R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996 Artesia ▲ Carlsbad ▲ Durango ▲ Midland

April 27, 2018

Olivia Yu NMOCD District 1 1625 N. French Dr. Hobbs, NM 88240

RE: Advanced Energy Tomahawk SWD Facility API: 30-025-33069. Unit L, 31, T21S. R33E. Lea County, NM 1RP- 4778

Ms. Yu:

R.T. Hicks Consultants (Hicks Consultants) is pleased to submit this characterization and remediation plan on the behalf of Advanced Energy. This CAP relies on our

- August 2017¹ workplan.
- The November 9, 2017 response to NMOCD, and
- Data collected during the December 2017 and March 2018 characterization.

Please refer to Appendix A that discusses our December 2017 and March 2018 sampling program.

Sampling and Analytical Results

The closure criteria proposed in NMOCD's application to repeal and replace Rule 19.15.29 NMAC (the Rule) was used to establish delineation and closure limits at this site. Based upon the Rule Table 1, chloride closure criteria at this location is:

Closure Criteria Depth (below ground surface)	Chloride Limit
0-4 feet	600 mg/kg
>4 feet	20,000 mg/kg

The proposed Rule does not cause conflict with the existing Rule. Rather the proposed Rule provides clarity, recognition of decades of data and certitude whereas the existing Rule relied upon 1993 guidance and relied upon the varied expertise and sometimes conflicting decisions of Districts. We are fully confident that OCD would not be the sponsor of the proposed Rule if the changes did not support the legal mandate of protecting fresh water, public health and the environment.

The proposed Rule also recognizes the fact that the existing Rule and decades of previous practice did not require submission and approval of a characterization work plan. The

¹ AMTEX Energy, Tomahawk SWD Facility Release, 1RP-4778. Dated August 24, 2017.

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proposed Rule does incorporate appropriate elements of the directive of Mr. Griswold (attached to the signed C-141 from OCD).

Appendix D is a copy of the Rule and Plates 1-9 show that this site meets the criteria established by proposed Section 19.15.29.12.B.3 and B.4.

Table 1, attached, presents the result of all sampling conducted at the site. Plate 10 presents the average chloride concentration observed from ground surface and 3 to 4 feet below ground surface (bgs) at each location from either the December 2017 or March 2018 sampling event.

Below is a summary of observations during the characterization activities. Please refer to Table 1 for summary of analytical, Appendix B for the Certificates of Analysis, and Appendix C for the trench/auger logs.

Most recent sampling shows:

- **Pad East** average chloride concentration was 95 mg/kg between 1 and 4 feet; all samples showed chloride below the 600 mg/kg closure criteria.
- Pad West average chloride concentration was 226.5 mg/kg between 1 and 4 feet. Samples between 1 and 4 feet exhibit chloride below 600 mg/kg. Chloride within the caliche at 7 feet showed a concentration of 3,800 mg/kg, less than the 20,000 mg/kg closure criteria.
- **Trench 1** the upper 4 feet soil samples exhibit a chloride concentration below the 600 mg/kg closure criteria. Below 4-feet soil samples exhibit a chloride concentration below the 20,000 mg/kg closure criteria.
- **Trench 2** chloride concentrations show that the uppermost 4-feet of soil meet the closure criteria. At 13 feet bgs, chloride was 7,600 mg/kg. We conclude that it is highly unlikely that chloride concentrations will exceed 20,000 mg/kg below 4-feet and no further delineation is necessary given that the depth to the groundwater is 364 feet and the identified aquifer lies at a depth of approximately 654 ft (average of 899 and 410; see Exhibit 2, below).
- **Trench 5** chloride is below 400 mg/kg from 3 feet to 9 feet bgs. No further delineation is necessary. Chloride at the surface to 1 foot bgs (1,700 mg/kg) will undergo corrective action discussed later.
- HA-4 (near Trench 4) chloride concentrations are below laboratory detection levels in the upper 3 feet. At 5 feet, chloride was 41 mg/kg. At 6.5 feet bgs chloride was 1,000 mg/kg, below the 20,000 mg/kg closure criteria.
- HA-200 South chloride at 3-feet bgs is 1,000 mg/kg chloride. Hand auger refusal was encountered at 3 feet with the contact of caliche. In March 2018, we elected to obtain soil samples 25-feet downgradient from HA-200, with respect to the release flow path. Chloride concentration at "225 S" averaged 337.5 mg/kg in the upper 4 feet. At 4-feet, chloride was 730 mg/kg. Accounting for approximately 18-inches of road cut from the natural surrounding topography (see Exhibit 1, below), depth to the 4-foot sample accounting for road cut is projected at 5.5 feet. During final reclamation of the road surface to blend with surrounding topography, the 4-foot sample depth will be an actual 5.5 feet. Based upon projected surface, one could argue that location meets the 600 mg/kg chloride closure criteria. Regardless, the

current upper 4-feet will require natural flushing of salt by stormwater infiltration and monitoring.



- Exhibit 1: Photograph viewing southwest across the north-south trending caliche access road. The road surface is cut into the surrounding natural grade at a depth of approximately 18-inches.
- HA-250 South average chloride concentrations in the upper 3-feet is 401 mg/kg. At 6 feet bgs, chloride shows 2,006 mg/kg, below the 20,000 mg/kg chloride closure criteria. Hand auger refusal was encountered at 6 feet with the contact of caliche.
- **Trench 350** chloride is below 600 mg/kg from 1 foot to 8 feet bgs. No further delineation is required.

BTEX, GRO, DRO, and MRO was below laboratory detection levels (non-detect) in the four samples submitted to the laboratory.

Depth to Groundwater

0

Review of nearby water wells available from the New Mexico Office of the State Engineer (OSE) online database (Plate 1) shows that the depth to the water-bearing zone averages:

- 646 feet for wells located 3.5 miles northeast of the location
- 350 feet for wells located 3.3 miles southwest of the location

OSE well logs show that the northeast wells have an average depth to water of 572 feet with a top of the water bearing formation depth of 899 feet; resulting in 327 feet of pressure head above the confining layer (see Exhibit 1, below). It is important to recognize that actual ground water is at a depth of 898 feet and confining pressure causes the water column to rise 327 feet for a perceived static water level of 572 feet bgs.

POD Number	Date	Top of Water Bearning Stratification	Bottom of Water Bearning Stratification	Depth to Water	Source	Height Above Confining Layer	Direction from Tomahawk
		Feet	Feet	Feet		Feet	
CP 01349 POD 1	7/18/2014	960	1188	572	Artesian	388	NE
CP 01355 POD 1	7/29/2014	925	1185	582	Artesian	343	NE
CP 01359 POD 1	8/9/2014	765	1092	555	Artesian	210	NE
CP 01357 POD 1	8/26/2014	945	1286	578	Artesian	367	NE
	Average of NE wells	899	1188	572		327	
C 02821	6/23/2001	410	540	340	Not Specified	70	SW

Exhibit 2: Summary of nearby OSE water wells showing depth to water bearing formation and water levels.

One OSE water well located southwest of the release had one well log available. This well also shows artesian conditions. As with the northeast wells, it is important to recognize that actual ground water is at a depth of 410 feet and confining pressure causes the water column to rise 70 feet for a perceived static water level of 340 feet bgs. We recognize that thin water-bearing units above the regional water-bearing zone may not have been recorded by the well drillers. However, more shallow water-bearing zones would be sandstone units within the Dockum Group redbeds and, like the regional water-bearing zone, would be under artesian pressure.

Ground water flow is to the southeast as demonstrated on the potentiometric map (Plate 2). We relied on the USGS water wells to generate the potentiometric surface. Regionally, USGS water wells show that ground water is within the Santa Rosa and Chinle Formation. The potentiometric surface indicates that the depth to water, which is under artesian flow, is approximately 364 feet bgs at the site.

Proposed Remediation Plan

The most recent chloride concentrations at the site do not exceed OCD's proposed closure criteria. Hicks Consultants concludes that residual chloride in the subsurface does not pose a threat to groundwater because:

- Depth to ground water is at least 364 feet bgs.
- Groundwater zones are under pressure and are not water-table aquifers.

With respect to surface reclamation, the December 2017 and March 2018 sampling events show that the July 2017 release has not caused average chloride concentrations to exceed 600 mg/kg in the upper 4 feet, except

• Trench 5 (average chloride in upper 4 feet <1030 mg/kg)

While the averaged chloride concentrations in the upper 4-feet generally meet the closure criteria, we propose the below remediation to support successful re-vegetation:

In-situ remediation at Trench 1, HA-4 (Trench 4), and Trench 5

- Rip and mulch affected areas to increase soil infiltration rates.
- Allow natural flushing to occur (via precipitation).

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• After six months, contour to blend with surrounding topography and reseed with an approved seed mixture

The proposed remediation area at HA-4 and Trench 5 is 2,660 sq. yrds. The proposed area at Trench 1 is 800 sq. yrds; totaling 3,460 sq. yrds. Advanced Energy will complete the proposed remediation within 90-days of division approval.

Sincerely, R.T. Hicks Consultants, Ltd.

And and a har

Andrew Parker Project Scientist

Copy: Advanced Energy, David Harwell (DHarwell@advanceenergypartners.com) Shelly Tucker, BLM (<u>stucker@blm.gov</u>) Merchant Livestock, Clabe Pearson (<u>clabe@merchantlivestock.com</u>) Brad Blevins (bblevins5252@gmail.com)

TABLES

Sample Name	Date	Cl (titration)	Cl mg/kg	TPH mg/kg	GRO+DRO mg/kg	BTEX mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	GRO mg/kg	DRO mg/kg	MRO mg/kg
NMAC Closure Criteria													
0 - 4 feet			600	2,500	1,000	10	50						
> 4 ft			20,000	2,500	1,000	10	50						
Pad East at 1 ft	12/5/2017	401	250										
Pad East at 3 ft	12/5/2017	401	600										
Pad East at 1 ft	3/7/2018		37										
Pad East at 2 ft	3/7/2018		89										
Pad East at 3 ft	3/7/2018		160										
Pad East at 4 ft	3/7/2018		94										
Pad East at 7 ft Caliche	3/7/2018		310										
Pad West at 1 ft	12/5/2017	401	480										
Pad West at 3 ft	12/5/2017	401	340										
Pad West at 1 ft	3/7/2018		410										
Pad West at 2 ft	3/7/2018		260										
Pad West at 3 ft	3/7/2018		170										
Pad West at 4 ft	3/7/2018		66										
Pad West at 5 ft	3/7/2018		720										
Pad West at 7 ft	3/7/2018		120										
Pad West at 7 ft Caliche	3/7/2018		3800										
Trench 1 at 0.5 ft	Jul-17	603											
Trench 1 at 1.0 ft	Jul-17	1,846											
Trench 1 at 2.0 ft	Jul-17	2,968											
Trench 1 at 3.0 ft	Jul-17	4,524											
Trench 1 at 1 ft	12/5/2017		58										
Trench 1 at 3 ft	12/5/2017		96										
Trench 1 at 5 ft	12/5/2017		6,100										
Trench 1 at 7 ft	12/5/2017		11,000										
Trench 1 at 10 ft	12/5/2017		910										
Trench 1 at 13 ft	12/5/2017		5,700										
Trench 2 at 0.5 ft	Jul-17	505											
Trench 2 at 1.0 ft	Jul-17	1,823											
Trench 2 at 1 ft	12/5/2017		<30										
Trench 2 at 3 ft	12/5/2017		<30										
Trench 2 at 5 ft	12/5/2017		80										
Trench 2 at 7 ft	12/5/2017		320										
Trench 2 at 11 ft	12/5/2017		5,600										
Trench 2 at 13 ft	12/5/2017		7,600										
Trench 3 at 0.5 ft	Jul-17	<105											
Trench 4 at 0.5 ft	Jul-17	2,291											
HA-4 at 1 ft	12/5/2017	200	<30	<62.2	<14.2	<0.206	<0.023	<0.046	<0.046	<0.091	<4.6	<9.6	<48
HA-4 at 3 ft	12/5/2017	200	<30	<62.4	<14.4	<0.215	<0.024	<0.048	<0.048	<0.095	<4.8	<9.6	<48
HA-4 at 5 ft	12/5/2017	401	41										
HA-4 at 6.5ft	12/5/2017	802	1,000										

Sample Name	Date	Cl	Cl	TPH	GRO+DRO	BTEX	Benzene	Toluene	Ethylbenzene	Xylenes	GRO	DRO	MRO
		(titration)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NMAC Closure Criteria													
0 - 4 feet			600	2,500	1,000	10	50						
> 4 ft			20,000	2,500	1,000	10	50						
Trench 5 at 0.25 ft	Jul-17	8,214											
Trench 5 at 1 ft	12/5/2017		1,700										
Trench 5 at 3 ft	12/5/2017		360	<59.9	<13.9	<0.212	<0.024	<0.047	<0.047	<0.094	<4.7	<9.2	<46
Trench 5 at 5 ft	12/5/2017		<30										
Trench 5 at 7.5 ft	12/5/2017		150										
Trench 5 at 9 ft	12/5/2017		270										
Trench 6 at 0.5 ft	Jul-17	<133											
HA-200 South at 1 ft	12/5/2017	200											
HA-200 South at 3 ft	12/5/2017	1,000											
225 S at 1 ft	3/7/2018		<30										
225 S at 2 ft	3/7/2018		130										
225 S at 3 ft	3/7/2018		460										
225 S at 4 ft	3/7/2018		730										
HA-250 South at 1 ft	12/5/2017	200											
HA-250 South at 3 ft	12/5/2017	601											
HA-250 South at 6 ft	12/5/2017	2,006											
Trench 350 South at 1 ft	12/5/2017	200	<30										
Trench 350 South at 3 ft	12/5/2017	401	210	<62.5	<14.5	<0.2185	<0.024	<0.048	<0.048	<0.0985	<4.8	<9.7	<48
Trench 350 South at 5 ft	12/5/2017	401	520										
Trench 350 South at 7 ft	12/5/2017	401	540										
Trench 350 South at 8 ft	12/5/2017	401	550										

PLATES

M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\Plate 1 DTW.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\Plate 2 Potentiometric.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure3_SurfaceWater.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure4_NearbyStructures.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure5_wellFields.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure6_wetlands.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure7_minesMinerals.mxd



M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\figure8_karstPotential.mxd





M:\Amtex\Tomahawk SWD\gis_ap\Figures\Dec 2017 Sampling\Plate 10 Location Chloride.mxd





December 2017 Sample Locations

On December 5, 2017 Andrew Parker and Mike Stubblefield of Hicks Consultants mobilized to the above referenced location to conduct a limited characterization of the produced water release that occurred on July 17, 2017. Storm Construction provided backhoe trenching services.

On March 7, 2017 Randall Hicks of Hicks Consultants mobilize to the location to obtain additional characterization of the upper 4 feet at locations defined during the December 2017 field event.

We excavated four (5) backhoe trenches and five (5) hand auger borings. Depth was determined by the extent of the backhoe reach or auger/bucket refusal caused by the underlying caliche. Soil samples were collected for the analysis of chloride, BTEX, and GRO/DRO/MRO. Soil samples were submitted to Hall Environmental Laboratory in Albuquerque, NM; on-ice and under strict chain-of-custody. Appendix B contains the laboratory Certificates of Analysis.

Plate 10 shows the location of the sample locations. Exhibit A, below, shows the latitude, longitude, depth, and sampling type. Table 1 is a summary of the laboratory analysis. Appendix C contains the lithologic logs for the sample locations.

Sample Location	Sampling Type	Date	Depth (ft)	Latitude	Longitude
Trench 1	Backhoe	12/05/17	13.0	32.43320	-103.61840
Trench 2	Backhoe	12/05/17	13.0	32.43301	-103.61851
Trench 5	Backhoe	12/05/17	10.5	32.43282	-103.61957
Trench 350 South	Backhoe	12/05/17	8.0	32.43174	-103.61992
HA-200 South	Hand Auger	12/05/17	3.0	32.43215	-103.61992
225 S	Backhoe	03/07/18	4	32.43206	-103.61992
HA-250 South	Hand Auger	12/05/17	6.0	32.43201	-103.61993
HA-4 (Trench 4)	Hand Auger	12/05/17	6.5	32.43259	-103.61981
Pad East	Hand Auger	12/05/17	4.0	32.43360	-103.61777
Pad West	Hand Auger	12/05/17	4.0	32.43349	-103.61808

Exhibit A: Sample location and type. Coordinate datum is WGS84/NAD83.

Location HA-4 was placed near the location of the previous Trench 4. A recently installed

surface pipeline prevented access with a backhoe. Therefore, we elected to hand auger the selected location. Trench 2 was relocated due to a subsurface pipeline paralleling the northern edge of the access road and per conversations with Storm Construction and Brad Blevins, ranch manger, regarding flow path and observed storm water surface flow that occurred with 24 hours of the release. Mr. Blevins and Storm Construction stated that release pooled in the location of the relocated Trench 2 (Exhibit B).

> Exhibit B: Photo of lithology at Trench 2. Silty sand dominates the stratigraphic column from the surface to 5.5 feet. Very hard caliche was encountered at 5.5 feet.



APPENDIX B



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

January 02, 2018

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: Amtex Tomahawk SWD

OrderNo.: 1712538

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 17 sample(s) on 12/8/2017 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,

andia

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysi	Hall Environmental Analysis Laboratory, Inc.				Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD Project: Amtex Tomahawk SWD			Client Samp		ench 1 at 3ft /5/2017 8:45:00 AM				
Lab ID: 1712538-001	Matrix:	SOIL			/8/2017 2:50:00 PM	-			
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch			
EPA METHOD 300.0: ANIONS					Analy	/st: CJS			
Chloride	96	30	mg/Kg	20	12/20/2017 10:19:04	AM 35601			

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 22 J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	is Labora	tory, Inc.	Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT:R.T. Hicks Consultants, LTDProject:Amtex Tomahawk SWDLab ID:1712538-002	Matrix:	SOIL	Collection	le ID: Trench 1 at 5ft Date: 12/5/2017 8:50:00 AM Date: 12/8/2017 2:50:00 PM			
Analyses	Result	PQL Qua	al Units	DF Date Analyzed	Batch		
EPA METHOD 300.0: ANIONS Chloride	6100	300	mg/Kg	Analy 200 12/22/2017 6:09:37 F	vst: MRA PM 35601		

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 22 J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	is Labora	tory, Inc.	Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD Project: Amtex Tomahawk SWD Lab ID: 1712538-003	Matrix:	SOIL	Collection	le ID: Trench 1 at 7ft Date: 12/5/2017 9:20:00 AM Date: 12/8/2017 2:50:00 PM			
Analyses	Result	PQL Qu	al Units	DF Date Analyzed	Batch		
EPA METHOD 300.0: ANIONS Chloride	11000	750	mg/Kg	Analy 500 12/22/2017 6:22:01 F	vst: MRA PM 35601		

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 22 J

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	s Labora	tory, Inc.	Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	e ID: Trench 1 at 10ft			
Project: Amtex Tomahawk SWD			Collection	Date: 12/5/2017 9:50:	00 AM		
Lab ID: 1712538-004	Matrix:	SOIL	Received	Date: 12/8/2017 2:50:	00 PM		
Analyses	Result	PQL Qua	l Units	DF Date Analyz	zed Batch		
EPA METHOD 300.0: ANIONS					Analyst: CJS		
Chloride	910	30	mg/Kg	20 12/20/2017 1	1:21:07 AM 35601		

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 22 J

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	Hall Environmental Analysis Laboratory, Inc.				
CLIENT: R.T. Hicks Consultants, LTD Project: Amtex Tomahawk SWD Lab ID: 1712538-005	Matrix:		Collection	le ID: Pad West at 3ft Date: 12/5/2017 10:40:00 AM Date: 12/8/2017 2:50:00 PM	=
Analyses	Result	PQL Qual		DF Date Analyzed Bate	ch
EPA METHOD 300.0: ANIONS Chloride	340	30	mg/Kg	Analyst: CJS 20 12/20/2017 5:40:16 PM 3562	

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 Page 5 of 22

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	tory, Inc.	Lab Order 1712538 • Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	e ID: Trench 2 a	at 3ft	
Project: Amtex Tomahawk SWD			Collection	Date: 12/5/2017	11:35:00 AN	M
Lab ID: 1712538-006	Matrix:	SOIL	Received	Date: 12/8/2017	2:50:00 PM	
Analyses	Result	PQL Qua	l Units	DF Date A	Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	/st: CJS
Chloride	ND	30	mg/Kg	20 12/20/2	2017 6:17:30 F	PM 35626

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 6 of 22 J

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	tory, Inc.	Lab Order 1712538 • Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	e ID: Trench 2 at 5	5ft	
Project: Amtex Tomahawk SWD			Collection 1	Date: 12/5/2017 11	:53:00 AM	
Lab ID: 1712538-007	Matrix:	SOIL	Received	Date: 12/8/2017 2:	50:00 PM	
Analyses	Result	PQL Qua	l Units	DF Date Ana	alyzed	Batch
EPA METHOD 300.0: ANIONS					Analys	t: CJS
Chloride	80	30	mg/Kg	20 12/28/20 ⁷	17 2:47:22 AN	1 35626

Qualifiers:

- * Value exceeds Maximum Contaminant Level.D Sample Diluted Due to Matrix
- D Sample Diluced 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 Page 7 of 22

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	e ID: Trench 2 at 11ft	
Project: Amtex Tomahawk SWD			Collection 1	Date: 12/5/2017 12:10:00 PM	1
Lab ID: 1712538-008	Matrix:	SOIL	Received 1	Date: 12/8/2017 2:50:00 PM	
Analyses	Result	PQL Qua	l Units	DF Date Analyzed	Batch
EPA METHOD 300.0: ANIONS				Analy	st: CJS
Chloride	5600	300	mg/Kg	200 12/28/2017 3:12:11 A	M 35626

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 Page 8 of 22

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1712538 Date Reported: 1/2/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Amtex Tomahawk SWD

Project:

Client Sample ID: Trench 5 at 3ft Collection Date: 12/5/2017 1:40:00 PM Presived Date: 12/8/2017 2:50:00 PM

Lab ID: 1712538-009	Matrix: S	Matrix: SOIL		Received Date: 12/8/2017 2:50:00 PM			
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch	
EPA METHOD 300.0: ANIONS					Analys	st: CJS	
Chloride	360	30	mg/Kg	20	12/28/2017 3:24:36 AM	M 35626	
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS	;			Analys	st: TOM	
Diesel Range Organics (DRO)	ND	9.2	mg/Kg	1	12/14/2017 12:01:35 F	PM 35467	
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	12/14/2017 12:01:35 F	PM 35467	
Surr: DNOP	99.1	70-130	%Rec	1	12/14/2017 12:01:35 F	PM 35467	
EPA METHOD 8015D: GASOLINE R	ANGE				Analys	st: NSB	
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	12/13/2017 3:20:33 PM	M 35455	
Surr: BFB	93.2	15-316	%Rec	1	12/13/2017 3:20:33 PM	M 35455	
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	st: DJF	
Benzene	ND	0.024	mg/Kg	1	12/16/2017 3:36:02 AM	M 35455	
Toluene	ND	0.047	mg/Kg	1	12/16/2017 3:36:02 AM	M 35455	
Ethylbenzene	ND	0.047	mg/Kg	1	12/16/2017 3:36:02 AM	N 35455	
Xylenes, Total	ND	0.094	mg/Kg	1	12/16/2017 3:36:02 AM	VI 35455	
Surr: 1,2-Dichloroethane-d4	98.0	70-130	%Rec	1	12/16/2017 3:36:02 AM	N 35455	
Surr: 4-Bromofluorobenzene	109	70-130	%Rec	1	12/16/2017 3:36:02 AM	M 35455	
Surr: Dibromofluoromethane	105	70-130	%Rec	1	12/16/2017 3:36:02 AM	M 35455	
Surr: Toluene-d8	95.3	70-130	%Rec	1	12/16/2017 3:36:02 AM	A 35455	

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

Oualifiers:

- * 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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 9 of 22 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysi	Lab Order 1712538 Date Reported: 1/2/2018					
CLIENT: R.T. Hicks Consultants, LTD			Client Samp	le ID: Tre	ench 5 at 7.5ft	
Project: Amtex Tomahawk SWD			Collection	Date: 12/	/5/2017 2:25:00 PM	
Lab ID: 1712538-010	Matrix: S	SOIL	Received	Date: 12/	/8/2017 2:50:00 PM	
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analy	rst: MRA
Chloride	150	30	mg/Kg	20	12/22/2017 5:19:59 P	PM 35626

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 10 of 22 J

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	Lab Order 1712538 Date Reported: 1/2/2018				
CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	le ID: Trench 5 at 9ft	=
Project: Amtex Tomahawk SWD			Collection 1	Date: 12/5/2017 2:38:00 PM	
Lab ID: 1712538-011	Matrix:	SOIL	Received	Date: 12/8/2017 2:50:00 PM	
Analyses	Result	PQL Qua	l Units	DF Date Analyzed Bat	ch
EPA METHOD 300.0: ANIONS				Analyst: MR	A
Chloride	270	30	mg/Kg	20 12/22/2017 5:32:23 PM 356	26

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
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 11 of 22 J
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Analytical Report
Lab Order 1712538

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 1/2/2018

CLIENT: R.T. Hicks Consultants, LTD	Client Sample ID: HA 4 at 1ft						
Project: Amtex Tomahawk SWD	Collection Date: 12/5/2017 1:20:00 PM						
Lab ID: 1712538-012	Matrix: SOIL Received			Date: 12/8/2017 2:50:00 PM			
Analyses	Result	PQL (Qual Units	DF	Date Analyzed	Batch	
EPA METHOD 300.0: ANIONS					Analys	: MRA	
Chloride	ND	30	mg/Kg	20	12/22/2017 5:44:48 PM	35626	
EPA METHOD 8015M/D: DIESEL RANGE		s			Analys	t: TOM	
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	12/14/2017 12:23:41 P	M 35467	
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	12/14/2017 12:23:41 P	M 35467	
Surr: DNOP	101	70-130	%Rec	1	12/14/2017 12:23:41 P	M 35467	
EPA METHOD 8015D: GASOLINE RANG	θE				Analys	: NSB	
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	12/13/2017 3:44:33 PM	35455	
Surr: BFB	90.5	15-316	%Rec	1	12/13/2017 3:44:33 PM	35455	
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analys	: DJF	
Benzene	ND	0.023	mg/Kg	1	12/16/2017 5:03:18 AM	35455	
Toluene	ND	0.046	mg/Kg	1	12/16/2017 5:03:18 AM	35455	
Ethylbenzene	ND	0.046	mg/Kg	1	12/16/2017 5:03:18 AM	35455	
Xylenes, Total	ND	0.091	mg/Kg	1	12/16/2017 5:03:18 AM	35455	
Surr: 1,2-Dichloroethane-d4	93.0	70-130	%Rec	1	12/16/2017 5:03:18 AM	35455	
Surr: 4-Bromofluorobenzene	107	70-130	%Rec	1	12/16/2017 5:03:18 AM	35455	
Surr: Dibromofluoromethane	102	70-130	%Rec	1	12/16/2017 5:03:18 AM	35455	
Surr: Toluene-d8	98.0	70-130	%Rec	1	12/16/2017 5:03:18 AN	35455	

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 12 of 22
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1712538

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 1/2/2018

CLIENT: R.T. Hicks Consultants, LTD Client Sample ID: HA 4 at 3ft **Project:** Amtex Tomahawk SWD Collection Date: 12/5/2017 1:30:00 PM Lab ID: 1712538-013 Matrix: SOIL Received Date: 12/8/2017 2:50:00 PM Analyses Result **PQL** Qual Units **DF** Date Analyzed Batch **EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride ND 30 mg/Kg 12/22/2017 5:57:13 PM 35626 20 EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: TOM **Diesel Range Organics (DRO)** ND mg/Kg 12/14/2017 12:45:16 PM 35467 9.6 1 mg/Kg Motor Oil Range Organics (MRO) ND 48 1 12/14/2017 12:45:16 PM 35467 Surr: DNOP 103 70-130 %Rec 1 12/14/2017 12:45:16 PM 35467 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 4.8 mg/Kg 1 12/13/2017 4:08:31 PM 35455 Surr: BFB 12/13/2017 4:08:31 PM 35455 88.8 15-316 %Rec 1 EPA METHOD 8260B: VOLATILES SHORT LIST Analyst: DJF Benzene ND 0.024 mg/Kg 1 12/16/2017 5:32:23 AM 35455 Toluene ND 0.048 12/16/2017 5:32:23 AM 35455 mg/Kg 1 Ethylbenzene ND 0.048 mg/Kg 12/16/2017 5:32:23 AM 35455 1 Xylenes, Total ND 0.095 mg/Kg 1 12/16/2017 5:32:23 AM 35455 Surr: 1,2-Dichloroethane-d4 96.8 70-130 %Rec 12/16/2017 5:32:23 AM 35455 1 Surr: 4-Bromofluorobenzene 108 70-130 %Rec 1 12/16/2017 5:32:23 AM 35455 %Rec Surr: Dibromofluoromethane 100 70-130 12/16/2017 5:32:23 AM 35455 1 Surr: Toluene-d8 99.7 70-130 %Rec 12/16/2017 5:32:23 AM 35455 1

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

Oualifiers:

- * 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
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 13 of 22 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
| Hall Environmental Analysi | s Labora | tory, Inc. | | Lab Order 1712538
Date Reported: 1/2/2018 |
|-------------------------------------|----------|------------|-------------|------------------------------------------------------------|
| CLIENT: R.T. Hicks Consultants, LTD | | (| Client Samp | le ID: HA 4 at 6.5ft |
| Project: Amtex Tomahawk SWD | | | Collection | Date: 12/5/2017 1:50:00 PM |
| Lab ID: 1712538-014 | Matrix: | SOIL | Received | Date: 12/8/2017 2:50:00 PM |
| Analyses | Result | PQL Qua | l Units | DF Date Analyzed Batch |
| EPA METHOD 300.0: ANIONS | | | | Analyst: MRA |
| Chloride | 1000 | 30 | mg/Kg | 20 12/20/2017 2:34:09 PM 35634 |

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 14 of 22

Analytical Report

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	s Laborat	tory, Inc.		Lab Order 1712538 Date Reported: 1/2/2018	
CLIENT: R.T. Hicks Consultants, LTD Project: Amtex Tomahawk SWD Lab ID: 1712538-015	Matrix:		Collection 1	le ID: Trench 350 at 5ft Date: 12/5/2017 1:30:00 PM Date: 12/8/2017 2:50:00 PM	=
Analyses	Result	PQL Qual	Units	DF Date Analyzed Batcl	h
EPA METHOD 300.0: ANIONS Chloride	520	30	mg/Kg	Analyst: MRA 20 12/21/2017 3:48:30 AM 35634	

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

Qualifiers:

*

- Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix
- 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
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 15 of 22 J

Analytical Report

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Hall Environmental Analysi	s Laborat	tory, Inc.		Lab Order 1712538 Date Reported: 1/2/2018	
CLIENT:R.T. Hicks Consultants, LTDProject:Amtex Tomahawk SWDLab ID:1712538-016	Matrix: 3		Collection 1	ble ID: Trench 350 at 8ft Date: 12/5/2017 1:50:00 PM Date: 12/8/2017 2:50:00 PM	=
Analyses	Result	PQL Qual	Units	DF Date Analyzed Batch	h
EPA METHOD 300.0: ANIONS Chloride	550	30	mg/Kg	Analyst: MRA 20 12/20/2017 3:11:24 PM 3563	

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

Qualifiers:

*

- Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix
- 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
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 16 of 22 J

Analytical Report

- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1712538 Date Reported: 1/2/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Amtex Tomahawk SWD

Client Sample ID: Trench 350 at 3ft Collection Date: 12/5/2017 1:20:00 PM Received Date: 12/8/2017 2:50:00 PM

Lab ID: 1712538-017	Matrix: S	SOIL	Received 1	Date: 12/	8/2017 2:50:00 PM	
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	210	30	mg/Kg	20	12/20/2017 3:23:48 PM	35634
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS				Analyst	том
Diesel Range Organics (DRO)	ND	9.7	mg/Kg	1	12/14/2017 1:06:54 PM	35467
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	12/14/2017 1:06:54 PM	35467
Surr: DNOP	96.9	70-130	%Rec	1	12/14/2017 1:06:54 PM	35467
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	12/13/2017 4:32:29 PM	35455
Surr: BFB	91.5	15-316	%Rec	1	12/13/2017 4:32:29 PM	35455
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analyst	DJF
Benzene	ND	0.024	mg/Kg	1	12/16/2017 6:01:25 AM	35455
Toluene	ND	0.048	mg/Kg	1	12/16/2017 6:01:25 AM	35455
Ethylbenzene	ND	0.048	mg/Kg	1	12/16/2017 6:01:25 AM	35455
Xylenes, Total	ND	0.095	mg/Kg	1	12/16/2017 6:01:25 AM	35455
Surr: 1,2-Dichloroethane-d4	97.6	70-130	%Rec	1	12/16/2017 6:01:25 AM	35455
Surr: 4-Bromofluorobenzene	106	70-130	%Rec	1	12/16/2017 6:01:25 AM	35455
Surr: Dibromofluoromethane	101	70-130	%Rec	1	12/16/2017 6:01:25 AM	35455
Surr: Toluene-d8	99.0	70-130	%Rec	1	12/16/2017 6:01:25 AM	35455

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 17 of 22
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1712538

Client: Project:		ks Consultants, LTD 'omahawk SWD			
Sample ID	MB-35601	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 35601	RunNo: 47886		
Prep Date:	12/19/2017	Analysis Date: 12/19/2017	SeqNo: 1534287	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-35601	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 35601	RunNo: 47886		
Prep Date:	12/19/2017	Analysis Date: 12/19/2017	SeqNo: 1534288	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		14 1.5 15.00	0 90.5 90	110	
Sample ID	MB-35626	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 35626	RunNo: 47918		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1535014	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-35626	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 35626	RunNo: 47918		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1535015	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		14 1.5 15.00	0 90.2 90	110	
Sample ID	MB-35634	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 35634	RunNo: 47923		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1536072	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-35634	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 35634	RunNo: 47923		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1536073	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		15 1.5 15.00	0 96.9 90	110	

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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	cks Consult Tomahawk S	,	D							
Sample ID LCS-35467	SampT	ype: LC	S	Tes	Code: EF	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch	n ID: 35	467	R	unNo: 47	7739				
Prep Date: 12/12/2017	Analysis D	ate: 12	2/13/2017	S	eqNo: 1	526367	Units: mg/K	ģ		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.1	73.2	114			
Surr: DNOP	4.4		5.000		87.7	70	130			
Sample ID MB-35467	SampT	ype: ME	BLK	Tes	Code: EF	PA Method	8015M/D: Die	esel Range	e Organics	
Sample ID MB-35467 Client ID: PBS	•	ype: ME 1 ID: 35 4			Code: EF		8015M/D: Die	esel Range	e Organics	
•	•	n ID: 35	467	R		7739	8015M/D: Die Units: mg/K	Ū	e Organics	
Client ID: PBS	Batch	n ID: 35	467 2/13/2017	R	unNo: 47	7739		Ū	e Organics RPDLimit	Qual
Client ID: PBS Prep Date: 12/12/2017	Batch Analysis D	n ID: 35 Pate: 12	467 2/13/2017	R S	unNo: 47	7739 526368	Units: mg/K	íg	-	Qual
Client ID: PBS Prep Date: 12/12/2017 Analyte	Batcl Analysis D Result	n ID: 35 Pate: 12 PQL	467 2/13/2017	R S	unNo: 47	7739 526368	Units: mg/K	íg	-	Qual

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 19 of 22

	cks Consult Fomahawk	,	ſD							
Sample ID MB-35455	SampT	ype: M	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	е	
Client ID: PBS	Batcl	h ID: 35	455	RunNo: 47743						
Prep Date: 12/12/2017	Analysis D	Date: 12	2/13/2017	S	SeqNo: 1	526938	Units: mg/ł	٨g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	890		1000		89.1	15	316			
Sample ID LCS-35455	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	е	
Client ID: LCSS	Batcl	h ID: 35	455	F	RunNo: 4	7743				
Prep Date: 12/12/2017	Analysis E	Date: 12	2/13/2017	S	SeqNo: 1	526939	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	110	75.9	131			
Surr: BFB	1000		1000		101	15	316			

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#:	1712538
	02-Jan-18

	ks Consult omahawk		D							
Sample ID mb-35455	Samp	Туре: МЕ	BLK	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: PBS	Batc	h ID: 35	455	F	RunNo: 4	7843				
Prep Date: 12/12/2017	Analysis [Date: 12	2/16/2017	S	SeqNo: 1	530759	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025	0111110100	0	/01/20	201121111		, or a 2		a dai
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.9	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		107	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.49		0.5000		98.1	70	130			
Sample ID Ics-35455	Samp	Type: LC	s	Tes	tCode: El	PA Method	8260B: Volat	iles Short	List	
Client ID: LCSS	Batc	h ID: 35	455	F	RunNo: 4	7843				
Prep Date: 12/12/2017	Analysis [Date: 12	2/16/2017	S	SeqNo: 1	530760	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.7	70	130			
Foluene	0.94	0.050	1.000	0	93.8	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.56		0.5000		112	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
	0.49		0.5000		98.0	70	130			
Surr: Toluene-d8	0.45		0.0000							
Surr: Toluene-d8 Sample ID 1712538-009ams		Туре: М		Tes		PA Method	8260B: Volat	iles Short	List	
	Samp	Type: M \$ h ID: 35	3				8260B: Volat	iles Short	List	
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft	Samp	h ID: 35	3 455	F	tCode: El	7843	8260B: Volat Units: mg/K		List	
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017	Samp ⁻ Batc	h ID: 35	5 455 2/16/2017	F	tCode: El RunNo: 4	7843			List RPDLimit	Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte	Samp [¬] Batc Analysis [h ID: 35 Date: 12	5 455 2/16/2017	F	tCode: El RunNo: 4 SeqNo: 1	7843 530762	Units: mg/K	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene	Samp ⁻ Batc Analysis [Result	h ID: 35 Date: 12 PQL	5 455 2/16/2017 SPK value	F S SPK Ref Val	tCode: El RunNo: 4 SeqNo: 1 %REC	7843 530762 LowLimit	Units: mg/K HighLimit	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Foluene Surr: 1,2-Dichloroethane-d4	Samp Batc Analysis I Result 0.89	h ID: 35 Date: 12 PQL 0.024	5 455 2/16/2017 SPK value 0.9407	F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9	7843 530762 LowLimit 51.9 64.6 70	Units: mg/K HighLimit 158	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Toluene	Samp Batc Analysis I Result 0.89 0.86 0.48 0.51	h ID: 35 Date: 12 PQL 0.024	5 455 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704	F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 19 %REC 94.9 91.4 101 108	7843 530762 LowLimit 51.9 64.6 70 70 70	Units: mg/K HighLimit 158 132 130 130	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Toluene Surr: 1,2-Dichloroethane-d4	Samp Batc Analysis I Result 0.89 0.86 0.48	h ID: 35 Date: 12 PQL 0.024	5 455 2/16/2017 SPK value 0.9407 0.9407 0.4704	F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101	7843 530762 LowLimit 51.9 64.6 70	Units: mg/K HighLimit 158 132 130	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Foluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Samp Batc Analysis I Result 0.89 0.86 0.48 0.51	h ID: 35 Date: 12 PQL 0.024	5 455 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704	F SPK Ref Val 0	tCode: El RunNo: 4 SeqNo: 19 %REC 94.9 91.4 101 108	7843 530762 LowLimit 51.9 64.6 70 70 70	Units: mg/K HighLimit 158 132 130 130	g		Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Toluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	Samp ⁻ Batc Analysis I Result 0.89 0.86 0.48 0.51 0.49 0.45	h ID: 35 Date: 12 PQL 0.024	5 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704 0.4704 0.4704	F S SPK Ref Val 0 0	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101 108 105 96.5	7843 530762 LowLimit 51.9 64.6 70 70 70 70 70 70	Units: mg/K HighLimit 158 132 130 130 130	g %RPD	RPDLimit	Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Toluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8	Samp [¬] Batc Analysis I 0.89 0.86 0.48 0.51 0.49 0.45 d Samp [¬]	h ID: 35 Date: 12 <u>PQL</u> 0.024 0.047	S 455 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704 0.4704 0.4704 0.4704	F SPK Ref Val 0 0 Tes	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101 108 105 96.5	7843 530762 LowLimit 51.9 64.6 70 70 70 70 70 70 70	Units: mg/K HighLimit 158 132 130 130 130 130	g %RPD	RPDLimit	Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Foluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1712538-009amsc Client ID: Trench 5 at 3ft	Samp [¬] Batc Analysis I 0.89 0.86 0.48 0.51 0.49 0.45 d Samp [¬]	h ID: 35 Date: 12 PQL 0.024 0.047	S 4455 2/16/2017 SPK value 0.9407 0.9407 0.9407 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704	F SPK Ref Val 0 0 Tes F	tCode: EI RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101 108 105 96.5	7843 530762 LowLimit 51.9 64.6 70 70 70 70 70 70 70 PA Method 7843	Units: mg/K HighLimit 158 132 130 130 130 130	g %RPD	RPDLimit	Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Foluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1712538-009amsc Client ID: Trench 5 at 3ft	Samp [¬] Batc Analysis I Result 0.89 0.86 0.48 0.51 0.49 0.45 d Samp [¬] Batc	h ID: 35 Date: 12 PQL 0.024 0.047	5 455 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704	F SPK Ref Val 0 0 Tes F	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101 108 105 96.5 tCode: El RunNo: 4	7843 530762 LowLimit 51.9 64.6 70 70 70 70 70 70 70 PA Method 7843	Units: mg/K HighLimit 158 132 130 130 130 130 8260B: Volat	g %RPD	RPDLimit	Qual
Sample ID 1712538-009ams Client ID: Trench 5 at 3ft Prep Date: 12/12/2017 Analyte Benzene Toluene Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID 1712538-009amsc Client ID: Trench 5 at 3ft Prep Date: 12/12/2017	Samp [¬] Batc Analysis I 0.89 0.86 0.48 0.51 0.49 0.45 d Samp [¬] Batc Analysis I	h ID: 35 Date: 12 0.024 0.047 Type: MS h ID: 35 Date: 12	5 455 2/16/2017 SPK value 0.9407 0.9407 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704 0.4704	F SPK Ref Val 0 0 Tes F S	tCode: El RunNo: 4 SeqNo: 1 %REC 94.9 91.4 101 108 105 96.5 tCode: El RunNo: 4 SeqNo: 1	7843 530762 LowLimit 51.9 64.6 70 70 70 70 70 70 70 70 70 70	Units: mg/K HighLimit 158 132 130 130 130 130 8260B: Volat Units: mg/K	g %RPD iles Short	RPDLimit	

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 21 of 22

WO#: 1712538 02-Jan-18

Client: R.T. Hicks Consultants, LTD

Project: Amtex Tomahawk SWD

Sample ID 1712538-009amsc	SampT	ype: M	SD	Tes	tCode: El	PA Method	8260B: Volat	tiles Short	List	
Client ID: Trench 5 at 3ft	Batch	n ID: 35	455	F	RunNo: 4	7843				
Prep Date: 12/12/2017	Analysis D	ate: 1	2/16/2017	5	SeqNo: 1	530763	Units: mg/k	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.4673		96.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.51		0.4673		109	70	130	0	0	
Surr: Dibromofluoromethane	0.48		0.4673		102	70	130	0	0	
Surr: Toluene-d8	0.47		0.4673		99.7	70	130	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 22 of 22

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Alba TEL 505-345-3975 Website: www.ha	4901 Hawki opeerque, NM FAX: 305-345	ns NE 87109 -4107	Sample Log-In Check List			
Client Name RT HICKS	Work Order Number	1712538			ReptNo: 1		
Received By: Sophla Campuzano	12/8/2017 2:50:00 PM		Sople	i Ciga-	~		
Completed By Ashley Gallegos	12/11/2017 9:56:31 AM	A.	A	F			
Reviewed By: IMO I	ריוו		100	U.			
Chain of Custody							
1. Custody seals intact on sample bottles?		Yes 📋	N	p []	Not Present		
2. Is Chain of Custody complete?		Yes 🕅	N	• []	Not Present		
3. How was the sample delivered?		Client					
Log In							
4. Was an attempt made to cool the samples?		Yes 🔽	N	lo 🗆			
5. Were all samples received at a temperature	of >0" C to 6.0"C	Yes 🗔	N		NA 🗔		
6. Sample(s) in proper container(s)?		Yes 🗹	N	0			
7. Sufficient sample volume for indicated test(s)	7	Yes 🗹	N				
B. Are samples (except VOA and ONG) properly	preserved?	Yes 🔽	N	0			
9. Was preservative added to bottles?		Yes 🗌	N		NA 🗔		
10. VOA vials have zero headspace?		Yes 🗔	N	•	No VOA Vials		
1. Were any sample containers received proker	17	Yes 🖂	N	• 🔽	# of preserved		
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	N	•	for pH: (<2 or >12 unless not		
 Are matrices correctly identified on Chain of C 	Custody?	Yes 🗹	N	. 🗆	Adjusted7		
14. Is it clear what analyses were requested?		Yes 🗹					
 Were all holding times able to be met? (If no, notify customer for authorization.) 		Yes 🗹	N		Checked by:		
Special Handling (if applicable)							
16. Was client notified of all discrepancies with th	is order?	Yes 🗍	N		NA 🔽		
Person Notified:	Date			-			
By Whom:	Via:	eMail	Phone [Fax	In Person		
Regarding:							
Client Instructions:	-						
17. Additional remarks:							
18. Cooler Information Cooler No Temp °C Condition Sea	I Intact Seal No 5 Present	Seal Date	Signed	By			
Page 1 of 1							

	Chain	-of-C	Chain-of-Custody Record	Turn-Around Time;	Time;				3	TIVE		101	Co	N IN	ENVIRONMENTAL	
Client:		icks C	RT Hicks Consultants	Xstandard	C Rush		n.	1		NAL		N I		MIN NO	ABORATORY	.>
				Project Name.					3	M.W.	www.hallenvironmental.com	onme	ntal.oc	E		
Mailing	Wailing Address:	2 01-	File	Amtex	Tomahuwk	it sup	-0	1061 H	awkin	S NE	Albu	duerq	Ine, NI	4901 Hawkins NE - Albuquerque, NM 87109	6	
				Project #:				Tel. 50	Tel. 505-345-3975	-3975	Fa	x 50	Fax 505-345-4107	4107		
Phone #	14	<5-0	5256-025-026								Inal	is Re	tsenb			
email c	or Fax#_c	waythe	email or Fax# and rew (Fthids Consult. (an	Project Manager:	iger:		1.00					1	1 hereit			-
OA/OC Packa	OA/OC Package:		🗆 Level 4 (Full Validation)	Andrew	rew Parter					(SWIS		_	_			
Accreditation	litation	1		12	Andre Parke			1	_			_				
L NELAP	A.A.	- Other	GT	On Ice:	R Yes	D No	_	-		1	×.	-	_			
L EDC	EDD (Type)			Sample Tem	emperature: 10, 4	7		-	_	_	ele:	_	_		-	
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO. 1712538	TM - X3T8 TM - X3T8	1M + XƏT8 88108 H9T	orliaM) H9T	EDB (Metho 158) £HA9	ым 8 АЯЭЯ	D, 1) anoinA 9081 Pestic	BZEOB (AOV	ime2) 0728	shinalda	səlddu 8 niA
F1 5/21	34:8 HISM	50:1	Trench 1 at 3 ft	1- 4az	TcE	100-			Ì		1í				X	
_	\$:50		Trench 1 at 55			-002				-		-			L	-
-	9:5		5			-003				-						
>	9:50	>	4	Z-W02	ENH 12/11/1-	MT -004						-				-
12/5/13	13/5/17 10:40	Soil	5	12+402								-				-
tils/ri	25:11	501'	Trench 2 at 3 ft	1+402		-000				_		-				
-	11:53		2			100-		_							-	-
->	12:10	>	Trench 2 at 11 ft			-008					1					
£1(5) E1	13:40	Seil	S			600-		×		-		-	×		_	
-	57.41	-	Trench Sat 25 A			DID-				-						-
>	14:38	>		>	>	-011				-		-			>	-
Date	Time: 14.50	Rel	Jen	Raperved by	2	Date Time 2/0%/17 1450	Remarks.		Pye 1		1 to	-				-
Date	ami	Relignisced by	ed by	Received by:		Date Time	_									



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

January 02, 2018

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: Amtex Tomahawk SWD

OrderNo.: 1712541

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 13 sample(s) on 12/8/2017 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,

andia

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1712541

mental Analysi	s Laborate	ory, Iı	nc.			Date Re	ported: 1/2/2018
	,				La	b Order:	1712541
1712541-001				Collection	n Date:	12/5/201	7 8:40:00 AM
Trench 1 at 1ft				Ν	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: MRA
	58	30		mg/Kg		20	12/20/2017 3:36:13 PM
1712541-002				Collection	n Date:	12/5/201	7 10:00:00 AM
Trench 1 at 13ft				Ν	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: CJS
	5700	300		mg/Kg		200	12/22/2017 10:14:40 PM
1712541-003			(Collection	n Date:	12/5/201	7 10:35:00 AM
Pad West at 1ft				N	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: MRA
	480	30		mg/Kg		20	12/20/2017 4:25:52 PM
1712541-004				Collection	n Date:	12/5/201	7 11:00:00 AM
Pad East at 1ft				Ν	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: MRA
	250	30		mg/Kg		20	12/20/2017 4:38:17 PM
1712541-005				Collection	n Date:	12/5/201	7 11:10:00 AM
Pad East at 3ft				N	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: MRA
	600	30		mg/Kg		20	12/20/2017 4:50:41 PM
1712541-006			(Collection	n Date:	12/5/201	7 11:25:00 AM
Trench 2 at 1ft				N	Matrix:	SOIL	
	Result	PQL	Qual	Units		DF	Date Analyzed
0: ANIONS							Analyst: MRA
	ND	30		mg/Kg		20	12/20/2017 5:03:05 PM
QC Summary report an	nd sample login	checklis	st for fl	agged QC	C data an	d preserva	ation information.
				B Analy	te detected	l in the asso	ciated Method Blank
-		1.1			-		·····
Holding times for preparatio	n or analysis excee	aed		J Analy	te detected	i below quar	titation limits Page 1 of
Not Detected at the Reportin				-	le pH Not	In Range	1 age 1 of
	2 2. T. Hicks Consultants Amtex Tomahawk SWI 1712541-001 Trench 1 at 1ft 0: ANIONS 1712541-002 Trench 1 at 13ft 0: ANIONS 1712541-003 Pad West at 1ft 0: ANIONS 1712541-003 Pad West at 1ft 0: ANIONS 1712541-004 Pad East at 1ft 0: ANIONS 1712541-005 Pad East at 3ft 0: ANIONS 1712541-005 Pad East at 3ft 0: ANIONS 1712541-005 Pad East at 3ft 0: ANIONS 1712541-006 Trench 2 at 1ft 0: ANIONS	Image: Construct on the second structure of the	Image: Colspan="2" Colspa	Annex Tomahawk SWD $\frac{1712541-001}{Trench 1 at 1ft}$ Result PQL Qual $\frac{58}{58}$ $\frac{58}{30}$ $\frac{1712541-002}{Trench 1 at 13ft}$ Result PQL Qual $\frac{5700}{300}$ $\frac{1712541-003}{Pad West at 1ft}$ Result PQL Qual $\frac{1712541-003}{Pad West at 1ft}$ Result PQL Qual $\frac{1712541-004}{Pad East at 1ft}$ Result PQL Qual $\frac{1712541-004}{Pad East at 1ft}$ Result PQL Qual $\frac{1712541-004}{Pad East at 3ft}$ $\frac{1712541-005}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East at 1ft}$ $\frac{1712541-006}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East at 1ft}$ $\frac{1712541-006}{Pad East at 3ft}$ $\frac{1712541-006}{Pad East 1 ft}$ $\frac{1712541-006}{Pad East 1 ft}$ $\frac{1712541-006}{Pad East 1 ft}$ $\frac{1712541-006}{Pad East 1 ft}$	R.T. Hicks Consultants, LTD Antex Tomahawk SWD Collection Trench 1 at 1ft Result PQL Qual Units 0: ANIONS 58 30 rng/Kg 1712541-002 Collection Trench 1 at 13ft N Result PQL Qual Units 0: ANIONS 5700 300 rng/Kg 1712541-002 Collection Trench 1 at 13ft N 0: ANIONS 5700 300 rng/Kg 1712541-003 Collection PQL Qual Units 0: ANIONS 480 30 rng/Kg 1712541-004 Collection Pad East at 1ft N N 1712541-004 Collection Pad East at 3ft N rng/Kg 1712541-005 Collection Pad East at 3ft N rng/Kg 1712541-005 Collection Pad East at 3ft N rng/Kg 1712541-005 Collection Pad East at 3ft N rng/Kg 1712541-006 Collection Pad East at 3ft N rng/Kg 1712541-006 Collection Pad East at 3ft N rng/Kg 1712541-006 </td <td>R.T. Hicks Consultants, LTD Antex Tomahawk SWD La 1712541-001 Collection Date: Trench 1 at 1ft Matrix: 0: ANIONS 58 30 mg/Kg 1712541-002 Collection Date: Trench 1 at 13ft Matrix: 0: ANIONS 58 30 mg/Kg 1712541-002 Collection Date: Matrix: Trench 1 at 13ft Matrix: Matrix: Result PQL Qual Units 0: ANIONS 5700 300 mg/Kg 1712541-003 Collection Date: Matrix: Pad West at 1ft Matrix: Matrix: 480 30 mg/Kg 1712541-003 Collection Date: Matrix: Pad East at 1ft Matrix: Matrix: Result PQL Qual Units 0: ANIONS 250 30 mg/Kg 1712541-005 Collection Date: Pad East at 3ft Matrix: Result PQL Qual Units 0: ANIONS 600 30 mg/Kg 1712541-006</td> <td>R.T. Hicks Consultants, LTD Lab Order: Mattex Tomahawk SWD Collection Date: 12/5/2017 1712541-001 Kesult PQL Qual Units DF 0: ANIONS 58 30 mg/Kg 20 1712541-002 Collection Date: 12/5/2017 Trench 1 at 13ft Matrix: SOIL Result PQL Qual Units DF 0: ANIONS 5700 300 mg/Kg 200 1712541-003 Collection Date: 12/5/2017 Pad West at 1ft Matrix: SOIL Matrix: SOIL Result PQL Qual Units DF 0: ANIONS 5700 300 mg/Kg 20 1712541-003 Collection Date: 12/5/2017 Pad East at 1ft Matrix: SOIL DF 0: ANIONS 250 30 mg/Kg 20 1712541-004 Collection Date: 12/5/2017 Pad East at 3ft PQL Qual Units DF 0: ANIONS 600 30 mg/K</td>	R.T. Hicks Consultants, LTD Antex Tomahawk SWD La 1712541-001 Collection Date: Trench 1 at 1ft Matrix: 0: ANIONS 58 30 mg/Kg 1712541-002 Collection Date: Trench 1 at 13ft Matrix: 0: ANIONS 58 30 mg/Kg 1712541-002 Collection Date: Matrix: Trench 1 at 13ft Matrix: Matrix: Result PQL Qual Units 0: ANIONS 5700 300 mg/Kg 1712541-003 Collection Date: Matrix: Pad West at 1ft Matrix: Matrix: 480 30 mg/Kg 1712541-003 Collection Date: Matrix: Pad East at 1ft Matrix: Matrix: Result PQL Qual Units 0: ANIONS 250 30 mg/Kg 1712541-005 Collection Date: Pad East at 3ft Matrix: Result PQL Qual Units 0: ANIONS 600 30 mg/Kg 1712541-006	R.T. Hicks Consultants, LTD Lab Order: Mattex Tomahawk SWD Collection Date: 12/5/2017 1712541-001 Kesult PQL Qual Units DF 0: ANIONS 58 30 mg/Kg 20 1712541-002 Collection Date: 12/5/2017 Trench 1 at 13ft Matrix: SOIL Result PQL Qual Units DF 0: ANIONS 5700 300 mg/Kg 200 1712541-003 Collection Date: 12/5/2017 Pad West at 1ft Matrix: SOIL Matrix: SOIL Result PQL Qual Units DF 0: ANIONS 5700 300 mg/Kg 20 1712541-003 Collection Date: 12/5/2017 Pad East at 1ft Matrix: SOIL DF 0: ANIONS 250 30 mg/Kg 20 1712541-004 Collection Date: 12/5/2017 Pad East at 3ft PQL Qual Units DF 0: ANIONS 600 30 mg/K

Hall Environmental Analysis Laboratory, Inc.

Hall Environ	mental Analys	is Labora	tory, Iı	ıc.			Date R	eported: 1/2/2018
	.T. Hicks Consultant mtex Tomahawk SW					La	ıb Order	: 1712541
Lab ID:	1712541-007				Collecti	ion Date:	12/5/20	17 12:00:00 PM
Client Sample ID:	Trench 2 at 7ft					Matrix:	SOIL	
Analyses		Result	PQL	Qual	Units		DF	Date Analyzed
EPA METHOD 300. Chloride	0: ANIONS	320	30		mg/Kg		20	Analyst: MRA 12/20/2017 5:40:20 PM
Lab ID:	1712541-008			(Collecti	ion Date:	12/5/20	17 12:28:00 PM
Client Sample ID:	Trench 2 at 13ft					Matrix:	SOIL	
Analyses		Result	PQL	Qual	Units		DF	Date Analyzed
EPA METHOD 300.0 Chloride	D: ANIONS	7600	300		mg/Kg		200	Analyst: CJS 12/22/2017 10:27:04 PM
Lab ID:	1712541-009			(Collecti	ion Date:	12/5/20	17 1:35:00 PM
Client Sample ID:	Trench 5 at 1ft					Matrix:	SOIL	
Analyses		Result	PQL	Qual	Units		DF	Date Analyzed
EPA METHOD 300. Chloride	0: ANIONS	1700	75		mg/Kg		50	Analyst: CJS 12/22/2017 10:39:29 PM
Lab ID:	1712541-010			(Collecti	ion Date:	12/5/20	17 1:45:00 PM
Client Sample ID:	Trench 5 at 5ft					Matrix:	SOIL	
Analyses		Result	PQL	Qual	Units		DF	Date Analyzed
EPA METHOD 300.0 Chloride	0: ANIONS	ND	30		mg/Kg		20	Analyst: MRA 12/20/2017 6:17:34 PM
Lab ID:	1712541-011			(Collecti	ion Date:	12/5/20	17 1:40:00 PM
Client Sample ID:	HA 4 at 5 ft					Matrix:	SOIL	
Analyses		Result	PQL	Qual	Units		DF	Date Analyzed
EPA METHOD 300. Chloride	D: ANIONS	41	30		mg/Kg		20	Analyst: MRA 12/20/2017 6:29:58 PM

Analytical Report Lab Order: 1712541

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 4
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Lab Order: 1712541

Hall Environ	mental Analys	is Labora	tory, Iı	nc.		ported: 1/2/2018
	R.T. Hicks Consultants Amtex Tomahawk SW	,			Lab Order:	1712541
Lab ID: Client Sample ID:	1712541-012 Trench 350 at 1ft			Collect	ion Date: 12/5/201 Matrix: SOIL	7 1:10:00 PM
Analyses		Result	PQL	Qual Units	DF	Date Analyzed
EPA METHOD 300	.0: ANIONS					Analyst: MRA
Chloride		ND	30	mg/Kg	20	12/20/2017 6:42:23 PM
Lab ID:	1712541-013			Collect	ion Date: 12/5/201	7 1:40:00 PM
Client Sample ID:	Trench 350 at 7ft				Matrix: SOIL	
Analyses		Result	PQL	Qual Units	DF	Date Analyzed
EPA METHOD 300	0.0: ANIONS					Analyst: MRA
Chloride		540	30	mg/Kg	20	12/20/2017 6:54:48 PM

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 3 of 4
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 age 5 01 4
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit	

Client: Project:		Hicks Consultants, LTD x Tomahawk SWD			
Sample ID	MB-35634	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 35634	RunNo: 47923		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1536072	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-35634	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 35634	RunNo: 47923		
Prep Date:	12/20/2017	Analysis Date: 12/20/2017	SeqNo: 1536073	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		15 1.5 15.00	0 96.9 90	110	

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 4 of 4

Received By. Sophia Campuzano 12/8/2017 2:50.00 PM Completed By. Ashley Galegos 12/11/2017 10:08:22 AM Reviewed By. IMO 13/11/2017 10:08:22 AM Chain of Custody ImO 13/11/2017 10:08:22 AM 1. Custody seals intact on sample bottles? Yes No 1. Custody complete? Yes No Not Present 2. Is Chain of Custody complete? Yes No Not Present 3. How was the sample delivered? Claint Not Present Not Present 4. Was an attempt made to cool the samples? Yes No NA 5. Were all samples received at a temperature of >0° C to 6 0°C Yes No NA 6. Sample(s) in proper container(s)? Yes No Na 7. Sufficient sample volume for indicated test(s)? Yes No Na 9. Was preservative added to bottles? Yes No Ma 10. VOA vials feve zero headspace? Yes No Ma <th>Client Name: RT HICKS</th> <th>Work Order Number</th> <th>171254</th> <th>1</th> <th></th> <th>ReptNo:</th> <th>1</th>	Client Name: RT HICKS	Work Order Number	171254	1		ReptNo:	1
Completed By: Ashley Gallegos 12/11/2017 10.08.22 AM Reviewed By: IMO 12/11/2017 10.08.22 AM Chain of Custody 1 Custody seals intact on sample bottles? Yes 2 Is Chain of Custody complete? Yes 2 Is Chain of Custody complete? Yes 3. How was the sample delivered? Client Load In 4. Was an attempt made to cool the samples? Yes 5. Were all samples received at a temperature of >0° C to 6 0° C Yes 6. Bample(s) in proper container(s)? Yes 7. Sufficient sample volume for indicated test(s)? Yes 9. Was preservative added to bottles? Yes 10. VCA viais fave zero headspace? Yes 11. Were any sample containers preceived broken? Yes 12. Obes papervortik match bottle labels? Yes (Note discrepancies on chain of custody) Yes 13. Are matches corted widentified on Chain of Custody? Yes 14. Is a clear winat analyses were requested? Yes 13. Are matches corted widentified on Chain of Custody? Yes Yes No Checked (or pH-title) </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
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2 is Chain of Custody complete? Yes V No Not Present 3. How was the sample delivered? Client Loa In . . 4. Was an attempt made to cool the samples?? Yes V No NA 5. Were all samples received at a temperature of >0° C to 6 0°C Yes V No NA 6. Sample(s) in proper container(s)? Yes V No NA 7. Sufficient samples (except VOA and ONG) property preserved? Yes V No NA 9. Was preservative added to bottles? Yes V No NA . 10. VCA viais have zero headspace? Yes V No No . No VOA Viais V 11. Were any sample containers received broken? Yes V No 12. Does paperwork match bottle labels? Yes V No 	Chain of Custody						
3. How was the sample delivered? Client Log In	1. Custody seals intact on sample bottles?		Yes [Na 🗌	Not Present	
Log In 4. Was an attempt made to cool the samples? Yes V No NA 5. Were all samples received at a temperature of >0° C to 6 0°C Yes V No NA 6. Sample(s) in proper container(s)? Yes V No NA 7. Sufficient sample volume for indicated test(s)? Yes V No NA 8. Are samples (except VOA and ONG) property preserved? Yes V No NA 9. Was preservative added to bottles? Yes V No NA 10. VCA viais have zero headspace? Yes V No NA 11. Were any sample containers received broken? Yes V No Ma 12. Does paperwork match bottla tabels? Yes V No Adjusted? 13. Are matrices correctly identified on Chain of Custody? Yes V No Adjusted? 14. Is at clear what analyses were requested? Yes V No Checked by: 15. Ware all holding times able to be met? Yes V No Na Checked by: 15. Ware all holding times able to be met? Yes V No NA Ma 16. Wase client notified of all discrepancies with this orde? Yes Na NA <td>2 Is Chain of Custody complete?</td> <td></td> <td>Yes 5</td> <td>1</td> <td>No 🗔</td> <td>Not Present</td> <td></td>	2 Is Chain of Custody complete?		Yes 5	1	No 🗔	Not Present	
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7 Sufficient sample volume for indicated test(s)? Yes No 8 Are samples (except VOA and ONG) properly preserved? Yes No 9 Was preservative added to bottles? Yes No NA 10.VCA vials have zero headspace? Yes No NA Image: Containers received broken? 11. Were any sample containers received broken? Yes No No Image: Containers received broken? 12. Does paperwork match bottle tabels? Yes No Image: Containers received broken? Yes No Image: Containers received broken? 13. Are matrices correctly identified on Chain of custody? Yes No Adjusted? Image: Containers received broken? Adjusted? 14. Is it clear what analyses were requested? Yes No Checked by: Image: Containers received broken? 15. Ware all holding times able to be met? Yes No No Checked by: Image: Containers received broken? 16. Ware client notified of all discrepancies with this order? Yes No Na Ma 17. Were any sample containing: Vis: Image: Containers Na Ma 13. Are matrices correctly iden	5. Were all samples received at a temperatu	ire of >0° C to 6.0°C	Yes []	No 🗹		
8. Are samples (except VOA and ONG) properly preserved? Yes No 9. Was preservative added to bottles? Yes No NA 10. VOA viais have zero headspace? Yes No No NA 10. VOA viais have zero headspace? Yes No No Na 11. Were any sample containers received broken? Yes No No # of preserved bottles checked for pH: 12. Does paperwork match bottle tabels? Yes No Mo # of preserved bottles checked for pH: 13. Are matrices correctly identified on Chain of Custody? Yes No Adjusted? 14. Is it clear what analyses were requested?? Yes No Checked by: 15. Ware all holding times able to be met? Yes No Checked by: 16. Was client notified of all discrepancies with this order? Yes No NA Person Notified:	6. Sample(s) in proper container(s)?		Yes	2	No 🗆		
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12. Does paperwork match bottle labels? Yes Yes No # of preserved bottles checked for pH: 13. Are matches correctly identified on Chain of custody? Yes No Adjusted? 14. Is it clear what analyses were requested? Yes No Adjusted? 15. Ware all holding times able to be mot? Yes No Checked by: (If no, notify customer for authorization.) Yes No NA Special Handling (if applicable) Na NA M 16. Was client notified of all discrepancies with this order? Yes No NA Person Notified: Date Date In Person By Whom: Vis: eMail Phone Fax In Person	10.VCA vials have zero headspace?		Yes [3	No 🗌	No VOA Vials	
12. Does paperwork match bottle labels? Yes Wi No bottles checked for pH; (Note discrepancies on chain of custody) Yes W No Adjusted? 13. Are matrices correctly identified on Chain of Custody? Yes W No Adjusted? 14. Is it clear what analyses were requested? Yes W No Adjusted? 15. Ware all holding times able to be met? Yes W No Checked by: (If no, notify customer for authorization.) Yes No NA Special Handling (if applicable) 16. Was client notified of all discrepancies with lhis order? Yes No NA Person Notified: Date	11, Were any sample containers received bro	oken?	Yes	1	No 🗹	the at execution and	
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

March 22, 2018

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: TOMAHAWK

OrderNo.: 1803614

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 16 sample(s) on 3/9/2018 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order: 1803614

Hall Environ	nental Analysis	Laborat	ory, Inc.		Date Reported:	3/22/2018	
	.T. Hicks Consultants, L OMAHAWK	TD		L	ab Order: 1	803614	
Lab ID:	1803614-001			Collection Date:	: 3/7/2018 8:50:00) AM	
Client Sample ID:	Pad East 1 Ft			Matrix:	: SOIL		
Analyses		Result	PQL Qual	Units	DF Date Analyz	ed Bat	tch ID
EPA METHOD 300	0: ANIONS					Analyst:	MRA
Chloride		37	30	mg/Kg	20 3/19/2018 2:0	5:14 PM	37098
Lab ID:	1803614-002			Collection Date:	: 3/7/2018 8:54:00) AM	
Client Sample ID:	Pad East 2 Ft			Matrix:	: SOIL		
Analyses		Result	PQL Qual	Units	DF Date Analyz	ed Bat	tch ID
EPA METHOD 300	.0: ANIONS					Analyst:	MRA
Chloride		89	30	mg/Kg	20 3/19/2018 2:1	7:37 PM	37098
Lab ID:	1803614-003			Collection Date:	: 3/7/2018 8:52:00) AM	
Client Sample ID:	Pad East 3 Ft			Matrix:	: SOIL		
Analyses		Result	PQL Qual	Units	DF Date Analyz	ed Bat	tch ID
EPA METHOD 300	.0: ANIONS					Analyst:	MRA
Chloride		160	30	mg/Kg	20 3/19/2018 2:5	4:51 PM	37098
Lab ID:	1803614-004			Collection Date:	3/7/2018 8:56:00) AM	
Client Sample ID:	Pad East 4 Ft			Matrix:	: SOIL		
Analyses		Result	PQL Qual	Units	DF Date Analyz	ed Bat	tch ID
EPA METHOD 300.	0: ANIONS					Analyst:	MRA
Chloride		94	30	mg/Kg	20 3/19/2018 3:0	7:16 PM	37098
Lab ID:	1803614-005			Collection Date:	: 3/7/2018 9:00:00) AM	
Client Sample ID:	Pad East 7 Ft Caliche			Matrix:	: SOIL		
Analyses		Result	PQL Qual	Units	DF Date Analyz	ed Bat	tch ID
EPA METHOD 300.	0: ANIONS					Analyst:	MRA
Chloride		310	30	mg/Kg	20 3/19/2018 3:4	4:30 PM	37098

Hall Environmental Analysis Laboratory Inc

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

Qualifiers:

*

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Value above quantitation range Е
- J Analyte detected below quantitation limits Page 1 of 5
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order: 1803614

Hall Environ	mental Analysis	s Laborat	ory, Inc.		Date Reported: 3/22	2/2018
	R.T. Hicks Consultants, TOMAHAWK	LTD			Lab Order: 1803	614
Lab ID: Client Sample ID:	1803614-006 Pad West 1 Ft				ate: 3/7/2018 8:24:00 AM	Л
Analyses		Result	PQL Qual		DF Date Analyzed	Batch ID
EPA METHOD 30	0.0: ANIONS				An	alyst: MRA
Chloride		410	30	mg/Kg	20 3/19/2018 3:56:54	PM 37098
Lab ID:	1803614-007			Collection D	ate: 3/7/2018 8:28:00 AM	Л
Client Sample ID:	Pad West 2 Ft			Mat	rix: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed	Batch ID
EPA METHOD 30 Chloride	0.0: ANIONS	260	30	mg/Kg	An 20 3/19/2018 4:09:19	alyst: MRA PM 37098
Lab ID:	1803614-008			Collection D	ate: 3/7/2018 8:30:00 AM	Л
Client Sample ID:	Pad West 3 Ft			Mat	rix: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed	Batch ID
EPA METHOD 30	0.0: ANIONS				An	alyst: MRA
Chloride		170	30	mg/Kg	20 3/19/2018 4:21:44	PM 37098
Lab ID:	1803614-009			Collection D	ate: 3/7/2018 8:33:00 AM	Л
Client Sample ID:	Pad West 4 Ft			Mat	rix: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed	Batch ID
EPA METHOD 30	0.0: ANIONS				An	alyst: MRA
Chloride		66	30	mg/Kg	20 3/19/2018 4:34:09	PM 37098
Lab ID:	1803614-010			Collection D	ate: 3/7/2018 8:36:00 AM	Л
Client Sample ID:	Pad West 5 Ft			Mat	rix: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed	Batch ID
EPA METHOD 30	0.0: ANIONS				An	alyst: MRA
Chloride		720	30	mg/Kg	20 3/19/2018 4:46:33	PM 37098

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

- 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
- Analyte detected in the associated Method Blank В
- Value above quantitation range Е
- J Analyte detected below quantitation limits Page 2 of 5
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order: 1803614

Hall Environ	mental Analysis l	Laborat	ory, Inc.		Date Reported: 3/22/2018	
	R.T. Hicks Consultants, L' TOMAHAWK	ГD			Lab Order: 1803614	
Lab ID: Client Sample ID:	1803614-011 Pad West 7 Ft				e: 3/7/2018 8:39:00 AM x: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed Bat	tch ID
EPA METHOD 300	0.0: ANIONS				Analyst:	MRA
Chloride		120	30	mg/Kg	20 3/19/2018 4:58:58 PM	37098
Lab ID: Client Sample ID:	1803614-012 Pad West 7 Ft Caliche				e: 3/7/2018 8:42:00 AM x: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed Bat	tch ID
EPA METHOD 300 Chloride	0.0: ANIONS	3800	150	mg/Kg	Analyst: 100 3/21/2018 4:59:18 AM	MRA 37098
Lab ID:	1803614-013			Collection Dat	e: 3/7/2018 9:14:00 AM	
Client Sample ID:	225 S 1 Ft			Matri	x: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed Bat	tch ID
EPA METHOD 300	0.0: ANIONS				Analyst:	MRA
Chloride		ND	30	mg/Kg	20 3/19/2018 5:23:47 PM	37098
Lab ID:	1803614-014			Collection Dat	e: 3/7/2018 9:15:00 AM	
Client Sample ID:	225 S 2 Ft			Matri	x: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed Bat	tch ID
EPA METHOD 300 Chloride	0.0: ANIONS	130	30	mg/Kg	Analyst: 20 3/19/2018 5:36:12 PM	MRA 37098
Lab ID:	1803614-015			Collection Dat	e: 3/7/2018 9:17:00 AM	
Client Sample ID:	225 S 3 Ft			Matri	x: SOIL	
Analyses		Result	PQL Qual	Units	DF Date Analyzed Bat	tch ID
EPA METHOD 300	0.0: ANIONS				Analyst:	MRA
Chloride		460	30	mg/Kg	20 3/19/2018 6:13:25 PM	37098

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

- Qualifiers:
- * Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix
- 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
- Analyte detected in the associated Method Blank В
- Value above quantitation range Е
- J Analyte detected below quantitation limits Page 3 of 5
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Analy	lucar	Keb	ort

Lab Order: 1803614

Hall Enviro	nmental Analysis	Laborat	ory, Inc.		Date Report	ed: 3/22/	2018	
CLIENT: Project:	R.T. Hicks Consultants, I TOMAHAWK	LTD			Lab Order:	18036	14	
Lab ID:	1803614-016			Collection E	Date: 3/7/2018 9:1	8:00 AM	[
Client Sample ID	225 S 4 Ft		Matrix: SOIL					
Analyses		Result	PQL Qua	l Units	DF Date Ana	alyzed	Batch ID	
EPA METHOD 3	00.0: ANIONS					Ana	lyst: MRA	
Chloride		730	30	mg/Kg	20 3/19/2018	3 7:15:27	PM 37103	

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

Qualifiers:

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- * 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 Page 4 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Client:	R.T. H	icks Consultants, LTD			
Project:	TOMA	HAWK			
Sample ID	MB-37098	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 37098	RunNo: 49922		
Prep Date:	3/19/2018	Analysis Date: 3/19/2018	SeqNo: 1616135	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-37098	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 37098	RunNo: 49922		
Prep Date:	3/19/2018	Analysis Date: 3/19/2018	SeqNo: 1616137	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		14 1.5 15.00	0 91.9 90	110	
Sample ID	MB-37103	SampType: mblk	TestCode: EPA Method	300.0: Anions	
Client ID:	PBS	Batch ID: 37103	RunNo: 49922		
Prep Date:	3/19/2018	Analysis Date: 3/19/2018	SeqNo: 1616189	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride		ND 1.5			
Sample ID	LCS-37103	SampType: Ics	TestCode: EPA Method	300.0: Anions	
Client ID:	LCSS	Batch ID: 37103	RunNo: 49922		
Prep Date:	3/19/2018	Analysis Date: 3/19/2018	SeqNo: 1616190	Units: mg/Kg	
Analyte		Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual

14 1.5 15.00 0 92.1 90 110

Qualifiers:

Chloride

* 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 5 of 5

HALL ENVIRONMENTAL ANALYSIS LABORATORY	TEL: 505-345-3	ntal Analysis Labord 4901 Hawkin. Albuquerque, NM 83 975 FAX: 505-345-4 v.hallenvironmental.	s NE 7109 San 4107	nple Log-In Chec	k List
Client Name: RT HICKS	Work Order Num	ber: 1 803614		RcptNo: 1	
Received By: Anne Thorne Completed By: Erin Melendrez	3/9/2018 1:05:00 P 3/12/2018 11:02:04	M	Ann A. UNA od by.		
Reviewed By:	3/12/18	label	ed by.	AR	
Chain of Custody				0	
1. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present	
2. How was the sample delivered?		Client			
Log In 3. Was an attempt made to cool the sa	amples?	Yes 🔽	No 🗀	na 🗔	
4. Were all samples received at a temp	perature of >0° C to 6.0°C	Yes 🗌	No 🗹		
5. Sample(s) in proper container(s)?		: Yes 🗹	No 🗌		
6. Sufficient sample volume for indicate	ed test(s)?	Yes 🗹	No 🗌		
7. Are samples (except VOA and ONG)	properly preserved?	Yes 🗹	No 🗌		
8. Was preservative added to bottles?		Yes 🗌	No 🔽	NA 🗌	
9. VOA vials have zero headspace?		Yes	No 🗌	No VOA Vials 🗹	
10. Were any sample containers receive	ed broken?	Yes	No 🗹	# of preserved	
11.Does paperwork match bottle labels? (Note discrepancies on chain of cust		Yes 🗹	No 🗌	bottles checked for pH: (<2 or >12 ur	less noted)
12. Are matrices correctly identified on C	hain of Custody?	Yes 🔽	No 🗌	Adjusted?	
13. Is it clear what analyses were reques	ited?	Yes 🔽	No 🗌		
14. Were all holding times able to be me (If no, notify customer for authorization		Yes 🗹	No 🗌	Checked by:	
Special Handling (if applicable)					
15, Was client notified of all discrepanci	es with this order?	Yes 🗌	No 🗌	NA 🔽	
Person Notified:	Date:	r			
By Whom:	Via:	eMail 🗌 Pi	hone 🗌 Fax	In Person	
Regarding:	a na an				
Client Instructions:		••••••••••••••••••••••••••••••••••••••			
16. Additional remarks:					
17. <u>Cooler Information</u> Cooler No Temp ⁰C Conditi 1 20.9 Good	on Seal Intact Seal No Not Present	Seal Date	Signed By		

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Client:	R.T. Hicks Consultants	onsultant	5	E Standard	D Rush			ANALYSIS LABORATORY	ORY
				Project Name:	12			www.hallenvironmental.com	
Mailing Address	355		901 Rio Grande NW F-142		TOMAHAWK	~	4901	4901 Hawkins NE - Albuquerque, NM 87109	
			Albuquerque NM 98104	Project #			Tel. 5	Tel. 505-345-3975 Fax 505-345-4107	
Phone #.		505 238 9515	9515					Analysis Request	
email or Fax#:	42	r@micks	r@rthicksconsult.com	Project Manager:	ger:				
QA/QC Package.	() ()		Level 4 (Full Validation)		Andrew Parker	(er			-
Accreditation:				Sampler.	RTH				
D NELAP		D Other		On Ice:	DX Yes	D No			
C EDD (Type)	(0			Sample Temperature:	perature:	20.0			19
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO. 1803 LO 14	ebholdO		səldduð ilA
3/7/2018	850	850 Sol	Pad East 1 ft	1 Glass		100-	×		
3/7/2018	854	854 Soll	Pad East 2 ft	1 Glass		200-	×		
3/7/2018	852	852 Soil	Pad East 3 ft	1 Glass		-003	×		
3/7/2018	856	856 Soll	Pad East 4 ft	1 Glass		-00H	×		
3/7/2018	906	900 Soil	Pad East 7 ft Caliche	1 Glass		1990-	×		
3/7/2018	824	824 Soil	Pad West 1 ft	1 Glass		-006	×		
3/7/2018	828	828 Sol	Pad West 2 ft	1 Glass		1001	×		
3/7/2018	830	830 Soll	Pad West 3 ft	1 Glass		-N08	×		
3/7/2018	833	833 Soil	Pad West 4 ft	1 Glass		PND-	×		
3/7/2018	836	836 Soil	Pad West 5 ft	1 Glass		-010	×		
3/7/2018	839	839 Soil	Pad West 7 ft	1 Glass		110-	×		
3/7/2018	842	842 Soil	Pad West 7 ft Caliche	1 Glass	5	210-	×		
a second s	Title 1305	Reinquished by	all -	Received by	1	Dete Time	Remarks		
Date:	Time	Reimquished by	ed by	Received by:		Date Time			

Client: R	R.T. Hicks Consultants	onsultants		C Standard C Rush		ANALYSIS LABORATORY	
				Project Name:		www.halleruironmental.com	
Mailing Address	SS		901 Rie Grande NW F-142	TOMAHAWK		4901 Hawkins NE - Albuquerque, NM 87109	
			Albuquerque NM 98104	Project #.		Tel. 505-345-3975 Fax 505-345-4107	
Phone #		505 238 9515	951S			\na	
email or Fax#:		r@nthicks	r@rthicksconsult.com	Project Manager.			
OA/OC Package:	ē.		(notebile/) (Link leve 11	Andrew Parker	Andrew Parker		-
Association of				Cometee DTU			
I NELAP		D Other		On Ice TYes	X No		14 1
C EDD (Type)				Sample Temperature:	20.7		(A)
Date	Time	Matrix	Sample Request ID	Container Preservative Type and # Type	HEAL NO. 1803(014	ebirolnD	Air Bubbles
3/7/2018	914 Soil	Sol	225 S 1 th	1 Glass	-03	x	
3/7/2018	915 Soll	Sol	225 S 2 ft	1 Glass	HIOH	X	
3/7/2018	917 Soll	Sal	225 5 3 ft	1 Glass	90-	×	
3/7/2018	918 Soll	Sol	225 S 4 ft	1 Glass	-010-	x	
3/7/2018		Soil		1 Glass		×	
3/7/2018		Soil		1 Glass		×	
3/7/2018		Sol		1 Glass		x	
3/7/2018		Soil		I Glass		×	
3/7/2018		Soil		1 Glass		×	
3/7/2018		Sol		1 Glass		×	
3/7/2018		Sol		1 Glass			
3/7/2018		Sol		1 Glass	(x x x x x x x x x x x x x x x x x x x	
30	Time: 1365	Relinquished by	Call &	Reactived by	Date Time	Remarks:	
ste.	Time	Relnouished by	/ / / / / / / / / / / / / / / / / / /	Received by:	Date Time		



				Olivert		Turnel ID	
	Logger: Driller:	Andrew Parker Storm Construction	n	Client: Advanced	Energy	Trench ID:	
Drilling	g Method:	Backhoe	1	Project Name:	пснай		
	Start Date:	12/5/2017		Tomahawk SWD	Characterization	Trench	#1
	End Date:	12/5/2017		Location:			
				32.433203, -103.6	18398 (WGS84)		
Depth		Description	Lithology	Comments	Chlori	de (mg/kg)	Depth
(feet)		Description	Lithology	Comments		ue (IIIg/kg)	(feet)
0.0					Field	Lab	0.0
1.0						58	1.0
2.0 3.0	Fine	0 - 5' sand, silt; reddish brown				96	2.0 3.0
<u>3.0</u> 4.0	FILES	sand, siit, reduisit brown				90	4.0
5.0						6,100	5.0
6.0		5' - 8'				-,	6.0
7.0		Caliche; tan				11,000	7.0
8.0		8' - 10'	199999				8.0
9.0 10.0	Finala	8' - 10' and, silt; orangish-brown				910	9.0 10.0
11.0					1	910	11.0
12.0		10' - 13'		hard, well-graded			12.0
13.0	Cemente	ed sand, silt; reddish brown		TD at 13'		5,700	13.0
14.0					1	-,	14.0
15.0							15.0
16.0							16.0
17.0 18.0							17.0 18.0
19.0							19.0
20.0							20.0
21.0							21.0
22.0							22.0 23.0
23.0 24.0							23.0
24.0							24.0
26.0							26.0
27.0							27.0
28.0							28.0
29.0							29.0
30.0							30.0
31.0 32.0							31.0 32.0
33.0							33.0
34.0							34.0
35.0							35.0
36.0							36.0
37.0 38.0							37.0 38.0
39.0							39.0
40.0							40.0
41.0							41.0
42.0 43.0							42.0 43.0
43.0							43.0
45.0							45.0
46.0							46.0
47.0							47.0
48.0							48.0
49.0							49.0
50.0 51.0							50.0 51.0
52.0							52.0
53.0							53.0
54.0							54.0
55.0							55.0
		sultants, Ltd	Advan	ced Energy: Tomahawk	SWD	Appendix	с
	1 Rio Grando Suite F- Ibuquerque, I	142					
	505-266-		Samp	le Trench Log and Chlo	oriae	January 20	17

	Logger:	Andrew Parker		Client:		Trench ID:	
	Driller:	Storm Construction	n	Advanced	Energy		
Drilling	g Method:	Backhoe		Project Name:	- 57		
	Start Date:	12/5/2017		Tomahawk SWD	Characterization	Trench	#2
	End Date:	12/5/2017		Location:	Onaracterization	Trenen	π2
	Lifu Date.	12/3/2017		32.433012, -103.6	19511 (MCS94)		
				52.405012, 103.0	10311 (10004)		
D. H							D. dl
Depth		Description	Lithology	Comments	Chlorid	e (mg/kg)	Depth
(feet)							(feet)
0.0		0 - 3"		Road base	Field	Lab	0.0
1.0		Caliche Road			4	<30	1.0
2.0		3" - 5.5'				00	2.0
3.0 4.0	Fine e	and, silt; reddish brown				<30	<u>3.0</u> 4.0
	Fille S	and, siit, reduish brown				00	
5.0 6.0						80	5.0 6.0
7.0		5.5' - 8.5'				320	7.0
8.0	C	Caliche; white, tan				520	8.0
9.0							9.0
10.0		8.5' - 12'					10.0
11.0	Fine sa	and, silt; orangish-brown				5,600	11.0
12.0	1 110 30	ana, one, orangion-brown				5,000	12.0
12.0		12' - 13'					12.0
13.0	Comon	ted sand; reddish brown				7,600	13.0
14.0	Cemen	teu sanu, reuulsii biowli		TD at 13'	4		14.0
14.0 15.0							<u>14.0</u> 15.0
16.0							16.0
	Note: Mover	d proposed location to road					17.0
		e in right-of-way. Placed	•				18.0
19.0		n release flowpath accordin	a				19.0
	to ranch har	nd (Bradley Blevins) and	9				20.0
	Storm Const						21.0
22.0							22.0
23.0							23.0
24.0							24.0
25.0							25.0
26.0							26.0
27.0							27.0
28.0							28.0
29.0							29.0
30.0							30.0
31.0							31.0
32.0							32.0
33.0							33.0
34.0							34.0
35.0							35.0
36.0 37.0							36.0 37.0
38.0							37.0
39.0							39.0
40.0							40.0
41.0							41.0
42.0							42.0
43.0							43.0
44.0							44.0
45.0							45.0
46.0							46.0
47.0							47.0
48.0							48.0
49.0							49.0
50.0							50.0
51.0							51.0
52.0							52.0
53.0							53.0
54.0							54.0
55.0							55.0
	. Hicks Consu 1 Rio Grande	Blvd NW	Advan	ced Energy: Tomahawk	SWD	Appendix	С
Al	Suite F-1 Ibuquerque, N 505-266-5	M 87104	Samp	le Trench Log and Chlo	oride	January 20	17

	Logger:	Andrew Parker		Client:		Trench ID:	
	Driller:	Storm Construction	l .	Advanced	d Energy		
	g Method:	Backhoe		Project Name:			
	Start Date:	12/5/2017		Tomahawk SWD	Characterization	Trench #	# 5
	End Date:	12/5/2017		Location:			
				32.432822, -103.	61957 (WGS <mark>84)</mark>		
Depth		Description	Lithology	Comments	Chlorid	de (mg/kg)	Depth
(feet)		Description	Liniology	Commento			(feet)
0.0					Field	Lab	0.0
1.0		0 - 4'				1,700	1.0
2.0	Fine	e sand, silt; brown, red				200	2.0
3.0 4.0						360	<u>3.0</u> 4.0
5.0		4' - 7.5'				<30	4.0 5.0
6.0	Fine san	id, silt, hard, clay; brownish-		Hard		<50	6.0
7.0		orange				150 (7.5 ft)	7.0
8.0		7.5' - 0.5'	85555			()	8.0
9.0		Caliche; white, tan		Hard at 10'		270	9.0
10.0		Galiche, white, tan		TD at 10.5'			10.0
11.0							11.0
12.0							12.0
13.0							13.0
14.0							14.0
15.0 16.0							15.0 16.0
17.0							17.0
18.0							18.0
19.0							19.0
20.0							20.0
21.0							21.0
22.0							22.0
23.0 24.0							23.0 24.0
25.0							25.0
26.0 27.0							26.0 27.0
27.0							27.0
29.0							29.0
30.0							30.0
31.0							31.0
32.0							32.0
33.0							33.0
34.0							34.0
35.0 36.0							35.0 36.0
37.0							37.0
38.0							38.0
39.0							39.0
40.0							40.0
41.0							41.0
42.0							42.0
43.0							43.0
44.0 45.0							44.0 45.0
46.0							46.0
47.0							40.0
48.0							48.0
49.0							49.0
50.0							50.0
51.0							51.0
52.0							52.0
53.0							53.0
54.0							54.0
55.0							55.0
		sultants, Ltd	A -1-		- SWD	A	~
	1 Rio Grand Suite F-	e Blvd NW	Advan	ced Energy: Tomahawl	k SWD	Appendix (ت
Al	lbuquerque, 1 505-266-	NM 87104	Samp	le Trench Log and Chl	oride	January 20 ²	17

	Logger:	Andrew Parke	er	Client:		Trench ID:	
	Driller:	Storm Construct		Advanc	ed Energy		
Drillina	Method:	Backhoe		Project Name:	.,		
	art Date:	12/5/2017			D Characterization	Trench	350
	ind Date:	12/5/2017		Location:			
					3.61992 (WGS84)		
Depth		Description	Lithology	Comments	Chlorid	e (mg/kg)	Depth
(feet)		Description	Litriology	Comments			(feet)
0.0					Field	Lab	0.0
1.0		0-3'			200	<30	1.0
2.0	Fine s	and, silt; Brown, red			404	010	2.0
3.0		3' - 4'			401	210	3.0
4.0	Fin	e sand, silt; Grey					4.0
5.0					401	520	5.0
6.0	_	4' - 7'				020	6.0
7.0	Fine s	and, silt; Brown, red			401	540	7.0
8.0		7' - 8'		Hard	401	550	8.0
		Caliche		TD at 8 ft	401	550	
9.0							9.0
10.0 11.0							10.0 11.0
12.0 13.0							12.0 13.0
14.0							13.0
15.0							14.0
16.0							16.0
17.0							17.0
18.0							18.0
19.0							19.0
20.0							20.0
21.0 22.0							21.0 22.0
23.0							22.0
24.0							24.0
25.0							25.0
26.0							26.0
27.0							27.0
28.0							28.0
29.0							29.0
30.0							30.0
31.0							31.0
32.0 33.0							32.0 33.0
34.0							34.0
35.0							35.0
36.0							36.0
37.0							37.0
38.0							38.0
39.0							39.0
40.0							40.0
41.0 42.0							41.0 42.0
43.0							42.0
44.0							44.0
45.0							45.0
46.0							46.0
47.0							47.0
48.0							48.0
49.0							49.0
50.0							50.0
51.0							51.0
52.0 53.0							52.0 53.0
53.0 54.0							54.0
55.0							55.0
			•				
	Hicks Consult Rio Grande B Suite F-14	Blvd NW	Advan	ced Energy: Tomahav	wk SWD	Appendix	С
Alt	505-266-50	1 87104	Samp	le Trench Log and Cł	nloride	January 20	017

	Logger:	Andre	w Parker	Client:		Auger ID:	
		Construction					
		d Auger	Advanced Energy Project Name:				
Start Date: 12/		5/2017	Tomahawk SWD Characterization		Pad West		
		5/2017	Location:				
				32.433488, -103	3.618082 (WGS84)		
Depth		Description	Lithology	Comments	Chlori	de (mg/kg)	Depth
(feet)		0-3" Caliche					(feet)
0.0		0-3" Caliche		Production Pad	Field 401	Lab 480	0.0
2.0		3" - 4'			401	400	1.0 2.0
3.0	F	ine sand, silt; brov	vn 🔅		401	340	3.0
4.0		,,		TD at 4'		• • •	4.0
5.0							5.0
6.0							6.0
7.0 8.0							7.0 8.0
9.0							9.0
10.0							10.0
11.0							11.0
12.0							12.0
13.0							13.0
14.0							14.0
15.0 16.0							<u>15.0</u> 16.0
17.0							17.0
18.0							18.0
19.0							19.0
20.0							20.0
21.0 22.0							21.0 22.0
22.0							23.0
24.0							24.0
25.0							25.0
26.0							26.0
27.0							27.0
28.0							28.0
29.0 30.0							29.0 30.0
31.0							31.0
32.0							32.0
33.0							33.0
34.0							34.0
35.0 36.0							35.0 36.0
37.0							37.0
38.0							38.0
39.0							39.0
40.0							40.0
41.0 42.0							41.0 42.0
43.0							43.0
44.0							44.0
45.0							45.0
46.0							46.0
47.0 48.0							47.0 48.0
48.0							48.0
50.0							50.0
51.0							51.0
52.0							52.0
53.0							53.0
54.0 55.0							54.0 55.0
55.0				1			55.0
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW		Advan	Appendix C				
Suite F-142 Albuquerque, NM 87104 505-266-5004		Samp	January 2017				

Logger:	Andrew Parker		Client:		Auger ID:			
Driller:	Storm Construction	n	Advanced					
Drilling Method:	Hand Auger		Project Name:					
Start Date:	12/5/2017		Tomahawk SWD Characterization		Pad East			
End Date:	12/5/2017		Location:					
			32.433599, -103.6	617771 (WGS84)				
		1		7				
Depth	Description	Lithology	Comments	Chloric	de (mg/kg)	Depth		
(feet) 0.0	0 - 3"		Production Pad	Field	Lab	(feet) 0.0		
1.0				401	250	1.0		
2.0	3" - 2.75'				200	2.0		
3.0 Fine	sand, silt; brown			401	600	3.0		
4.0	2.75' - 4'		TD at 4'					
5	ilt, clay; brown		10 at 1			4.0		
5.0 6.0						5.0		
7.0						6.0 7.0		
8.0						8.0		
9.0						9.0		
10.0						10.0		
11.0						11.0		
12.0						12.0		
<u>13.0</u> 14.0						13.0 14.0		
15.0						14.0		
16.0						16.0		
17.0						17.0		
18.0						18.0		
19.0 20.0						19.0 20.0		
21.0						20.0		
22.0						22.0		
23.0						23.0		
24.0						24.0		
25.0						25.0		
26.0 27.0						26.0 27.0		
28.0						28.0		
29.0						29.0		
30.0						30.0		
31.0						31.0		
32.0 33.0						32.0 33.0		
34.0						33.0		
35.0						35.0		
36.0						36.0		
37.0						37.0		
38.0 39.0						38.0 39.0		
40.0						40.0		
41.0						41.0		
42.0						42.0		
<u>43.0</u> 44.0						43.0		
<u>44.0</u> 45.0						44.0 45.0		
46.0						46.0		
47.0						47.0		
48.0						48.0		
49.0						49.0		
50.0						50.0		
51.0						51.0		
52.0 53.0						52.0 53.0		
54.0						54.0		
55.0						55.0		
R.T. Hicks Consult 901 Rio Grande Bl		Advanced Energy: Tomahawk SWD				Appendix C		
Suite F-142 Albuquerque, NM	2 4 87104	Sample Trench Log and Chloride				January 2017		
505-266-500)4							
	Logger:	Andre	w Parker		Client:		Auger ID:	
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Driller: Storm C		Construction		Advanced Energy				
Drilling Method: Han		nd Auger		Project Name:		HA-4 (near Trench 4)		
		2/5/2017		Tomahawk SWD Characterization				
	End Date: 12/5/		5/2017		Location:	10000 (MCC04)		,
					32.432588, -103.6	19009 (110084)		
Depth								Depth
(feet)		Description	l	Lithology	Comments	Chlorie	de (mg/kg)	(feet)
0.0						Field	Lab	0.0
1.0		0' - 4'				200	<30	1.0
2.0	Fin	e sand, silt; brown,	red			000	20	2.0
3.0 4.0						200	<30	3.0 4.0
5.0		4' - 6.5'			Hard	401	41	5.0
6.0	Fine san	d, silt, clay; brownis	sh orange 🚦		TD at 6.5 ft	802	1,000 (6.5 ft)	6.0
7.0		-						7.0
8.0								8.0
9.0 10.0								9.0 10.0
11.0								11.0
12.0								12.0
13.0	1							13.0
14.0								14.0
15.0								15.0
16.0 17.0	Frank .	a pipeline er d	المغمالة ا					16.0 17.0
18.0		er pipeline recently Blocked access wit						18.0
19.0	Sunace. L	DIOCKEU ACCESS WIL	II DACKINE.					19.0
20.0 21.0								20.0 21.0
21.0								21.0
23.0								23.0
24.0								24.0
25.0								25.0
26.0 27.0								26.0 27.0
28.0								28.0
29.0								29.0
30.0								30.0
31.0 32.0								31.0 32.0
33.0								33.0
34.0								34.0
35.0								35.0
36.0 37.0								36.0 37.0
38.0								38.0
39.0								39.0
40.0 41.0								40.0 41.0
41.0	1							41.0
43.0	1							43.0
44.0	ł							44.0
45.0 46.0								45.0 46.0
40.0								40.0
48.0	1							48.0
49.0								49.0
50.0								50.0
51.0 52.0								51.0 52.0
53.0	1							53.0
54.0								54.0
55.0								55.0
		sultants, Ltd e Blvd NW		Advan	nced Energy: Tomahawk SWD		Appendix C	
	901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104							
	505-266-5004			Sample Trench Log and Chloride			January 2017	

	Logger:	Andre	w Parker	Client:		Auger ID:	
Driller: Storm C		onstruction	Advanc				
Drilling Method: Han Start Date: 12/			Project Name:		HA-200'		
		5/2017		D Characterization	South		
E			5/2017	Location:			
				32.432149, -103	.619916 (WGS84)		
Depth		Description	Lithology	Comments	Chlori	de (mg/kg)	Depth
(feet)							(feet)
0.0		0 - 3'			Field 200	Lab	0.0
2.0	Fine	sand, silt, brown,	red		200		2.0
2.0		3'					2.0
3.0		Caliche		TD at 3'	1,000		3.0
4.0							4.0
5.0						_	5.0
6.0 7.0						_	6.0 7.0
8.0						_	8.0
9.0							9.0
10.0							10.0
11.0							11.0
12.0							12.0
13.0							13.0
14.0						_	14.0
15.0 16.0						_	15.0 16.0
17.0							17.0
18.0							18.0
19.0							19.0
20.0							20.0
21.0 22.0						_	21.0 22.0
22.0						_	23.0
24.0						_	24.0
25.0							25.0
26.0							26.0
27.0							27.0
28.0							28.0
29.0						_	29.0
30.0 31.0						_	30.0 31.0
32.0							32.0
33.0							33.0
34.0							34.0
35.0							35.0
36.0 37.0						_	36.0
37.0						F	37.0 38.0
39.0							39.0
40.0							40.0
41.0							41.0
42.0						F	42.0
43.0 44.0						F	43.0 44.0
44.0						F	45.0
46.0							46.0
47.0							47.0
48.0							48.0
49.0							49.0
50.0							50.0
51.0 52.0						F	51.0
52.0 53.0							52.0 53.0
54.0						F	54.0
55.0							55.0
					· · · · · · · · · · · · · · · · · · ·		
	<u>R.T. Hicks Consultants, Ltd</u> 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104		Advanced Energy: Tomahawk SWD			Appendix C	
						Appendix C	
A 11							
Alt			Sample Trench Log and Chloride			January 2017	
505-266-5004							

	Logger:	Andrew Parke	er	Client:		Auger ID:		
Driller: Storm C		Storm Construc		Advanc	ed Energy			
Drilling Method: Han		Hand Auger	•	Project Name:		— НА-	250'	
Start Date: 12/		12/5/2017		Tomahawk SW	D Characterization		uth	
End Date: 12/		12/5/2017		Location:				
			32.432011, -103	3.619928 (WGS84)				
Depth		Description	Lithology	Comments	Chlorid	de (mg/kg)	Depth	
(feet)		•					(feet)	
0.0 1.0		0 - 3'			Field 200	Lab	0.0	
2.0	Fines	and, silt; Brown, red			200		2.0	
3.0	1 110 0	and, siit, Brown, red			601		3.0	
		3' - 4'						
4.0	Fir	ne sand, silt; Grey					4.0	
		4' - 6'						
5.0	Fines	sand, silt; Brown,red					5.0	
		6'						
6.0		Caliche		TD at 6 ft	2,006		6.0	
7.0							7.0	
8.0							8.0	
9.0 10.0							9.0 10.0	
11.0							11.0	
12.0							12.0	
12.0							12.0	
14.0							14.0	
15.0							15.0	
16.0							16.0	
17.0							17.0	
18.0							18.0	
19.0 20.0							19.0 20.0	
20.0							20.0	
22.0							22.0	
23.0							23.0	
24.0							24.0	
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	Hicks Consul Rio Grande H		Advanced Energy: Tomahawk SWD			Append	ix C	
201	Suite F-14							
Albuquerque, NM 87104			Sample Trench Log and Chlorida			January		
Alt	ouquerque, r		Sample Trench Log and Chloride				2017	



STATE OF NEW MEXICO OIL CONSERVATION COMMISSION

2018 JAN - 3 P GASE NO. 15959

IN THE MATTER OF THE:

APPLICATION OF THE NEW MEXICO OIL CONSERVATION DIVISION TO REPEAL AND REPLACE RULE 19.15.29 NMAC; STATEWIDE.

APPLICATION

The New Mexico Oil Conservation Division hereby applies to the Oil Conservation Commission to rename and repeal and replace 19.15.29 NMAC. The proposed name change from "Release Notification" to "Releases" and the purpose of the repealed and replaced rule is to refine existing terms, define new terms, and clarify the process for responding to releases of oil, gases, produced water, condensate, or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixtures of those chemicals or contaminants that occur during drilling, producing, storing, disposing, injecting, transporting, servicing, or processing and to establish reporting, site assessment, remediation, closure, variance, and enforcement procedures.

A draft of the proposed amendments to 19.15.29 NMAC is attached hereto as *Exhibit A*. A proposed legal notice for publication is attached hereto as *Exhibit B*. A copy of the New Mexico Commission of Public Records approval of the name change is attached hereto as *Exhibit C*.

Respectfully submitted,

Keith Herrmann Assistant General Counsel New Mexico Energy Minerals and Natural Resources Department 1220 S. St. Francis Drive Santa Fe, NM 87505 (505) 476-3463 Keith.Herrmann@state.nm.us Exhibit A – Proposed Rule 19.15.29 NMAC:

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TITLE 19NATURAL RESOURCES AND WILDLIFECHAPTER 15OIL AND GASPART 29RELEASES

19.15.29.1 ISSUING AGENCY: Oil Conservation Commission. [19.15.29.1 NMAC – Rp, 19.15.29.1 NMAC, XX/XX/201?]

19.15.29.2 SCOPE: 19.15.29 NMAC applies to persons engaged in oil and gas development and production within New Mexico. [19.15.29.2 NMAC - Rp, 19.15.29.2 NMAC, XX/XX/201?]

19.15.29.3 STATUTORY AUTHORITY: 19.15.29 NMAC is adopted pursuant to the Oil and Gas Act, Section 70-2-11 NMSA 1978 (1977) and Section 70-2-12 NMSA 1978 (2004). [19.15.29.3 NMAC – Rp, 19.15.29.3 NMAC, XX/XX/201?]

19.15.29.4 DURATION: Permanent. [19.15.29.4 NMAC - Rp, 19.15.29.4 NMAC, XX/XX/201?]

19.15.29.5 EFFECTIVE DATE: _____, unless a later date is cited at the end of a section. [19.15.29.5 NMAC – Rp, 19.15.29.5 NMAC, XX/XX/201?]

19.15.29.6 OBJECTIVE: To require persons who operate or control the release or the location of the release to report the unauthorized release of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixtures of those chemicals or contaminants that occur during drilling, producing, storing, disposing, injecting, transporting, servicing or processing and to establish reporting, site assessment, remediation, closure, variance and enforcement procedures. [19.15.29.6 NMAC – Rp, 19.15.29.6 NMAC, XX/XX/201?]

19.15.29.7 DEFINITIONS:

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"Major release" means:

- (1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;
 - an unauthorized release of a volume that:
 - (a) results in a fire or a fire causes;
 - (b) may with reasonable probability reach a watercourse;
 - (c) may with reasonable probability endanger public health; or
 - (d) substantially damages property or the environment;
- (3) an unauthorized release of gases exceeding 500 MCF; or

(4) a release of a volume that may with reasonable probability be detrimental to fresh water. B. "Minor release" means an unauthorized release, which is not a major release and is a volume

greater than five barrels but less than 25 barrels; or for gases, greater than 50 MCF but less than 500 MCF. C. "Responsible Party" means the operator, as defined in 19.15.2 NMAC. Notwithstanding the foregoing, the division, in its sole discretion, may also consider a person causing the release, or controlling the

location of the release as the responsible party. [19.15.29.7 NMAC - Rp, 19.15.29.7 NMAC, XX/XX/201?]

19.15.29.8 RELEASE NOTIFICATION:

A. The responsible party must notify the division on form C-141 of a major or minor release occurring during the drilling, producing, storing, disposing, injecting, transporting, servicing or processing of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixture of the chemicals or contaminants, in accordance with the requirements of 19.15.29 NMAC.

B. If state, federal or tribal lands are involved, the responsible party must send a copy of the form C-141 to the appropriate land managing agency including the State Land Office, the Bureau of Land Management or tribal authority, as applicable.

[19.15.29.8 NMAC – Rp, 19.15.29.8 NMAC, XX/XX/201?]

19.15.29.9 RELEASE NOTIFICATION REPORTING REQUIREMENTS: The responsible party must notify the division of releases in 19.15.29.8 NMAC as follows.

A. Reporting a Major Release.

(1) The responsible party must notify the division's environmental bureau chief and the appropriate division district office verbally or by e-mail within 24 hours of discovery of the release. The notification must provide the information required on form C-141.

(2) The responsible party must also notify the appropriate division district office in writing within 15 days of discovering the release by completing and filing form C-141. The written notification must verify the prior verbal or e-mail notification and include additions or corrections to the information contained in the prior verbal or e-mail notification.

B. Reporting a Minor Release. The responsible party must notify the appropriate division district office in writing within 15 days of discovery of the release by completing and filing form C-141. [19.15.29.9 NMAC – Rp, 19.15.29.9 NMAC, XX/XX/201?]

19.15.29.10 INITIAL RESPONSE: The responsible party must take the following immediate actions unless the actions could create a safety hazard that would result in injury.

A. Source Elimination and Site Security. The responsible party must take appropriate measures to stop the source of the release and limit access to the site as necessary to protect human health and the environment.

B. Containment. Once the site is secure, the responsible party must contain the materials released by construction of berms or dikes, the use of absorbent pads or other containment actions to limit the area affected by the release and prevent potential fresh water contaminants from migrating to watercourses or areas which could pose a threat to public health and environment. The responsible party must monitor the containment to ensure that it is effectively containing the material and not being degraded by weather or onsite activity.

C. Site Stabilization. After containment, the responsible party must recover any free liquids and recoverable product that can be physically removed from the surface within the containment area. The responsible party must deliver material removed from the site to a division-approved facility. [19.15.29.10 NMAC - Rp, 19.15.29.10 NMAC, XX/XX/201?]

19.15.29.11 SITE ASSESSMENT/CHARACTERIZATION: After the responsible party has removed all free liquids and recoverable products, the responsible party must assess soils both vertically and horizontally for potential environmental impacts from the release.

A. Characterization Requirements: The responsible party must submit information characterizing the release to the appropriate division district office within 90 days of discovery of the release or characterize the site by submitting a final closure report within 90 days of discovery of the release in accordance with 19.15.29 NMAC. The responsible party may seek an extension of time to submit characterization information for good cause as determined by the division. The responsible party must submit the following information to the division.

(1) Site Map. The responsible party must provide a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.

(2) Depth to Ground Water. The responsible party must determine the depth to ground water where the release occurred. If the exact depth to ground water is unknown, the responsible party must provide a reasonable determination of probable ground water depth using data generated by numeric models, cathodic well lithology, water well data, published information or other tools as approved by the appropriate division district office. If the responsible party uses water well data, the responsible party must provide all pertinent well information.

(3) Wellhead Protection Area. The responsible party must determine the horizontal distance from all known water sources within a half mile of the release including private and domestic water sources. Water sources are wells, springs or other sources of fresh water extraction. Private and domestic water sources are those water sources used by less than five households for domestic or stock purposes.

(4) **Distance to Nearest Significant Watercourse.** The responsible party must determine the horizontal distance to the nearest significant watercourse as defined in Subsection P of 19.15.17.7 NMAC.

(5) Soil/Waste Characteristics. The responsible party must determine the lateral and vertical extents of soil contamination, as follows.

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(a) If the release occurred within a lined containment area, the responsible party must demonstrate liner integrity after affected material is removed and the affected area of the liner is exposed and provide:

(i) certification on form C-141 that the responsible party has visually inspected the liner where the release occurred and the liner remains intact and had the ability to contain the leak in question; and

(ii) at least two business days' notice to the appropriate division district office before conducting the liner inspection.

(b) If the responsible party is unable to demonstrate liner integrity or the release occurred outside of a lined containment area, the responsible party must delineate the release horizontally and vertically using Table I constituents or other constituents as appropriate for the type of the release. The operator may use the following soil sampling methods for characterization.

(i) NRCS Field Guide;

- (ii) EPA SW-846;
- (iii) ASTM Method 4547;
- (iv) EPA 600; or

(v) or other division-approved methods.

(c) In addition to Subparagraph (b) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, if the release occurred outside of a lined containment area and is in an area where depth to ground water is greater than 50 feet and less than or equal to 100 feet, the responsible party must delineate the vertical extent of the release to the greater of 600 mg/kg chloride or background chloride level, if:

(i) the release contains produced water that exceeds 10,000 mg/l of chloride (if the responsible party contends the fluid is less than 10,000 mg/l, the responsible party must provide current sample results to the division); and

(ii) the release is of an unknown quantity or results in greater than 200 barrels of unrecovered produced water.

(d) If the conditions are met in Subparagraph (c) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, the responsible party must submit at least two soil samples for laboratory analysis from each borehole or sample point (highest observed contamination and deepest depth investigated). Field screening and assessment techniques are acceptable (headspace, titration, electrical conductivity [include algorithm for validation purposes], electromagnetics, etc.), but the sampling procedures must be clearly defined. The responsible party must submit copies of field notes attributable to field sampling and provide copies of the actual laboratory results including chain of custody documentation.

B. Unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

C. If the division determines that more information is needed to understand the character of the release and its potential impact on fresh water, public health and the environment, the division may request the responsible party submit additional information. Should the division request additional information, it must do so in writing to the responsible party within 30 days from receipt of the characterization report or remediation plan with what specific information the division is requesting and reasons why the additional information is needed. The responsible party has 14 days to respond to a written request for additional information. If the responsible party disagrees with the request for additional information, it may consult with the division, or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the issuance of the conditions.

19.15.29.12 REMEDIATION AND CLOSURE:

A. The responsible party must remediate all releases regardless of volume.

B. The responsible party must complete division-approved remediation for releases that endanger public health or the environment within 90 days of division approval of a remediation plan or with an abatement plan the responsible party submitted to the division in accordance with 19.15.30 NMAC. The responsible party may request an extension of time to remediate upon a showing of good cause as determined by the division. If the director determines that the release has caused water pollution in excess of the standards and requirements of 19.15.30 NMAC, the director may notify the responsible party that an abatement plan may be required pursuant to 19.15.30 NMAC.

(1) **Remediation Plan Requirements.** The responsible party must submit a detailed description of proposed remediation measures in accordance with the findings of the site assessment/characterization plan that includes:

- **(a)** delineation results, including laboratory analysis;
- a scaled sitemap showing release area with horizontal and vertical delineation **(b)**

points:

- estimated volume of impacted material to be remediated; (c)
- proposed remediation technique; and (d)
- proposed timeline for remediation activities. (e)

(2) The responsible party shall restore the impacted surface area of a release occurring on a lined, bermed or otherwise contained exploration, development, production or storage site to the condition that existed prior to the release. Restoration of the site must include, but is not limited to, removal of materials the release contaminated and replacement with clean, uncontaminated materials. The responsible party must place the replacement materials to the near original relative positions and contour the replacement materials so as to achieve erosion control, long-term stability and preservation of surface water.

The responsible party shall remediate the impacted surface area of a release not occurring (3) on a lined, bermed or otherwise contained exploration, development, production or storage site to meet the standards of Table I of 19.15.29.12 NMAC and contain a minimum of four feet of non-waste material containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0. The soil cover must include a top layer which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

If a release occurs within the following areas, the responsible party must treat the release (4) as if it occurred less than 50 feet to ground water in Table I of 19.15.29.12 NMAC:

(1) within

-::C	(i)	300 feet of any continuously flowing watercourse or any other
significant watercourse, or	(ii)	200 feet of any lakebed, sinkhole or playa lake (measured from the
ordinary high-water mark)		

within 300 feet from an occupied permanent residence, school, hospital,

ordinary high-water mark); (b)

institution or church;

(c) within

(i) 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or

1000 feet of any fresh water well or spring; (ii)

within incorporated municipal boundaries or within a defined municipal fresh (d) water well field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves;

- within 100 feet of a wetland; (e)
- within the area overlying a subsurface mine; **(f)**
- within an unstable area: or (g)
- (h) within a 100-year floodplain.

B. The division has 30 days from receipt of the proposed remediation plan to review and approve, approve with conditions, or deny the remediation plan. If 30 days have lapsed without response from the division, then the plan is deemed denied and the responsible party may file an application for a hearing pursuant to 19.15.4 NMAC within 30 days. If the responsible party disagrees with any conditions of approval or denial of the plan, it may consult with the division or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the denial or issuance of the conditions. С.

Closure Requirements.

The responsible party must test the remediated areas for contamination with (1) representative five-point composite samples and individual grab samples from any wet or discolored areas. The samples must be analyzed for the constituents listed in Table I of 19.15.29.12 NMAC.

(a) The responsible party must verbally notify the appropriate division district office two business days prior to conducting final sampling. If the division district office does not respond to the notice within the two business days, the responsible party may proceed with final sampling. The responsible party may request a variance from this requirement upon a showing of good cause as determined by the division.

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(b) There must be separate representative wall and base 5-point composite samples to show horizontal and vertical remediation. Each composite sample must not be representative of more than 200 ft^2 . The division may add additional sampling requirements dependent on the material released and any risks to human health or the environment.

(c) The responsible party may submit an alternative sampling plan for the division's review and approval. If a division inspector is witnessing the samples, the division inspector is authorized to verbally approve an alternative sampling plan based on site observations.

(2) If all composite and grab sample concentrations are less than or equal to the parameters listed in Table I or any conditions of approval, then the responsible party may proceed to backfill any excavated areas.

D. Closure Reporting.

(1) The responsible party must submit to the division a closure report on form C-141, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The responsible party must certify that all information in the closure report and attachments is correct and that the responsible party has complied with all applicable closure requirements and conditions specified in division rules or directives. The responsible party must submit closure report along with form C-141 to the division within 90 days of the remediation plan approval. The responsible party may apply for additional time to submit the final closure report upon a showing of good cause as determined by the division. The final report must include:

- (a) a scaled site and sampling diagram;
- (b) photographs of the remediated site prior to backfill;
- (c) laboratory analyses of final sampling; and
- (d) a description of all remedial activities.

(2) The division district office has 60 days to review and approve or deny the closure report. If the responsible party disagrees with denial of the closure report, it may consult with the division or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the denial.

		Table I	· · · · · · · · · · · · · · · · · · ·
	Closure Criteria	for Soils Impacted by a Release	
Depth below bottom of release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
\leq 50 feet	Chloride***	EPA 300.0	600 mg/kg
	ТРН	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0	10,000 mg/kg
	ТРН	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
•	BTEX	EPA SW-846 Method 8021B or 8260B	* 50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
➤ 100 feet	Chloride***	EPA 300.0	20,000 mg/kg
	ТРН	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg

BTEX.	EPA SW-846 Method 8021B or 8260B	50 mg/kg
Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg

*Or other test methods approved by the division.

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

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

[19.15.29.12 NMAC – N, XX/XX/201?]

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19.15.29.13 RESTORATION, RECLAMATION AND RE-VEGETATION:

A. The responsible party must substantially restore the impacted surface areas to the condition that existed prior to the release. Restoration of the site must include the replacement of removed material and must be replaced to the near original relative positions and contoured to achieve erosion control, long-term stability and preservation of surface water flow patterns.

B. Areas reasonably needed for production operations or for subsequent drilling operations must be compacted, covered, paved or otherwise stabilized and maintained in such a way as to minimize dust and erosion to the extent practical.

C. The responsible party must construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material.

D. Reclamation of Areas No Longer in Use. The responsible party shall reclaim all areas disturbed by the remediation and closure, except areas reasonably needed for production operations or for subsequent drilling operations, as early and as nearly as practical to their original condition or their final land use and maintain those areas to control dust and minimize erosion to the extent practical.

(1) The responsible party must reseed disturbed area in the first favorable growing season following closure of the site.

(2) The division will consider reclamation of all disturbed areas complete when uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds.

(3) The responsible party must notify the division when reclamation and re-vegetation are complete.

E. The surface restoration, reclamation and re-vegetation obligations imposed by federal, state agencies or tribes on lands managed or owned by those agencies supersede these provisions and govern the obligations of any responsible party subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment. [19.15.29.13 NMAC - N, XX/XX/201?]

19.15.29.14 VARIANCES:

A. A responsible party may file a written request for a variance from any requirement of 19.15.29 NMAC with the appropriate division district office. The variance request must include:

(1) a detailed statement explaining the need for a variance; and

(2) a detailed written demonstration that the variance will provide equal or better protection of fresh water, public health and the environment.

B. The division district office must approve or deny the variance in writing within 60 days of receipt. If the division district office denies the variance, it must provide the responsible party with the reasons for denial.

C. If the division district office does not approve or deny a request for variance from the requirements of this rule within 60 days, of the date of the request for variance is received by the division district office, then the plan is deemed denied and the responsible party may file an application for a hearing pursuant to 19.15.4 NMAC within 30 days of the denial.

D. If the responsible party requests a hearing pursuant to 19.15.4 NMAC within 30 days after receipt of notice, the division must set the matter for hearing with notice to the responsible and appropriate division district office.

E. In addition to the notice provisions in 19.15.4 NMAC, the responsible party must provide notice of the hearing on the request for variance to the surface owner of the site by certified mail, return receipt requested, at least 20 days prior to the date of the hearing.

F. Variances must receive division approval prior to implementation. [19.15.29.14 NMAC – N, XX/XX/201?]

19.15.29 NMAC

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19.15.29.15 ENFORCEMENT:

A. The responsible party must comply with all the requirements of 19.15.29 NMAC. The division may take enforcement action against any responsible party who does not comply with 19.15.29 NMAC.

B. A responsible party may enter an agreed compliance order with the division for any violation of 19.15.29 NMAC, except for 19.15.29.9 NMAC. An agreed compliance order may be entered prior to or after the filing of an application by the division or any other party for an administrative compliance proceeding. Any administrative compliance order will have the same force and effect as a compliance order issued after an adjudicatory hearing.

C. The director or the director's designee may deny a permit to drill, deepen or plug back any application if the responsible party is not in compliance with a court order, agreed compliance order or administrative compliance order arising from 19.15.29 NMAC.

D. If the division or other party files an administrative enforcement application, the provisions of 19.15.4 NMAC apply to the enforcement proceeding, unless altered or amended by 19.15.5.10 NMAC or 19.15.29 NMAC.

[19.15.29.15 NMAC - N, XX/XX/201?]

19.15.29.16 TRANSITIONAL PROVISIONS:

A. Responsible parties with current ongoing corrective actions/remediation with approved plans and timelines as of (effective date of rule) do not have to submit revised plans.

B. Responsible parties with ongoing corrective actions/remediation without approved timelines or plans as of ______ (effective date of rule) must submit a characterization plan or corrective action/remediation plan with proposed timeframes within 90 days of _____ (effective date of rule).

[19.15.29.16 NMAC - N, XX/XX/201?]

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