
	S-11135250-14-071218-MG-TP-4-2	2	7/12/18	NA	NA	NA	NA		NA	NA	NA		0.7	85	<1.0
Test Pit 4	HA-4-2	2	7/10/18												<1.0
	S-11135250-14-071218-MG-TP-4-4	4	7/12/18	NA	NA	NA	NA		NA	NA	NA		1.3	45	<1.0
Test Pit 5	S-11135250-14-071218-MG-TP-5-2	2	7/12/18	NA	NA	NA	NA		NA	NA	NA		0.8	350	224
10011110	S-11135250-14-071218-MG-TP-5-4	4	7/12/18	NA	NA	NA	NA		NA	NA	NA		0.4	370	260
Test Pit 7	S-11135250-14-081618-MG-TP-7-12	12	8/20/18	NA	NA	NA	NA		<3.9	<9.7	<49	<62.6	0.6	50	<1.0
					Initial Surfa	ace Samples Co	llected by	ETC							
V1	V1 6"	0.5	7/6/18	0.635	8.67	5.36	45.8	60.5	905	2,400	1,230	4,535		5,840	
V2	V2 6"	0.5	7/6/18	3.4	31.6	17.8	149	202	4,450	9,980	4,940	19,370		19,200	
V3	V3 6"	0.5	7/6/18	0.369	3.5	1.72	14.3	19.9	337	1,170	663	2,170		8,000	
V4	V4 6"	0.5	7/6/18	<0.050	<0.050	<0.050	<0.150	<0.3	32.3	4,440	887	5,359		96	
H1 4"	H1 4"	0.33	7/6/18	<0.050	0.245	0.535	5.07	5.85	160	2,120	1,230	3,510		992	
H2 4"	H2 4"	0.33	7/6/18	<2.0	26.7	14.5	123	164	4,000	9,770	5,050	18,820		24,000	
NMOCD Closure Criteria for Soils Impacted by Release Depth to Water Less Than 50 Feet			10		BTEX =	50			Total TF	PH: 100		NE	600	NE	

Notes:

All sample results are in milligrams per kilogram <=Non Detect NA = Not Analyzed BTEX =Benzene, Toluene, Ethylbenzene, Xylenes TPH = Total Petroleum Hydrocarbons GRO = Gasoline Range Organics DRO = Diesel Range Organics

MRO = Motor Oil Range Organics

NE = Not Established



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Appendix A USGS National Water Information System Well Data



Avalon Compresso Station 1.38 mile NE

USGS Home Contact USGS Search USGS

National Water Information System: Web Interface

USGS Water Resources	Data Category:	Geographic Area:		1
0305 Water Resources	Groundwater V	United States V	GO	

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

• 320230104060601

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 320230104060601 26S.28E.18.33111

Available data for this site Groundwater: Field measurements V GO

Eddy County, New Mexico Hydrologic Unit Code --Latitude 32°02'30", Longitude 104°06'06" NAD27 Land-surface elevation 3,070 feet above NAVD88 This well is completed in the Castile Gypsum (312CSTL) local aquifer.

Output formats

Table of data Tab-separated data Graph of data Reselect period



Breaks in the plot represent a gap of at least one year between field measurements. Download a presentation-quality graph

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U.S. Departmer Title: Groundv URL: https://	nt of the Interic vater for USA nwis.waterda	or <u>U.S. Ge</u> : Water Le ta.usgs.go	ological Survey vels v/nwis/gwle	vels?
Page Contact Ir	formation. US	GS Water D	ata Sunnort Te	am



Page Contact Information: <u>USGS Water Data Support Team</u> Page Last Modified: 2018-07-25 09:28:54 EDT 3.46 1.09 nadww01

https://nwis.waterdata.usgs.gov/usa/nwis/gwlevels/?site no=320230104060601

GO



USGS Home Contact USGS Search USGS

National Water Information System: Web Interface



Data Category:Geographic Area:GroundwaterVUnited StatesV

GO

V

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

• 320134104094801

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 320134104094801 26S.27E.23.321431

Available data for this site Groundwater: Field measurements

Eddy County, New Mexico Hydrologic Unit Code 13060011 Latitude 32°01'34", Longitude 104°09'48" NAD27 Land-surface elevation 3,065 feet above NGVD29 This well is completed in the Bell Canyon Formation (313BLCN) local aquifer.

Output formats

<u>Table of data</u>

Tab-separated data

<u>Graph of data</u>

Reselect period



Breaks in the plot represent a gap of at least one year between field measurements. Download a presentation-quality graph

Questions about sites/data? Feedback on this web site

Accessibility Plug-Ins FOIA Policies and Notices Privacy U.S. Department of the Interior | U.S. Geological Survey **Title: Groundwater for USA: Water Levels** URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels? Page Contact Information: USGS Water Data Support Team

Page Last Modified: 2018-07-25 09:28:07 EDT 9.32 1 nadww01



USA.gov

Appendix B Release Notification and Corrective Action Form C-141

District 1 1625 N. French Dr., Hobbs, NM 88240 State of New Mexico Energy Minerals and Natural Resources JUL 0 9 2018 Form C-141 District II Revised August 8, 2011 811 S. First St., Artesia, NM 88210 Oil Conservation Division DISTRICT IL ARTESIA Secondance with 19.15.29 NMAC. District III 1000 Rio Brazos Road, Aztec, NM 87410 1220 South St. Francis Dr. District IV 1220 S. St. Francis Dr., Santa Fc, NM 87505 Santa Fe, NM 87505 FAB 1807457621 **Release Notification and Corrective Action** 1819151052 **OPERATOR** X Initial Report Final Report Name of Company - Energy Transfer Partners Contact - Dean D. Ericson Address 600 N. Marienfeld Street Ste.700 Telephone No. 432-238-2142 Facility Name Avalon Compressor Station Facility Type Compressor Station Surface Owner: NMSLO Mineral Owner N/A API No. LOCATION OF RELEASE Feet from the Unit Letter Section Township Range North/South Line Feet from the East/West Line County: 20 28E к 26S N/A N/A N/A N/A Eddy Latitude: 32.026186 Longitude: -104.117172 NATURE OF RELEASE 5.066 Condensate Volume of Release: 6.9bbls 2.0 bbls Volume Recovered: 0 Date and Hour of Occurrence: WARDate and Hour of Discovery: Type of Release: Fluid - Condensate and Water Source of Release: Tank Hatch 07/05/18 10:30am 10:30am Was Immediate Notice Given? If YES, To Whom? Yes D No X Not Required **Hobbs District Office** By Whom? Date and Hour Was a Watercourse Reached? If YES, Volume Impacting the Watercourse. Yes No X N If a Watercourse was Impacted, Describe Fully.* Describe Cause of Problem and Remedial Action Taken.* Tank equalizing valve was closed. Tank Equalizing valve opened. Describe Area Affected and Cleanup Action Taken.* Impacted area is approximately 47' x 50'x 6". Spill contained within the "pad", no off-site impact occurred. All standing fluid was removed. Impacted soil will be removed and hauled to disposal. I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or Jocal laws and/or regulations. OIL CONSERVATION DIVISION 61111 lam Signature: Approved by Environmental Printed Name: Dean D. Ericson Approval Date: **Expiration Date:** Title: Sr. Environmental Specialist E-mail Address: dean.ericson@energytransfer.com Conditions of Approval; Attached BUD attac Date: 07/09/18 Phone: 432-238-2142 Attach Additional Sheets If Necessary

RECEIVED

Operator/Responsible Party,

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete <u>division-approved corrective action</u> for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in <u>ARTESIA</u> on or before <u>8/9/2018</u>. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

• Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

• Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

• Nominal detection limits for field and laboratory analyses must be provided.

• Composite sampling is not generally allowed.

• Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold OCD Environmental Bureau Chief 1220 South St. Francis Drive Santa Fe, New Mexico 87505 505-476-3465 jim.griswold@state.nm.us

Bratcher, Mike, EMNRD

From:	Ericson, Dean < Dean.Ericson@energyTransfer.com>
Sent:	Monday, July 9, 2018 9:02 AM
То:	Bratcher, Mike, EMNRD; rmann@slo.state.nm.us
Cc:	Boultinghouse, Stacy; Hummel, Larry; Hatcher, Tony; Blackaller, Carolyn J
Subject:	Avalon Compressor Station - Notification and Initial C-141 Submittal
Attachments:	Avalon CS Initial C-141 070918.pdf

Mike,

A spill occurred at ETC's Avalon Compressor Station (GPS Coordinates below) on 7/5/18 at approx. 10:30am. Approx. 6.9bbls of fluid was released. Spoke to Ryan Mann w/ NMSLO on 07/06/18 advised the same. The initial C-141 Form is attached for submittal.

Forbes | 2017 AMERICA'S

BEST LARGE EMPLOYERS

GPS Coordinates below 32.026186 -104.117172

Any questions please call,

Thanks,





O: 817.302.9758 **C:** 432.238-2142

Private and confidential as detailed here. If you cannot access hyperlink, please e-mail sender.

Appendix C Soil Laboratory Analytical Report



July 10, 2018

DEAN ERICSON ENERGY TRANSFER

P. O. BOX 1226

JAL, NM 88252

RE: AVALON CS

Enclosed are the results of analyses for samples received by the laboratory on 07/09/18 11:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keine

Celey D. Keene Lab Director/Quality Manager



/2018
k Intact
lenson
5 8 H

Sample ID: V1 6" (H801843-01)

BTEX 8021B	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.635	0.500	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	8.67	0.500	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	5.36	0.500	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	45.8	1.50	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	60.5	3.00	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	120	% 69.8-14	2						
Chloride, SM4500CI-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5840	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg,	/kg	Analyzed By: MS						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	905	10.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	2400	10.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	1230	10.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	152	% 41-142							
Surrogate: 1-Chlorooctadecane	133	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



		ENERGY TRANSFER DEAN ERICSON P. O. BOX 1226 JAL NM, 88252 Fax To:		
Received:	07/09/2018		Sampling Date:	07/06/2018
Reported:	07/10/2018		Sampling Type:	Soil
Project Name:	AVALON CS		Sampling Condition:	Cool & Intact
Project Number:	32.026153		Sample Received By:	Jodi Henson
Project Location:	AVALON CS			

Sample ID: V2 6" (H801843-02)

BTEX 8021B	mg	′kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	3.40	2.00	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	31.6	2.00	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	17.8	2.00	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	149	6.00	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	202	12.0	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	116 9	% 69.8-14	2						
Chloride, SM4500CI-B	mg,	′kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19200	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg,	′kg	Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	4450	50.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	9980	50.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	4940	50.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	164	% 41-142	?						
Surrogate: 1-Chlorooctadecane	270	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		ENERGY TRANSFER DEAN ERICSON P. O. BOX 1226 JAL NM, 88252 Fax To:		
Received:	07/09/2018		Sampling Date:	07/06/2018
Reported:	07/10/2018		Sampling Type:	Soil
Project Name:	AVALON CS		Sampling Condition:	Cool & Intact
Project Number:	32.026153		Sample Received By:	Jodi Henson
Project Location:	AVALON CS			

Sample ID: V3 6" (H801843-03)

BTEX 8021B	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.369	0.200	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	3.50	0.200	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	1.72	0.200	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	14.3	0.600	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	19.9	1.20	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	118	% 69.8-14	2						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8000	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	337	10.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	1170	10.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	663	10.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	130	% 41-142	?						
Surrogate: 1-Chlorooctadecane	118	% 37.6-14	7						

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*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		ENERGY TRANSFER DEAN ERICSON P. O. BOX 1226 JAL NM, 88252 Fax To:		
Received:	07/09/2018		Sampling Date:	07/06/2018
Reported:	07/10/2018		Sampling Type:	Soil
Project Name:	AVALON CS		Sampling Condition:	Cool & Intact
Project Number:	32.026153		Sample Received By:	Jodi Henson
Project Location:	AVALON CS			

Sample ID: V4 6" (H801843-04)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	<0.050	0.050	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	<0.050	0.050	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	<0.150	0.150	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	<0.300	0.300	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	141 9	69.8-14	2						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	32.3	10.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	4440	10.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	887	10.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	96.9	% 41-142	?						
Surrogate: 1-Chlorooctadecane	205 9	37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		ENERGY TRANSFER DEAN ERICSON P. O. BOX 1226 JAL NM, 88252 Fax To:		
Received:	07/09/2018		Sampling Date:	07/06/2018
Reported:	07/10/2018		Sampling Type:	Soil
Project Name:	AVALON CS		Sampling Condition:	Cool & Intact
Project Number:	32.026153		Sample Received By:	Jodi Henson
Project Location:	AVALON CS			

Sample ID: H1 4" (H801843-05)

BTEX 8021B	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	0.245	0.050	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	0.535	0.050	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	5.07	0.150	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	5.85	0.300	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	153 %	69.8-14	2						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	160	10.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	2120	10.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	1230	10.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	122 %	% 41-142	?						
Surrogate: 1-Chlorooctadecane	144 %	37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



		ENERGY TRANSFER DEAN ERICSON P. O. BOX 1226 JAL NM, 88252 Fax To:		
Received:	07/09/2018		Sampling Date:	07/06/2018
Reported:	07/10/2018		Sampling Type:	Soil
Project Name:	AVALON CS		Sampling Condition:	Cool & Intact
Project Number:	32.026153		Sample Received By:	Jodi Henson
Project Location:	AVALON CS			

Sample ID: H2 4" (H801843-06)

BTEX 8021B	mg	′kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<2.00	2.00	07/10/2018	ND	2.04	102	2.00	2.42	
Toluene*	26.7	2.00	07/10/2018	ND	2.02	101	2.00	2.40	
Ethylbenzene*	14.5	2.00	07/10/2018	ND	1.99	99.4	2.00	2.31	
Total Xylenes*	123	6.00	07/10/2018	ND	6.15	102	6.00	2.33	
Total BTEX	164	12.0	07/10/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	113 9	% 69.8-14	2						
Chloride, SM4500CI-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	24000	16.0	07/09/2018	ND	416	104	400	0.00	
TPH 8015M	mg,	′kg	Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	4000	50.0	07/10/2018	ND	222	111	200	1.96	
DRO >C10-C28*	9770	50.0	07/10/2018	ND	226	113	200	2.03	
EXT DRO >C28-C36	5050	50.0	07/10/2018	ND					
Surrogate: 1-Chlorooctane	157	% 41-142	2						
Surrogate: 1-Chlorooctadecane	257	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500CI-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name:	EIC						
Project Manager:	Denw Ericson		9.0. #:		ANALYSIS	REQUEST	1
Address:		0	ombany:				
City:	State:	Zip: A	ttn:				
Phone #:	Fax #:	A	ddress:				
Project #:	Project Owner:	C	ity:				
Project Name:	Fundan Compressor St	S Nert	tate: Zip:				
Project Location:	32.026153	P	hone #:				
Sampler Name:	Tyle R. Roma	7	av #:				
FOR LAB USE ONLY		I ATON	aA #.				
			PRESERV. SAMPLIN	6			
Lab I.D. H5019413	Sample I.D.	(G)RAB OR (C) # CONTAINERS GROUNDWATE NASTEWATER SOIL DIL SLUDGE DTHER :	ACID/BASE: CE / COOL DTHER :	TPHEXT BTet			
I VI			/u /u	1/143 Am [1			
200							
4 V	4						
E N	Ч.						
D T	2 Y"						
LEASE NOTE - Liability and Dam	nee Fordially failly and Rush with the						
nalyses. All claims including those ervice. In no event shall Cardinal to fiftilates or successors arising out o	for negligence and any other cause whatsoever shall be dee be liable for incidental or consequental damages, including wi for related to the performance of services hereunder by Card	rmed waived unless made in writing and rece thout limitation, business interruptions, loss o final, regardless of whether such claim is bas	vived by Cardinal within 30 days after co of use, or loss of profits incurred by clien ed upon any of the above stated reason	y no control the applicable ompletion of the applicable nt, its subsidiaries, ns or otherwise.			
Relinquished Rv.	Time: []: 25 pm	Jodi Mu	MOON -	hone Result:	No Add'l Phone #: No Add'l Fax #:		
	Time: 15			Rich			
Sampler - LIPS - Bu	101 - Other: 240 / 0 -	Sample Condition	CHECKED BY:	N.M.			
			YV.				_



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

July 23, 2018

Alan Brandon GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110 TEL: (505) 884-0672 FAX

OrderNo.: 1807773

RE: Avalon Booster

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 10 sample(s) on 7/14/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <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 #NM0901

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1807773

Date Reported: 7/23/2018

			¥ *					-	
CLIENT:		GHD				L	ab C)rder: 18077	73
Project:		Avalon Booster							
Lab ID:		1807773-001		С	ollecti	on Date:	: 7/1	2/2018 9:48:00 A	М
Client Sam	ple ID	S -11135250-14-0	071218-MG-TP-1-2	-		Matrix	SC	DIL	
Analyses	•		Result	PQL	Qual	Units	DF	Date Analyzed	Batch II
EPA METH	IOD 3	00.0: ANIONS						Ana	alvst: SRM
Chloride			42	30		mg/Kg	20	7/19/2018 4:19:57	PM 39295
EPA METH	IOD 8	015M/D: DIESEL RA	NGE ORGANICS			0 0		Ana	alvst: Irm
Diesel Rar	nge Or	ganics (DRO)	ND	10		mg/Kg	1	7/17/2018 11:45:10	AM 39231
Motor Oil F	Range	Organics (MRO)	ND	51		mg/Kg	1	7/17/2018 11:45:10	AM 39231
Surr: DN	NOP		90.9	70-130		%Rec	1	7/17/2018 11:45:10	AM 39231
EPA METH	IOD 8	015D: GASOLINE R	ANGE					Ana	alyst: NSB
Gasoline R	Range	Organics (GRO)	ND	5.0		mg/Kg	1	7/17/2018 2:36:24	PM 39222
Surr: BF	В		98.2	15-316		%Rec	1	7/17/2018 2:36:24	PM 39222
EPA METH	IOD 8	021B: VOLATILES						Ana	alyst: NSB
Benzene			ND	0.025		mg/Kg	1	7/17/2018 2:36:24	PM 39222
Toluene			ND	0.050		mg/Kg	1	7/17/2018 2:36:24	PM 39222
Ethylbenze	ene		ND	0.050		mg/Kg	1	7/17/2018 2:36:24	PM 39222
Xylenes, T	otal		ND	0.099		mg/Kg	1	7/17/2018 2:36:24	PM 39222
Surr: 4-E	Bromo	fluorobenzene	111	80-120		%Rec	1	7/17/2018 2:36:24	PM 39222
Lab ID:		1807773-002		С	ollecti	on Date:	: 7/1	2/2018 9:50:00 Al	М
Client Sam	ple ID	S -11135250-14-0	071218-MG-TP-1-4			Matrix	SC SC	DIL	
Analyses			Result	PQL	Qual	Units	DF	Date Analyzed	Batch II
EPA METH	IOD 3	00.0: ANIONS						Ana	alvst: SRM
Chloride			.34	30		ma/Ka	20	7/19/2018 4:32:21	PM 39295
	פ חרו			00		ilig/itg	20	Λη-	lvet: Irm
		onsign (DDO)		10		malka	4		uysi. IIII DM 20024
Motor Oil F	ige Oig Rande	Organics (DRO)	ND	10 50		mg/Kg	1	7/17/2018 1:00:03	PINI 39231 PM 39231
Surr: DN	NOP	organics (Mitto)	92.6	70-130		%Rec	1	7/17/2018 1:00:03	PM 39231
	א טטו					,		Δης	livet: NCR
Casolino P				1 9		ma/ka	1	7/17/2018 2:00:02	DM 2022
Surr: BF	B	Organics (GRO)	98.8	4.0		%Rec	1	7/17/2018 3:00:02	PM 39222
	IOD 8	021B: VOLATILES	00.0	10 010		/01100	•	Ana	alvst: NSB
Benzene			ND	0.024		ma/Ka	1	7/17/2018 3:00:02	PM 39222
Toluene			ND	0.048		mg/Kg	1	7/17/2018 3:00:02	PM 39222
Ethylbenze	ene		ND	0.048		mg/Kg	1	7/17/2018 3:00:02	PM 39222
Xylenes, T	otal		ND	0.095		mg/Kg	1	7/17/2018 3:00:02	PM 39222
Surr: 4-E	Bromo	fluorobenzene	108	80-120		%Rec	1	7/17/2018 3:00:02	PM 39222
Refe	er to th	e QC Summary repo	rt and sample login checkl	ist for fla	igged (QC data a	und p	preservation inform	ation.
Qualifiers:	*	Value exceeds Maximun	1 Contaminant Level.	В	Anal	yte detecte	d in th	ne associated Method B	lank
-	D	Sample Diluted Due to M	Iatrix	Е	Valu	e above qu	antita	tion range	
	Н	Holding times for prepar	ation or analysis exceeded	J	Anal	yte detecte	d belo	w quantitation limits	Page 1 of
	ND	Not Detected at the Repo	orting Limit	Р	Sam	ple pH Not	In Ra	inge	1 450 1 01
	PQL	Practical Quanitative Lin	nit	RL	Repo	orting Deteo	ction l	Limit	

Hall Environmental Analysis Laboratory, Inc.

Lab Order: 1807773

Date Reported: 7/23/2018

CLIENT:	GHD			L	ab O	Order: 1807773	
Project:	Avalon Booster						
L.L.D.	1907772 002		C.II.	the D - to	. 7/1	2/2010 10 45 00 AM	
Lab ID:	1807773-003		Colle	ection Date	: //1	12/2018 10:45:00 AM	
Client Sample	e ID: S-11135250-14-07121	18-MG-TP-2-2		Matrix	: SC	DIL	
Analyses		Result	PQL Q	ual Units	DF	Date Analyzed H	Batch ID
EPA METHO	D 300.0: ANIONS					Analys	st: SRM
Chloride		300	30	mg/Kg	20	7/19/2018 4:44:45 PM	39295
EPA METHO	D 8015M/D: DIESEL RANGE	ORGANICS				Analys	st: Irm
Diesel Range	e Organics (DRO)	ND	10	mg/Kg	1	7/19/2018 3:31:28 PM	39231
Motor Oil Rai	nge Organics (MRO)	ND	50	mg/Kg	1	7/19/2018 3:31:28 PM	39231
Surr: DNO	P	120	70-130	%Rec	1	7/19/2018 3:31:28 PM	39231
EPA METHO	D 8015D: GASOLINE RANG	E				Analys	st: NSB
Gasoline Rar	nge Organics (GRO)	ND	4.6	mg/Kg	1	7/17/2018 3:23:46 PM	39222
Surr: BFB		95.0	15-316	%Rec	1	7/17/2018 3:23:46 PM	39222
EPA METHO	D 8021B: VOLATILES					Analys	st: NSB
Benzene		ND	0.023	mg/Kg	1	7/17/2018 3:23:46 PM	39222
Toluene		ND	0.046	mg/Kg	1	7/17/2018 3:23:46 PM	39222
Ethylbenzene	e	ND	0.046	mg/Kg	1	7/17/2018 3:23:46 PM	39222
Xylenes, Tota	al	ND	0.092	mg/Kg	1	7/17/2018 3:23:46 PM	39222
Surr: 4-Bro	omofluorobenzene	107	80-120	%Rec	1	7/17/2018 3:23:46 PM	39222

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

Qualifiers:

*

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

Value exceeds Maximum Contaminant Level.

Hall Environmental Analysis Laboratory, Inc.

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 8
- P Sample pH Not In Range
- RL Reporting Detection Limit

Lab Order: 1807773

Date Reported: 7/23/2018

CLIENT:	GHD				I	ab C)rder: 1807'	773	
Project:	Avalon Booster								
Lab ID:	1807773-004		C	ollecti	on Date	: 7 /1	12/2018 10:48:00	AM	
Client Sample ID:	S-11135250-14-07121	8-MG-TP-2-8			Matrix	: SC	DIL		
Analyses		Result	PQL	Qual	Units	DF	Date Analyzed	Ba	tch ID
EPA METHOD 30	0.0: ANIONS						An	alyst:	SRM
Chloride		230	30		mg/Kg	20	7/19/2018 4:57:09	PM	39295
EPA METHOD 80	15M/D: DIESEL RANGE	ORGANICS					An	alyst:	Irm
Diesel Range Org	anics (DRO)	290	9.9		mg/Kg	1	7/19/2018 3:53:48	PM	39231
Motor Oil Range C	Drganics (MRO)	230	49		mg/Kg	1	7/19/2018 3:53:48	РМ	39231
Surr: DNOP		128	70-130		%Rec	1	7/19/2018 3:53:48	PM	39231
EPA METHOD 80	15D: GASOLINE RANGE	E					An	alyst:	NSB
Gasoline Range C	Organics (GRO)	69	4.7		mg/Kg	1	7/17/2018 3:47:30	PM	39222
Surr: BFB		672	15-316	S	%Rec	1	7/17/2018 3:47:30	PM	39222
EPA METHOD 80	21B: VOLATILES						An	alvst:	NSB
Benzene		ND	0.024		ma/Ka	1	7/17/2018 3:47:30	PM	39222
Toluene		ND	0.047		mg/Kg	1	7/17/2018 3:47:30	PM	39222
Ethylbenzene		ND	0.047		mg/Kg	1	7/17/2018 3:47:30	PM	39222
Xylenes, Total		0.84	0.095		mg/Kg	1	7/17/2018 3:47:30	PM	39222
Surr: 4-Bromofl	uorobenzene	134	80-120	S	%Rec	1	7/17/2018 3:47:30	PM	39222
Lab ID:	1807773-005		C	ollecti	on Date	: 7 /1	12/2018 11:10:00	AM	
Client Sample ID:	S-11135250-14-07121	8-MG-TP-3-2			Matrix	: SC	DIL		
Analyses		Result	PQL	Qual	Units	DF	Date Analyzed	Ba	tch ID
EPA METHOD 30	0.0: ANIONS						An	alyst:	SRM
Chloride		430	30		mg/Kg	20	7/19/2018 5:09:34	PM	39295
Lab ID:	1807773-006		C	ollecti	on Date	: 7 /1	12/2018 11:12:00	AM	
Client Sample ID:	S-11135250-14-07121	8-MG-TP-3-4			Matrix	: SC	DIL		
Analyses		Result	PQL	Qual	Units	DF	Date Analyzed	Ba	tch ID
EPA METHOD 30	0.0: ANIONS						An	alyst:	SRM
Chloride		70	30		mg/Kg	20	7/19/2018 5:21:59	PM	39295

Hall Environmental Analysis Laboratory, Inc.

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

Page 3 of 8

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method H	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	Pa
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	I a
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit	

Hall Environ	mental Analysis La	boratory,	Inc.			A L L	Analytical L ab Order: 18 Date Reported	Report 807773 d: 7/23//	2018	
CLIENT: Project:	GHD Avalon Booster				L	ab C	order:	180777	73	
Lab ID:	1807773-007		C	ollecti	on Date	: 7/1	2/2018 11:	38:00 A	M	
Client Sample ID:	S-11135250-14-071218-M	G-TP-4-2			Matrix	: SC	IL			
Analyses		Result	PQL	Qual	Units	DF	Date Ana	lyzed	Bat	tch ID
EPA METHOD 30 Chloride	0.0: ANIONS	85	30		mg/Kg	20	7/19/2018	Anal 6:24:02 F	lyst: ²M	SRM 39295
Lab ID:	1807773-008		С	ollecti	on Date	: 7/1	2/2018 11:	40:00 A	Μ	
Client Sample ID:	S-11135250-14-071218-M	G-TP-4-4			Matrix	: SC	IL			
Analyses		Result	PQL	Qual	Units	DF	Date Anal	lyzed	Bat	tch ID
EPA METHOD 30 Chloride	0.0: ANIONS	45	30		mg/Kg	20	7/19/2018	Anal 6:36:27 F	lyst: ²M	SRM 39295
Lab ID:	1807773-009		С	ollecti	on Date	: 7/1	2/2018 11:	55:00 A	M	
Client Sample ID:	S-11135250-14-071218-M	G-TP-5-2			Matrix	: SC	IL			
Analyses		Result	PQL	Qual	Units	DF	Date Ana	lyzed	Bat	tch ID
EPA METHOD 30 Chloride	0.0: ANIONS	350	30		mg/Kg	20	7/20/2018	Anal 11:52:39	lyst: AM	CJS 39326
Lab ID:	1807773-010		С	ollecti	on Date	: 7/1	2/2018 11:	58:00 A	М	
Client Sample ID:	S-11135250-14-071218-M	G-TP-5-4			Matrix	: SC	IL			

Result

370

30

H

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

vel.

Analyses

Chloride

EPA METHOD 300.0: ANIONS

- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- PQL Practical Quanitative Limit

- В Analyte detected in the associated Method Blank
- Е Value above quantitation range

PQL Qual Units DF Date Analyzed

mg/Kg

Batch ID

Analyst: CJS

20 7/20/2018 12:29:52 PM 39326

- J Analyte detected below quantitation limits Page 4 of 8
- Р Sample pH Not In Range
- RL Reporting Detection Limit

GHD

Project:	Avalon Booster									
Sample ID MB-3	9326 SampT	ype: m ł	olk	Tes	tCode: EF	PA Method	300.0: Anion	S		
Client ID: PBS	Batch	n ID: 39	326	F	RunNo: 52	2859				
Prep Date: 7/20	0/2018 Analysis D	ate: 7/	20/2018	5	SeqNo: 17	737713	Units: mg/k	ίg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								
Sample ID LCS-	39326 SampT	ype: Ics	6	Tes	tCode: EF	PA Method	300.0: Anion	s		
Client ID: LCS	B Batch	n ID: 39	326	F	RunNo: 52	2859				
Prep Date: 7/20	0/2018 Analysis D	ate: 7/	20/2018	5	SeqNo: 17	737714	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.6	90	110			

Qualifiers:

Client:

- * 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
- Daga
 - Page 5 of 8

Client:	GHD										
Project:	Avalon	Booster									
Sample ID	MB-39231	Samp	Гуре: М	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	PBS	Batc	h ID: 39	231	F	RunNo: 5	2744				
Prep Date:	7/16/2018	Analysis E	Date: 7/	17/2018	S	SeqNo: 1	732326	Units: mg/ł	٨g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	ND	10								
Motor Oil Rang	ge Organics (MRO)	ND	50								
Surr: DNOP		9.9		10.00		99.5	70	130			
Sample ID	LCS-39231	Samp	Гуре: LC	s	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	LCSS	Batc	h ID: 39	231	F	RunNo: 5	2744				
Prep Date:	7/16/2018	Analysis [Date: 7/	/17/2018	5	SeqNo: 1	732346	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	48	10	50.00	0	96.2	70	130			
Surr: DNOP		4.4		5.000		88.1	70	130			
Sample ID	1807773-001AMS	Samp	Гуре: М	S	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	S-11135250-14-0	712 Batc	h ID: 39	231	F	RunNo: 5	2744				
Prep Date:	7/16/2018	Analysis E	Date: 7/	/17/2018	S	SeqNo: 1	732375	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	40	10	49.85	2.953	74.3	62	120			
Surr: DNOP		3.3		4.985		66.5	70	130			S
Sample ID	1807773-001AMS	SD Samp	Гуре: М	SD	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	S-11135250-14-0	712 Batc	h ID: 39	231	F	RunNo: 5	2744				
Prep Date:	7/16/2018	Analysis E	Date: 7/	/17/2018	S	SeqNo: 1	732376	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	39	10	50.30	2.953	72.3	62	120	1.64	20	
Surr: DNOP		3.3		5.030		65.4	70	130	0	0	S

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Н 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
- В Analyte detected in the associated Method Blank
- Е 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 6 of 8

GHD

Project: Avalon	Booster								
Sample ID MB-39222	SampType:	MBLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBS	Batch ID:	39222	F	RunNo: 5	2767				
Prep Date: 7/16/2018	Analysis Date:	7/17/2018	S	SeqNo: 1	733195	Units: mg/H	٤g		
Analyte	Result PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO) Surr: BFB	ND 5 880	.0 1000		88.1	15	316			
Sample ID LCS-39222	SampType:	LCS	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSS	Batch ID:	39222	F	RunNo: 52	2767				
Prep Date: 7/16/2018	Analysis Date:	7/17/2018	5	SeqNo: 1	733196	Units: mg/k	٢g		
Analyte	Result PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26 5	.0 25.00	0	102	75.9	131			
Surr: BFB	970	1000		96.6	15	316			

Qualifiers:

Client:

- * 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
- Page 7
 - Page 7 of 8

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc

WO#:	1807773
	23-Jul-18

Client: GHD **Project:** Avalon Booster Sample ID MB-39222 SampType: MBLK TestCode: EPA Method 8021B: Volatiles PBS Client ID: Batch ID: 39222 RunNo: 52767 Prep Date: 7/16/2018 Analysis Date: 7/17/2018 SeqNo: 1733219 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Benzene ND 0.025 Toluene ND 0.050 Ethylbenzene ND 0.050 Xylenes, Total ND 0.10 Surr: 4-Bromofluorobenzene 1.0 1.000 101 80 120 Sample ID LCS-39222 SampType: LCS TestCode: EPA Method 8021B: Volatiles Client ID: LCSS Batch ID: 39222 RunNo: 52767 Prep Date: 7/16/2018 Analysis Date: 7/17/2018 SeqNo: 1733220 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual 0.025 1.000 77.3 0.93 0 93.3 128 Benzene Toluene 0.97 0.050 1.000 0 97.2 79.2 125 Ethylbenzene 0.95 0.050 1.000 0 94.7 80.7 127 Xylenes, Total 2.9 0.10 3.000 97.1 81.6 129 0 Surr: 4-Bromofluorobenzene 1.000 100 80 120 1.0

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 8 of 8

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmer TEL: 505-345-3 Website: www	tal Analysis Labora 4901 Hawkin: Albuquerque, NM 87 975 FAX: 505-345-4 hallenvironmental.	atory s NE 7109 San 4107 com	mple Log-In Check List						
Client Name: GHD	Work Order Numb	ber: 1807773		RcptNo: 1						
Received By: Ashley Gallegos Completed By: Isaiah Ortiz Reviewed By: JAB 07/16/18 LB: ENM 7/16/18	7/14/2018 11:00:00 7/16/2018 8:26:27 /	AM	Ia							
 <u>Chain of Custody</u> 1. Is Chain of Custody complete? 2. How was the sample delivered? 		Yes 🗹 <u>Courier</u>	No 🗌	Not Present						
Log In 3. Was an attempt made to cool the samples	?	Yes 🔽	No 🗌							
4. Were all samples received at a temperature	e of >0° C to 6.0°C	Yes 🗌	No 🗹							
5. Sample(s) in proper container(s)?		Yes 🗹 -	No 🗌							
6. Sufficient sample volume for indicated test(7. Are samples (except VOA and ONG) prope8. Was preservative added to bottles?	s)? rly preserved?	Yes ✔ Yes ✔ Yes □	No 🗌 No 💭 No 🗹	NA 🗌						
 9. VOA vials have zero headspace? 10. Were any sample containers received broken. 	en?	Yes □ Yes □	No 🗌 No 🗹	No VOA Vials						
 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) 12. Are matrices correctly identified on Chain of 13. Is it clear what analyses were requested? 14. Were all holding times able to be met? (If no, notify customer for authorization.) 	f Custody?	Yes ☑ Yes ☑ Yes ☑ Yes ☑	No No No No	Adjusted2 Checked by:						
Special Handling (if applicable) 15. Was client notified of all discrepancies with Person Notified: By Whom: Regarding: Client Instructions:	this order? Date: Via:	Yes 🗍	No -	NA 🗹						
16. Additional remarks:										

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	6.6	Good	Yes			

	L ENVIRONMENTAL 11 YSTS I ARORATORY	hallenvironmental com	E - Albuquerque, NM 87109	75 Eax 505-345-4107	Analysis Request	(*(⊂B,² CB,² CB,² CB,2 (SV		8270 (1, 8082 (1, 8082 (1, 2) (1, 2) (1, 2) (1, 2) (1, 2) (1, 2) (1, 2) (1, 2) (2, 2)) (2, 2)) ())) ())) ())) ()))) ()))))))))))))) OL (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	0168) 2'HA9 PeM 8 AA77 IO,7) 2noinA Noions (F,Cl 8081 Pestici 10,70 (Semi- 201 10 201 10 20	X	×	X	X		×	×	X						ata will be clearly notated on the analytical report
			4901 Hawkins N	Tel. 505-345-3		(O) (م)ار (1508) AM / (ວະ ອ)	HTPH (1.4.1) (1.4.1)	9 2(9 7 (GE 9E -	BTEX + MTI BTEX + MTE TPH 8015B Odfbd (Metho	X, X,	XX	XXX	\times								Remarks:		ossibility. Any sub-contracted
w rush	1.0 /		oster	×							HEAL No. 1407773	2 100-	-00 -	- Cr 3	-004	-005	-100-	109-	-003	900-	Q 10-		Date lime F	7 11.2/15 1107	This serves as notice of this po
urn-Around Time: S	□ Standard	roject Name:	Avalon Doc	roject #:	HI-OSESSIII	roject Manager:	Alan Brandon		ampler: <u> </u>	ample Temperature: 10	Container Preservative Type and # Type	*Soi Jar Juf											eceived by	eceived W.	racted to other accredited laboratories
stody Record	s Inc.		dian School Rol Stered	NM S7110 P	672 ,	unden@ ahd. com P)	Level 4 (Full Validation)	<u></u>		Sample Request ID	11125250-14.67/218,MG. TP.1.2 4	HISS 250 HY OTRIBING METPIN	11155250 14,07218,MCT0,22	B.C. J M & 101 - 05 05 25 111-	1135350-14 021218-16-78-32	וושששיין יערדאי ארשוע ארששיין	111252256-14-671218-146-TP-4-2	1-1-12522111 01218 21 6-11-05825111	1113525614.071218.26.79.52	יוויצאלהאוגטוגווייליאיאיאיאיאי		pk.	by:	tted to Hall Environmental may be subconti
ain-of-Cus	HD Service		dress: 6/2/ Tm	DUG RECT VE.	3658840	X#: ALON, Bro	kage:	q	on Other	ype)	ime Matrix	149 S 50	150 s	4S s	48 5	10	13	39 S	40 Þ	55	58 5		ie: Relinquistred	re: Rejinquened	secary sample submit
Chi	Client: 💪		Mailing Ad	NEANE	Phone #: 5	email or Fa	QA/QC Paci	□ Standar	Accreditati		Date	7/12/18/09	60		(0		11		11		11		7/15/18	THE THE	17 0,1.



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

August 20, 2018

Alan Brandon GHD 6121 Indian School Road, NE #200 Albuquerque, NM 87110 TEL: (505) 884-0672 FAX

OrderNo.: 1808A88

RE: Avalon 1

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/17/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <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 #NM0901

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1808A88

Date Reported: 8/20/2018

8/17/2018 9:59:20 AM

39838

CLIENT: Project:	GHD Avalon 1			I	ab C)rder: 1808.	A88	
110jeet.								
Lab ID:	1808A88-001		С	ollection Date	: 8/1	6/2018 10:50:00	AM	
Client Sample	ID: S-11135250-14-08161	8-MG-TP-7-12'		Matrix	: M	EOH (SOIL)		
Analyses		Result	PQL	Qual Units	DF	Date Analyzed	Bat	ch ID
EPA METHOD	0 300.0: ANIONS					An	alyst:	MRA
Chloride		50	30	mg/Kg	20	8/17/2018 12:48:4	2 PM	39860
	0 8015M/D: DIESEL RANGE	ORGANICS				An	alyst:	Irm
Diesel Range	Organics (DRO)	ND	9.7	mg/Kg	1	8/17/2018 11:15:5	5 AM	39854
Motor Oil Rang	ge Organics (MRO)	ND	49	mg/Kg	1	8/17/2018 11:15:5	5 AM	39854
Surr: DNOP	5	88.8	50.6-138	%Rec	1	8/17/2018 11:15:5	5 AM	39854
	0 8015D: GASOLINE RANG	E				An	alyst:	NSB
Gasoline Rang	ge Organics (GRO)	ND	3.9	mg/Kg	1	8/17/2018 9:59:20	AM	39838

94.5

15-316

%Rec

1

Hall Environmental Analysis Laboratory, Inc.

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

Qualifiers:

*

Surr: BFB

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

Value exceeds Maximum Contaminant Level.

- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit

GHD

Project:	Avalon 1										
Sample ID	MB-39860	SampT	ype: m l	olk	Tes	tCode: El	PA Method	300.0: Anion	S		
Client ID:	PBS	Batch	n ID: 39	860	F	RunNo: 5	3528				
Prep Date:	8/17/2018	Analysis D	ate: 8/	17/2018	S	SeqNo: 1	765188	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND	1.5								
Sample ID	LCS-39860	SampT	ype: Ics	6	Tes	tCode: El	PA Method	300.0: Anion	S		
Client ID:	LCSS	Batch	n ID: 39	860	F	RunNo: 5	3528				
Prep Date:	8/17/2018	Analysis D	ate: 8/	17/2018	5	SeqNo: 1	765189	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		14	1.5	15.00	0	95.4	90	110			

Qualifiers:

Client:

- * 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
- Page 2 of 4

Client:	GHD										
Project:	Avalon 1										
Sample ID	MB-39854	SampT	ype: M	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	PBS	Batch	n ID: 39	854	F	RunNo: 5	3521				
Prep Date:	8/17/2018	Analysis D	ate: 8/	17/2018	5	SeqNo: 1	764303	Units: mg/k	(g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	ND	10								
Motor Oil Rang	ge Organics (MRO)	ND	50								
Surr: DNOP		8.7		10.00		87.0	50.6	138			
Sample ID	LCS-39854	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID:	LCSS	Batch	n ID: 39	854	F	RunNo: 5	3521				
Prep Date:	8/17/2018	Analysis D	ate: 8/	17/2018	5	SeqNo: 1	764304	Units: mg/k	ζg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range	Organics (DRO)	45	10	50.00	0	89.9	70	130			
Surr: DNOP	•	3.9		5.000		77.9	50.6	138			

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
- Page 3 of 4

GHD

Project:	Avalon 1										
Sample ID	MB-39838	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	h ID: 39	838	F	RunNo: 5	3515				
Prep Date:	8/16/2018	Analysis D	Date: 8/	/17/2018	S	SeqNo: 1	764497	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	ND	5.0								
Surr: BFB		910		1000		90.9	15	316			
Sample ID	LCS-39838	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	е	
Client ID:	LCSS	Batch	h ID: 39	838	F	RunNo: 5	3515				
Prep Date:	8/16/2018	Analysis D	Date: 8 /	/17/2018	5	SeqNo: 1	764498	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	24	5.0	25.00	0	95.8	75.9	131			
Surr: BFB		1000		1000		101	15	316			

Qualifiers:

Client:

- * 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
- Page 4 of 4

HALL HO ENVIRONMENTAL ANALYSIS LABORATORY	all Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 EL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com	Sample Log-In Check List
Client Name: GHD Wor	k Order Number: 1808A88	RcptNo: 1
Received By: Erin Melendrez 8/17/2 Completed By: Ashley Gallegos 8/17/2 Reviewed By: JAB 08/17/18	018 8:35:00 AM 018 8:56:25 AM Labeled	64: ENH 8/17/18
Chain of Custody	_	
1. Is Chain of Custody complete?	Yes 🗹	No 🗋 Not Present 🛄
2. How was the sample delivered?	<u>Courier</u>	
Log In 3. Was an attempt made to cool the samples?	Ves 🔽	
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 🗌
Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌
7. Are samples (except VOA and ONG) properly preserv	ved? Yes 🗹	No 🗌
3. Was preservative added to bottles?	Yes	No 🗹 NA 🗌
O VOA vials have zero headspace?	Yes	No 🗌 No VOA Vials 🗹
0. Were any sample containers received broken?	Yes	No 🗹 # of preserved
1. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🔽	No bottles checked for pH:
2. Are matrices correctly identified on Chain of Custody	Yes 🖌	No Adjusted
3. Is it clear what analyses were requested?	Yes 🗹	No 🗆
4. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No Checked by:
pecial Handling (if applicable)		
15. Was client notified of all discrepancies with this order	r? Yes	`No 🗌 NA 🗹
Person Notified:	Date	
By Whom:	Via: 🗌 eMail 🛄 Phon	e 📋 Fax 🔄 In Person
Regarding:		
Client Instructions:		
16. Additional remarks:		
17. <u>Cooler Information</u> Cooler No Temp ^o C Condition Seal Intact 1 4.0 Good Yes	Seal No Seal Date Sig	ned By

	MENTAL RATORY		109	2					(N)	رکر (۲ ه	ر کر کھ ج Air Bubbles			 	-				stercom	talytical report.	
		COM	NM 87	5-410	st				(\	۰۸۵٬	(OV) COSC								Tren	C C V ^L	
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Turm-Around Time:	Standard Kush		C WALEY +	Broject #: → こ と い し バ ● ご	1 M 00000 11	Project Manager:	Alon Brander		Sampler: / // () On loe: / Yes No	Sample Temperature 5.0-1.0 (re)=4.0	Container Preservative HEAL No. Type and # Type 180.8A88	1 for Soil 3at ICE - 001							Leh SILLIS 150	Received by: COUNSENTIS Date Date 05354	
Chain-of-Custody Record	Client GHD Services Inc	Mailing Address: / Int. 1-1, 0 1 0 1 0 - 22	11 - 11 - 11 - 14 The Ray Solved Ma Sterry	NE Albuquerque, NM 87110	XPhone #: 805 884 0672	Femail or Fax#: Alan & Canden @ ghad com	QA/QC Package:	Standard Level 4 (Full Validation)	Accreditation	🗆 EDD (Type)	Date Time Matrix Sample Request ID	G/1418 1050 5 5111352501406161814677712							 VILLIS 1500 Actor	Date: Time: Relinfuished by International Control Cont	•

Appendix D 2018 Remediation Work Plan



November 12, 2018

Reference No. 11135250-14

Ms. Maria Pruett New Mexico Oil Conservation Division Energy, Minerals, and Natural Resources Department District 2 811 S. First Street Artesia, New Mexico 88210

Re: 2018 Remediation Work Plan Avalon Compressor Station Release (2RP-4848) Eddy County, New Mexico

Dear Ms. Pruett:

1. Project Information

The Site is located on land owned by the State of New Mexico in Unit K, Section 20, Township 26 South, Range 28 East, approximately 14-miles south of Malaga, in southern Eddy County, New Mexico. ETC submitted an initial C-141 Form to the New Mexico Oil Conservation Division (NMOCD) dated July 9, 2018 describing a release of approximately 5.0 barrels of condensate and 2.0 barrels of water. The release was determined to have originated from a closed tank equalizing valve tank hatch.

2. NMOCD Closure Requirement Criteria for Soils

Subsurface investigation activities were completed in accordance with the revised and reissued Guidelines for Remediation of Leaks, Spills, and Releases Rule 19.15.29 New Mexico Administrative Code (NMAC) from the NMOCD issued on August 14, 2018. The following criteria from Table 1 (below) within NMAC 19.15.29.12 was utilized to determine site-specific screening limits:

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituent	Limit*
<u><</u> 50 feet	Chloride**	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg
* Numerical limits or natural background level, whichever is greate	er.	
** This applies to release of produced water or other fluids which n	nay contain chloride.	



Localized depth to groundwater was estimated at a depth of approximately 15 to 20 feet below ground surface (bgs) based on depth to water records available on the United States Geological Survey (USGS) National Water System Information map. The nearest well to the site is approximately 1.38 miles to the west. Information available from various sources including the Petroleum Recovery Research Center (PRRC) Mapping Portal and the United States Geological Survey (USGS) Current Water Database for the Nation concludes:

- a) the depth to groundwater at the Site is less than 50-feet bgs;
- b) the site is not within 300 feet of any continuously flowing watercourse;
- c) the site is not within 200 feet of any lakebed, sinkhole or playa lake;
- d) the site is not within 300 feet of an occupied permanent residence, school, etc.;
- e) the site is not within 500 feet of a spring or private, domestic fresh water well;
- f) the site is not within 1,000 feet of any fresh water well or spring;
- g) the site is not within incorporated municipal boundaries or within a defined municipal fresh water well field;
- h) the site is not within 300 feet of a wetland;
- i) the site is not within an area overlying a subsurface mine;
- j) the site is not within an unstable area and;
- k) the site is not within a 100-year floodplain.

Consequently, the anticipated site-specific screening limits to be applied to this location by the NMOCD based on the revised Rule are <u>10 mg/kg for benzene</u>, <u>50 mg/kg for total benzene</u>, <u>total benzene</u>, <u>total sylenes (BTEX)</u>, <u>100 mg/kg for total petroleum hydrocarbons (TPH) including gasoline range</u> organics (GRO), diesel range organics (DRO, and oil range organics (MRO), and 600 mg/kg for chloride.

Per 19.15.29.13, Restoration, Reclamation, and Re-vegetation, the impacted area must be remediated a minimum of 4-feet bgs with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Soil cover must consist of topsoil at a thickness comparable to background topsoil thicknesses, or one foot of suitable earthen material capable of establishing and maintaining vegetation at the site. Reclamation is considered complete when all disturbed areas have established vegetative cover with a life-form ratio of plus or minus 50 percent of pre-remedial levels, and plant cover of a minimum of 70 percent of previous levels, excluding noxious weeds.

Evaluation of the analytical data obtained from soil assessment and delineation activities performed from 2018 indicate horizontal and vertical delineation of petroleum hydrocarbon and chloride impacts have been achieved at the Site to support remediation activities (excavation of the area).



3. 2018 Scope of Work

The scope of work for this project in 2018 will involve soil remediation activities inclusive of excavation, sampling, backfilling, and restoration (re-seeding of off-pad areas if applicable) of the impacted area (see Figure 1).

Petroleum hydrocarbon and chloride impacted caliche well pad material and soil will be excavated accompanied by confirmation soil sample analysis. Field screening of soils for BTEX, TPH, and chloride will be performed in order to guide excavation activities. Subsequently, the area will be backfilled with clean caliche material and soil, graded and contoured to ensure proper surface area drainage, and the soil (off-pad areas) fertilized and re-seeded. The following outlines basic project details that will be completed by GHD and GHD subcontractors.

Field Program

- Prior to mobilizing excavation equipment to the Site, a New Mexico 811 utility notification will be made at least 48-hours prior to mobilization.
- Underground utilities in proximity to the proposed excavation area will be day-lighted via hydroexcavation prior to remedial excavation activities.
- GHD anticipates that pipeline operators will not allow excavation within 10 feet of any pipelines, therefore remediation within these areas will be deferred until operations of the pipelines cease.
- Approximately 300 cubic yards (cy) of pad material and soil will be excavated (Figure 1). Impacted soil in the affected area will be excavated until field screening indicates that volatile organic compounds (VOCs) are at background concentrations and chloride is below 600 mg/kg.
- Field screening for VOCs will be conducted with a photoionization detector (PID) calibrated to isobutylene.
- Soils will be field screened for chloride during excavation activities utilizing Hach chloride test strips.
- Sidewall and bottom confirmation samples will be collected from the excavated area prior to backfilling and analyzed for chloride by EPA Method 300, BTEX by EPA Method 8021B, and TPH by EPA Method 8015 Modified.
- The excavated area will be backfilled with clean soil following evaluation of the confirmation samples.
- Any disturbed off-pad areas will be fertilized and re-seeded with a Bureau of Land Managementapproved seed mix.

Quality Assurance/ Quality Control

Confirmation soil sampling will be completed in accordance with our standard Quality Assurance/ Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results.



Reporting

A report summarizing remediation activities will be submitted. The report will include a Site description, project history, description of field events, a discussion of results, and recommendations (if any).

The report will include:

- A scaled Site plan showing the locations of the excavation and other Site features;
- Tabulation of field screening and laboratory analytical results; and
- Geotagged photographic documentation of field activities.

Vegetation Monitoring

Following completion of soil remediation activities at the Site, and as required by the New Mexico State Land Office (NMSLO), GHD will conduct vegetation monitoring visits to the Site if any off pad areas are restored. The status of vegetative growth within the remediated area will be documented with photographs and in field notes during each visit. A closure request report will be completed following one year of monitoring for submittal to NMSLO.

4. Work Plan Approval Request

GHD is prepared to initiate the scope of work immediately. If you have any questions or comments with regards to this work plan, please do not hesitate to contact our Albuquerque office at (505) 884-0672. Your timely response to this correspondence is appreciated.

Sincerely,

GHD

Christine Mathews Project Manager

CM/ji/1

Encl.

Attachment: Figure 1 – Proposed Excavation Map



Source: Image © 2018 Google - Imagery Date: October 1, 2014





ETC TEXAS PIPELINE, LTD. EDDY COUNTY, NEW MEXICO AVALON COMPRESSOR 2RP-4848

PROPOSED EXCAVATION AREA

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1113----\11135250-ETC Field Services\Proposal\11135250-14(Proposal-01)GN-DL001.dwg

HA-1		TP-1		
Date	07/10/18	07/12/18		
Depth	2'	2'	4'	
TPH		2.4	20.9	
hloride	344	<1.0	<1.0	

1
•

Avalon Compressor

2. All results are in milligrams per kilogram (mg/kg).

1. All site locations are approximate.

LEGEND

	LEGEND	
	Test Pit Location	
	ETC Initial Surface Samples (See Table for Results)	
	Approximate Release Area	
RY	Proposed Excavation Limits (1ft)	
PH.	Proposed Excavation Limits (10ft)	
-PW-	Produced Water Line	
Depth	Depth of Sample (feet)	
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes Concentration (mg/kg)	
TPH	Total Petroleum Hydrocarbons Concentration (mg/kg)	
GRO	TPH as Gasoline Range Organics	
DRO	TPH as Diesel Range Organics	
	Indicates Field Screen (FS)	
		_

Lat/Long: 32.026224° North, 104.117843° West

11135250-14 Nov 8, 2018

FIGURE 1

