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 2017[1] 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.

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.

o 

- **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

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).

- 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.

Andrew Parker
Project Scientist

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

TABLES

Table 1: Summary of Analytical

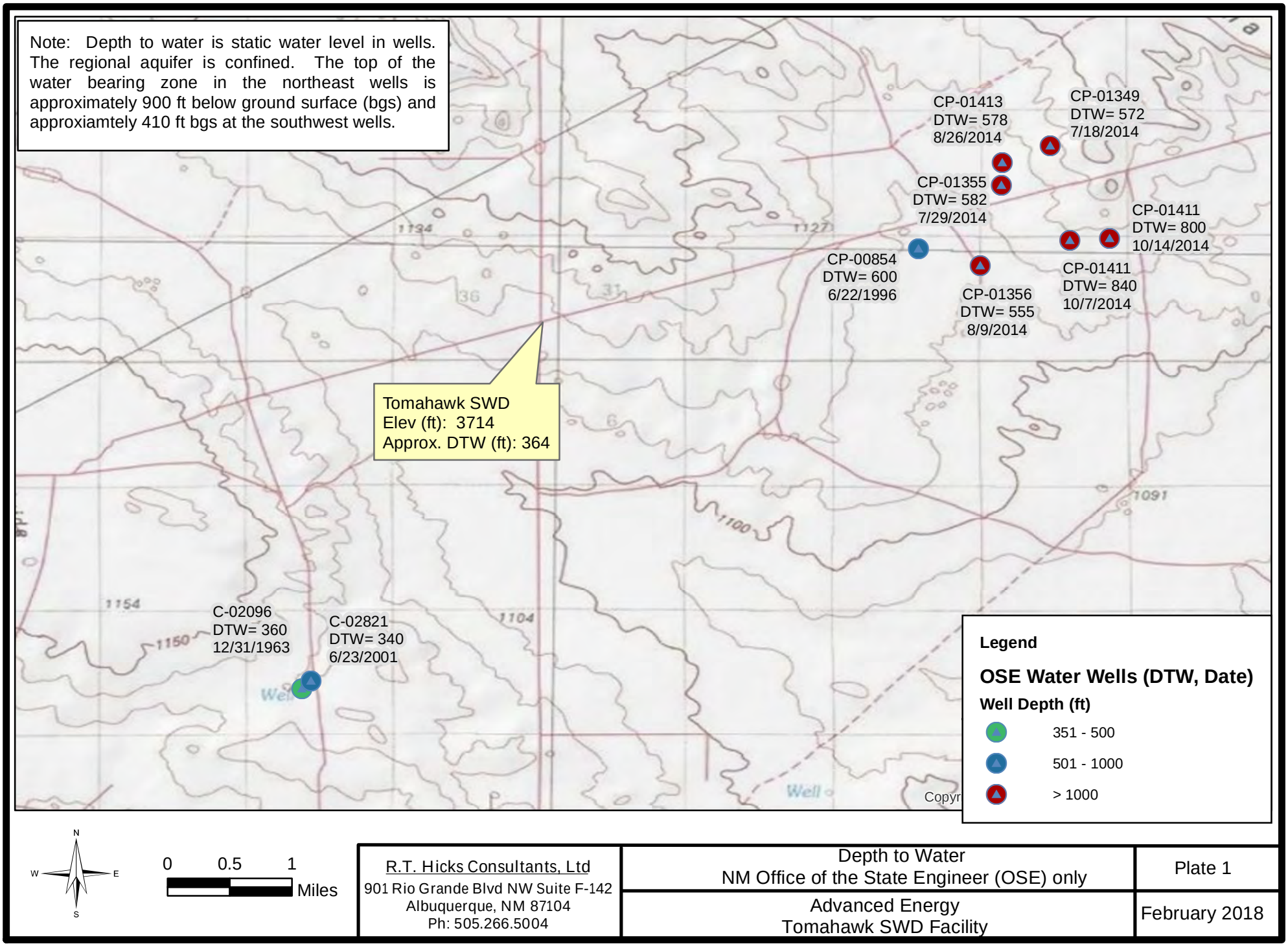
Sample Name	Date	Cl (titration)	Cl mg/kg	TPH mg/kg	GRO+DRO mg/kg	BTEX mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	GRO mg/kg	DRO mg/kg	MRO mg/kg
NMAC Closure Criteria													
0 - 4 feet			600	2,500	1,000	10	50						
> 4 ft			20,000	2,500	1,000	10	50						
Pad East at 1 ft	12/5/2017	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										

Table 1: Summary of Analytical

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						
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



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Depth to Water
NM Office of the State Engineer (OSE) only

Plate 1

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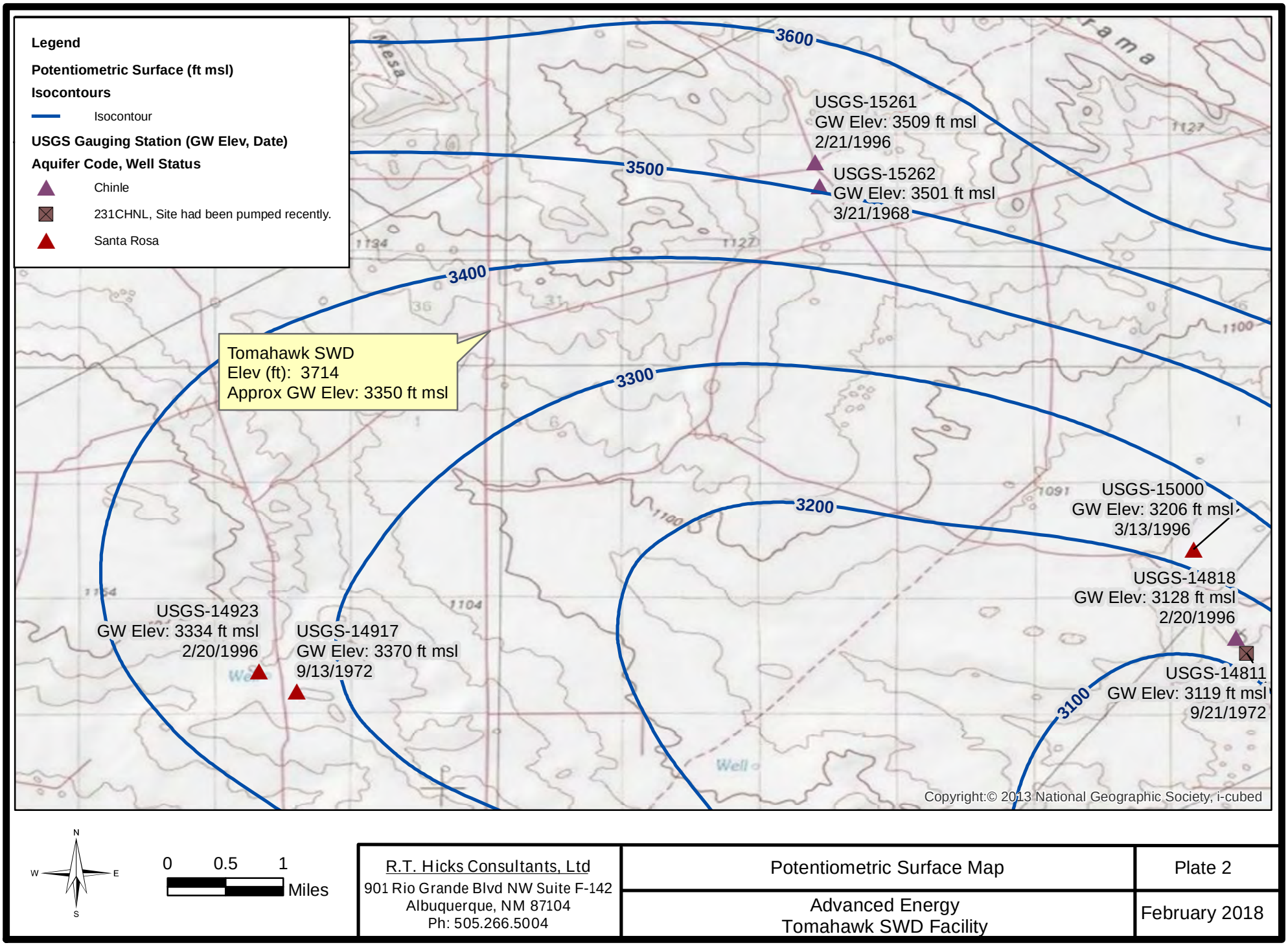

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Potentiometric Surface Map	Plate 2
	Advanced Energy Tomahawk SWD Facility	February 2018

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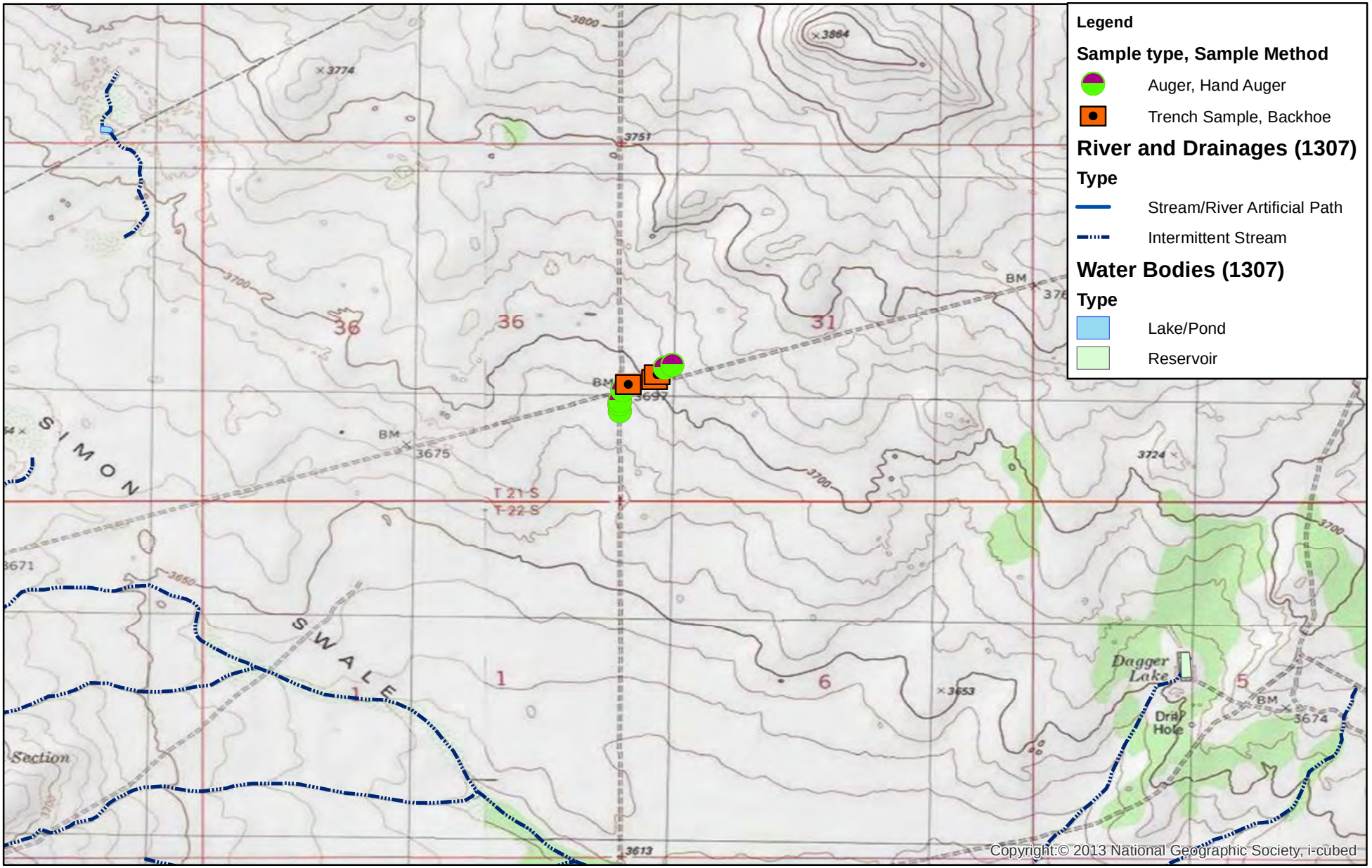

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Surface Water and Topography

Plate 3

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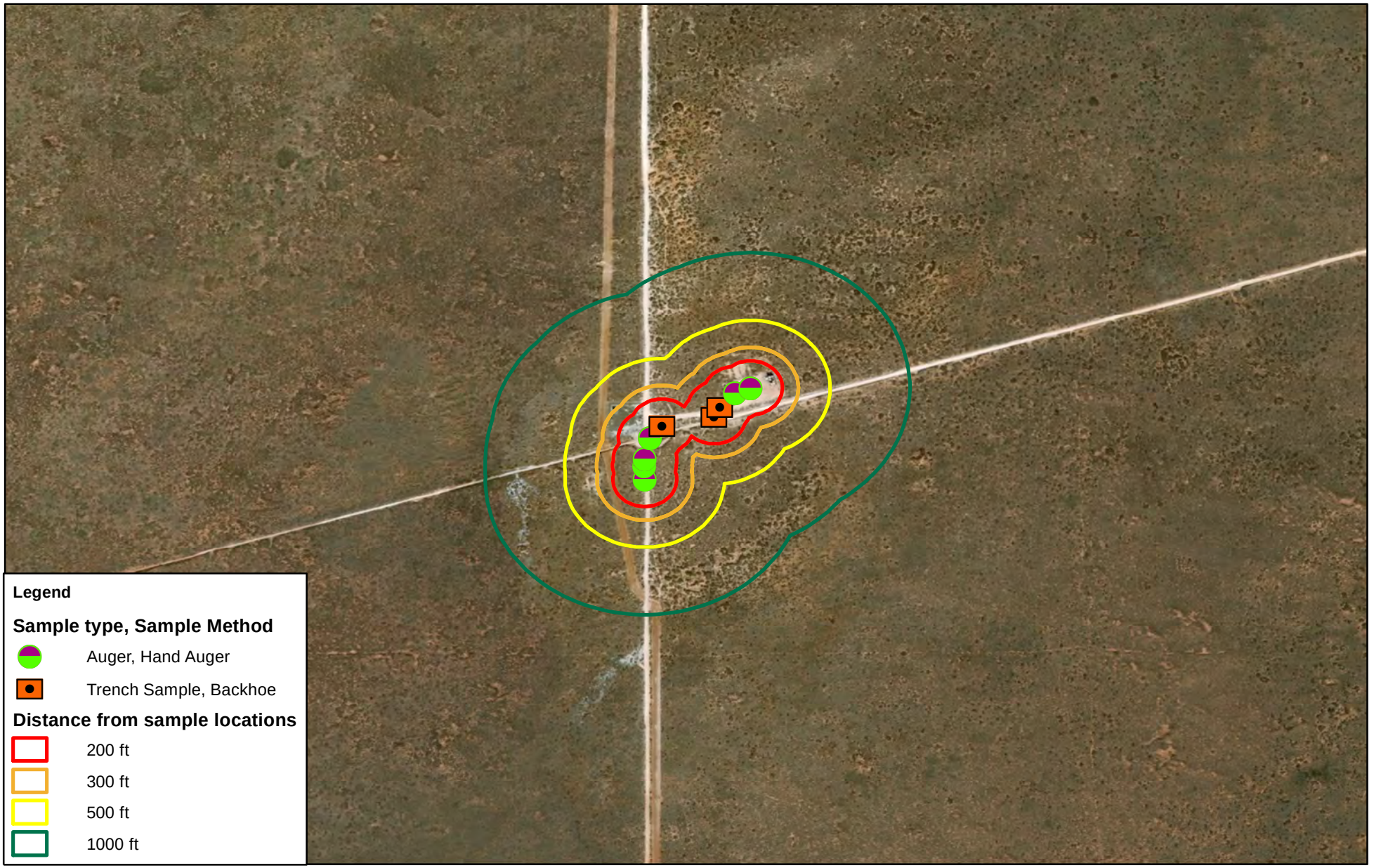

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Structures	Plate 4
	Advanced Energy Tomahawk SWD Facility	February 2018

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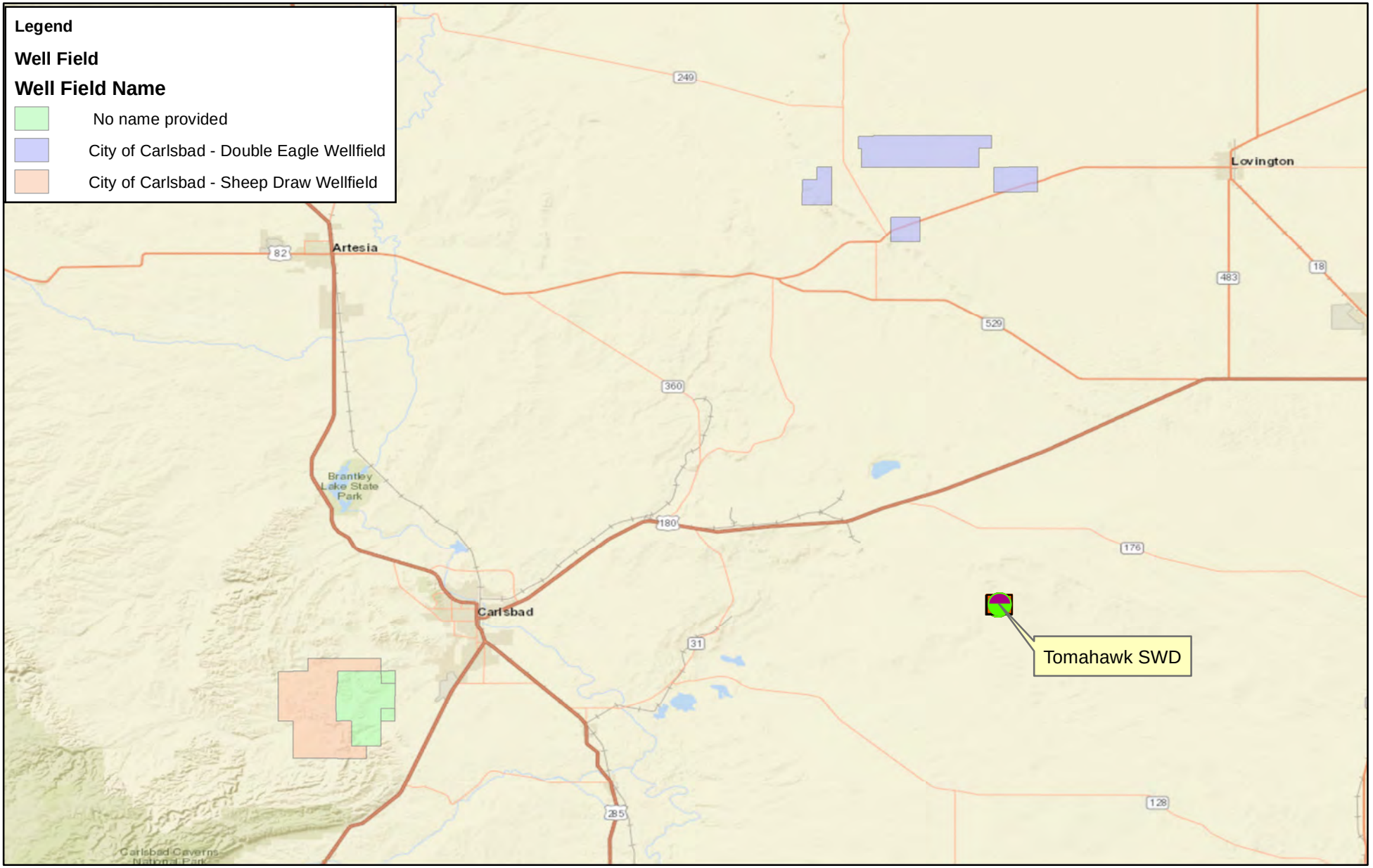

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Nearby Municipalities and Well Fields

Plate 5

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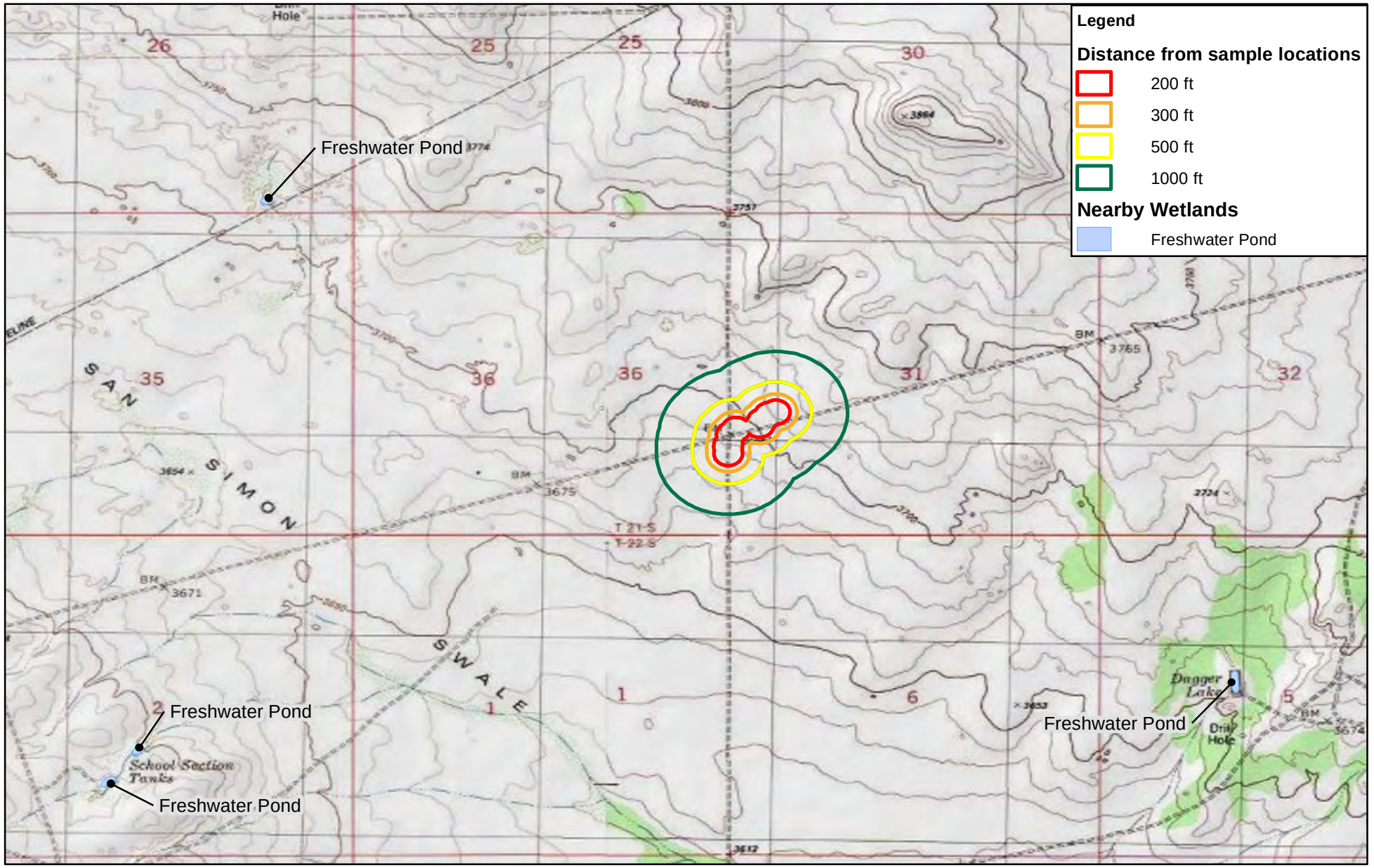

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Nearby Wetlands	Plate 6
Advanced Energy Tomahawk SWD Facility	February 2018

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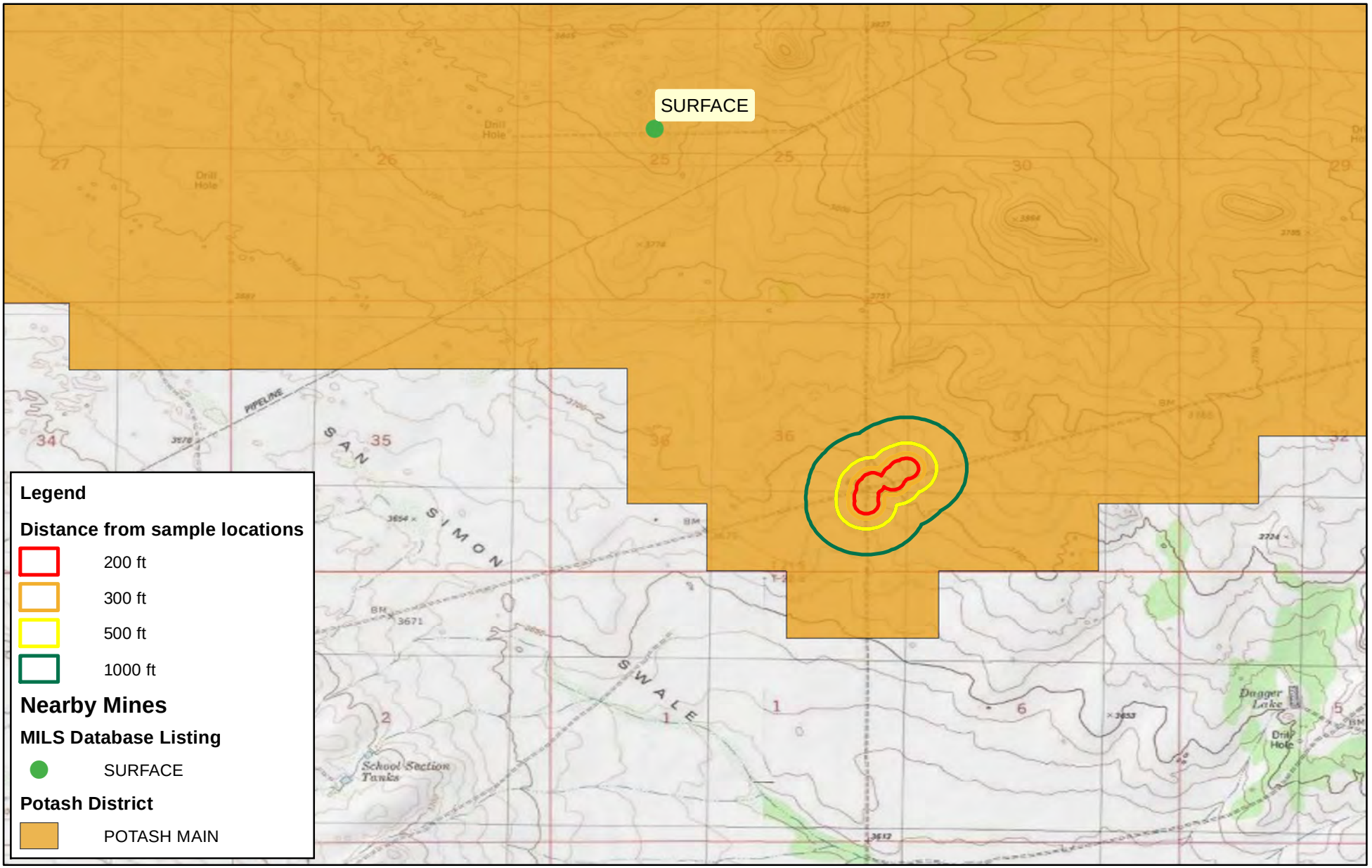

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	Advanced Energy Tomahawk SWD Facility	February 2018

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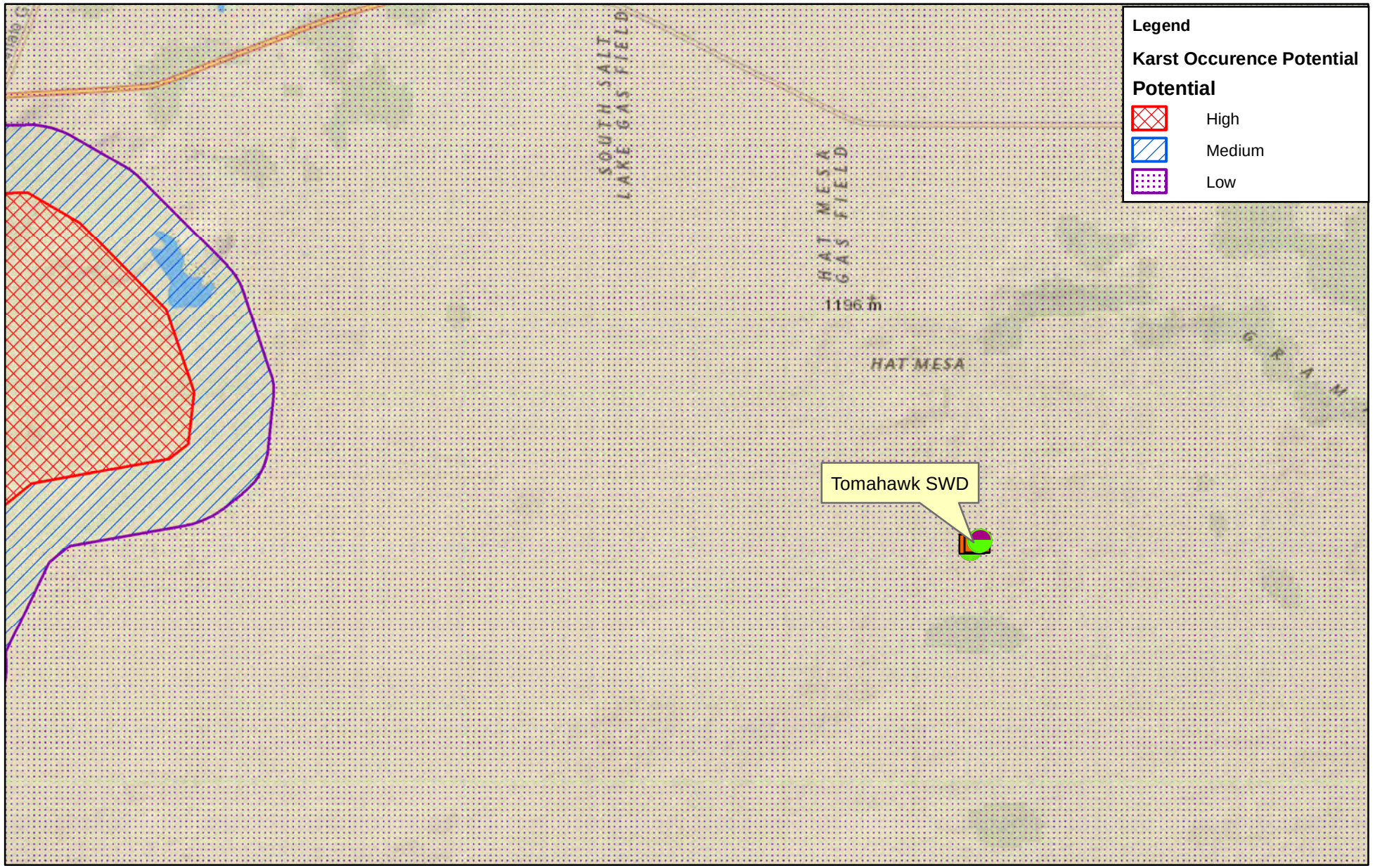

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Karst Potential

Plate 8

Advanced Energy
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February 2018

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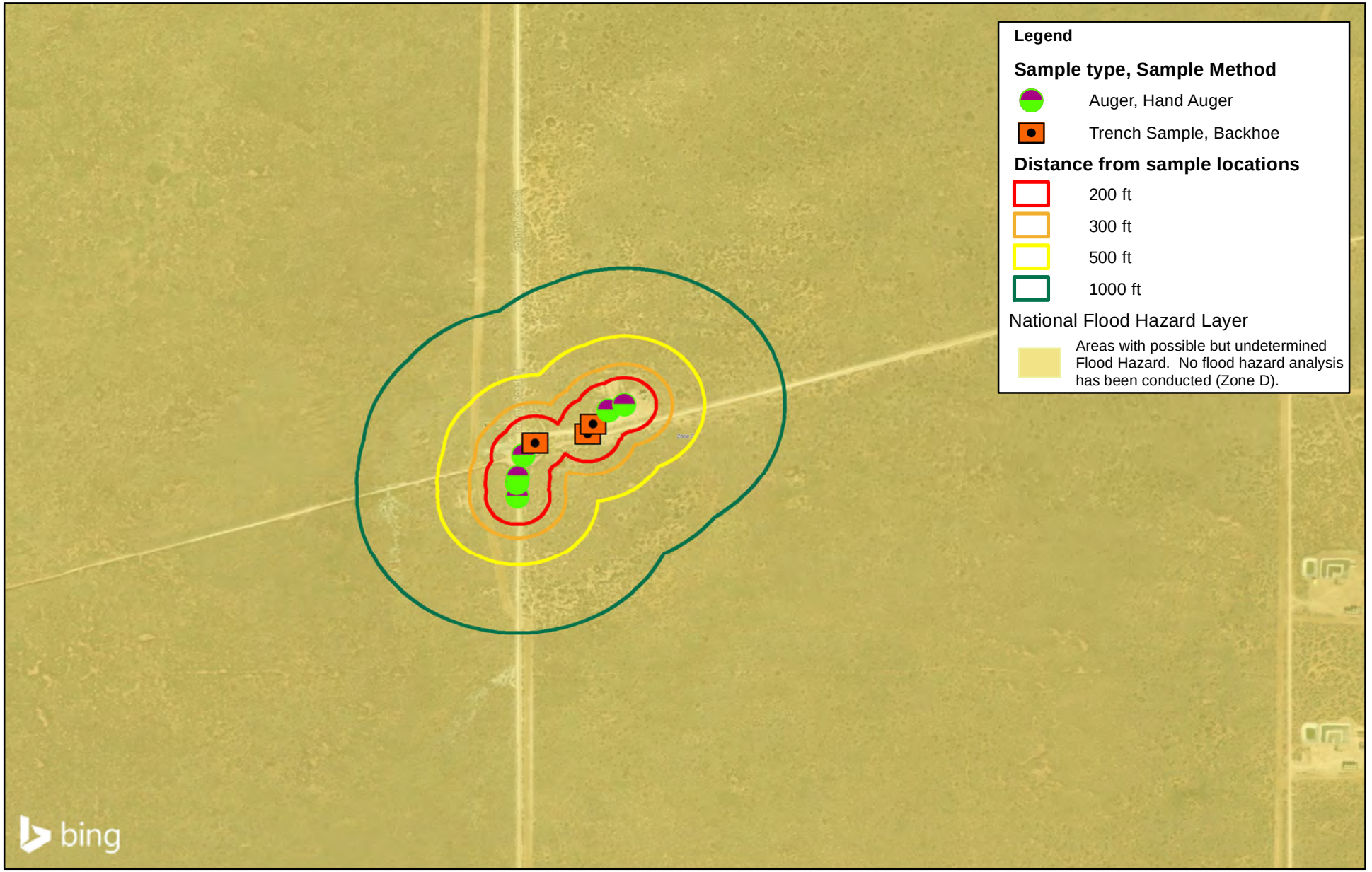

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FEMA Flood Map

Plate 9

Advanced Energy
Tomahawk SWD Facility

February 2018

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Trench/Hand Auger Locations showing average chloride concentrations in the upper 4-foot soil horizon.

Plate 10

Advanced Energy
Tomahawk SWD Facility

March 2018

APPENDIX A

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: www.hallenvironmental.com

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 1 at 3ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 8:45:00 AM
Lab ID: 1712538-001 **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: **CJS**	
Chloride	96	30		mg/Kg	20	12/20/2017 10:19:04 AM	35601

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 1 at 5ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 8:50:00 AM
Lab ID: 1712538-002 **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	6100	300		mg/Kg	200	12/22/2017 6:09:37 PM	35601

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 1 at 7ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 9:20:00 AM
Lab ID: 1712538-003 **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	11000	750		mg/Kg	500	12/22/2017 6:22:01 PM	35601

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample 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	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	910	30		mg/Kg	20	12/20/2017 11:21:07 AM	35601

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Pad West at 3ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 10:40:00 AM
Lab ID: 1712538-005
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: **CJS**	
Chloride	340	30		mg/Kg	20	12/20/2017 5:40:16 PM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 2 at 3ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 11:35:00 AM
Lab ID: 1712538-006 **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: **CJS**	
Chloride	ND	30		mg/Kg	20	12/20/2017 6:17:30 PM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 2 at 5ft
Project: Amtex Tomahawk SWD
Collection 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	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	80	30		mg/Kg	20	12/28/2017 2:47:22 AM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 2 at 11ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 12:10:00 PM
Lab ID: 1712538-008 **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: **CJS**	
Chloride	5600	300		mg/Kg	200	12/28/2017 3:12:11 AM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 5 at 3ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 1:40:00 PM
Lab ID: 1712538-009
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: **CJS**	
Chloride	360	30		mg/Kg	20	12/28/2017 3:24:36 AM	35626
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	12/14/2017 12:01:35 PM	35467
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/14/2017 12:01:35 PM	35467
Surr: DNOP	99.1	70-130		%Rec	1	12/14/2017 12:01:35 PM	35467
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/13/2017 3:20:33 PM	35455
Surr: BFB	93.2	15-316		%Rec	1	12/13/2017 3:20:33 PM	35455
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **DJF**	
Benzene	ND	0.024		mg/Kg	1	12/16/2017 3:36:02 AM	35455
Toluene	ND	0.047		mg/Kg	1	12/16/2017 3:36:02 AM	35455
Ethylbenzene	ND	0.047		mg/Kg	1	12/16/2017 3:36:02 AM	35455
Xylenes, Total	ND	0.094		mg/Kg	1	12/16/2017 3:36:02 AM	35455
Surr: 1,2-Dichloroethane-d4	98.0	70-130		%Rec	1	12/16/2017 3:36:02 AM	35455
Surr: 4-Bromofluorobenzene	109	70-130		%Rec	1	12/16/2017 3:36:02 AM	35455
Surr: Dibromofluoromethane	105	70-130		%Rec	1	12/16/2017 3:36:02 AM	35455
Surr: Toluene-d8	95.3	70-130		%Rec	1	12/16/2017 3:36:02 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 5 at 7.5ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 2:25:00 PM
Lab ID: 1712538-010
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	150	30		mg/Kg	20	12/22/2017 5:19:59 PM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 5 at 9ft
Project: Amtex Tomahawk SWD
Collection 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	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	270	30		mg/Kg	20	12/22/2017 5:32:23 PM	35626

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: 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						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/22/2017 5:44:48 PM	35626
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/14/2017 12:23:41 PM	35467
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/14/2017 12:23:41 PM	35467
Surr: DNOP	101	70-130		%Rec	1	12/14/2017 12:23:41 PM	35467
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **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 SHORT LIST						Analyst: **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 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: 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	20	12/22/2017 5:57:13 PM	35626
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/14/2017 12:45:16 PM	35467
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	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	88.8	15-316		%Rec	1	12/13/2017 4:08:31 PM	35455
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		mg/Kg	1	12/16/2017 5:32:23 AM	35455
Ethylbenzene	ND	0.048		mg/Kg	1	12/16/2017 5:32:23 AM	35455
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	1	12/16/2017 5:32:23 AM	35455
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	12/16/2017 5:32:23 AM	35455
Surr: Dibromofluoromethane	100	70-130		%Rec	1	12/16/2017 5:32:23 AM	35455
Surr: Toluene-d8	99.7	70-130		%Rec	1	12/16/2017 5:32:23 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 350 at 5ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 1:30:00 PM
Lab ID: 1712538-015 **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	520	30		mg/Kg	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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 350 at 8ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 1:50:00 PM
Lab ID: 1712538-016 **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	550	30		mg/Kg	20	12/20/2017 3:11:24 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Client Sample ID: Trench 350 at 3ft
Project: Amtex Tomahawk SWD
Collection Date: 12/5/2017 1:20:00 PM
Lab ID: 1712538-017
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	210	30		mg/Kg	20	12/20/2017 3:23:48 PM	35634
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
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 RANGE						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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1712538**

02-Jan-18

Client: R.T. Hicks Consultants, LTD

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1712538**

02-Jan-18

Client: R.T. Hicks Consultants, LTD

Project: Amtex Tomahawk SWD

Sample ID	**LCS-35467**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID:	**35467**		RunNo:	**47739**					
Prep Date:	**12/12/2017**	Analysis Date:	**12/13/2017**		SeqNo:	**1526367**	Units:	**mg/Kg**			
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**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**35467**		RunNo:	**47739**					
Prep Date:	**12/12/2017**	Analysis Date:	**12/13/2017**		SeqNo:	**1526368**	Units:	**mg/Kg**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)		ND	10								
Motor Oil Range Organics (MRO)		ND	50								
Surr: DNOP		8.3		10.00		83.4	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1712538**

02-Jan-18

Client: R.T. Hicks Consultants, LTD

Project: Amtex Tomahawk SWD

Sample ID	**MB-35455**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**35455**	RunNo:	**47743**					
Prep Date:	**12/12/2017**	Analysis Date:	**12/13/2017**	SeqNo:	**1526938**	Units:	**mg/Kg**			

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**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**35455**	RunNo:	**47743**					
Prep Date:	**12/12/2017**	Analysis Date:	**12/13/2017**	SeqNo:	**1526939**	Units:	**mg/Kg**			

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1712538**

02-Jan-18

Client: R.T. Hicks Consultants, LTD

Project: Amtex Tomahawk SWD

Sample ID **mb-35455**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **35455**	RunNo: **47843**
Prep Date: **12/12/2017**	Analysis Date: **12/16/2017**	SeqNo: **1530759** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 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 **lcs-35455**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **35455**	RunNo: **47843**
Prep Date: **12/12/2017**	Analysis Date: **12/16/2017**	SeqNo: **1530760** Units: **mg/Kg**

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			
Toluene	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			
Surr: Toluene-d8	0.49		0.5000		98.0	70	130			

Sample ID **1712538-009ams**	SampType: **MS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **Trench 5 at 3ft**	Batch ID: **35455**	RunNo: **47843**
Prep Date: **12/12/2017**	Analysis Date: **12/16/2017**	SeqNo: **1530762** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.024	0.9407	0	94.9	51.9	158			
Toluene	0.86	0.047	0.9407	0	91.4	64.6	132			
Surr: 1,2-Dichloroethane-d4	0.48		0.4704		101	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.4704		108	70	130			
Surr: Dibromofluoromethane	0.49		0.4704		105	70	130			
Surr: Toluene-d8	0.45		0.4704		96.5	70	130			

Sample ID **1712538-009amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **Trench 5 at 3ft**	Batch ID: **35455**	RunNo: **47843**
Prep Date: **12/12/2017**	Analysis Date: **12/16/2017**	SeqNo: **1530763** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.023	0.9346	0	93.5	51.9	158	2.15	20	
Toluene	0.89	0.047	0.9346	0	95.4	64.6	132	3.60	20	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1712538**
02-Jan-18

Client: R.T. Hicks Consultants, LTD
Project: Amtex Tomahawk SWD

Sample ID **1712538-009amsd** SampType: **MSD** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **Trench 5 at 3ft** Batch ID: **35455** RunNo: **47843**
Prep Date: **12/12/2017** Analysis Date: **12/16/2017** SeqNo: **1530763** Units: **mg/Kg**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: RT HICKS | Work Order Number: 1712538 | RcptNo: 1

Received By: Sophia Campuzano 12/8/2017 2:50:00 PM

Completed By: Ashley Gallegos 12/11/2017 9:56:31 AM

Reviewed By: IMO 12/11/17

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.4	Good	Not Present			

Chain-of-Custody Record

Client: RT Hicks Consultants

Mailing Address: on file

Phone #: 970-570-9535

email or Fax#: andrew@rthicksconsult.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Amtex Tomahawk SWD

Project #:

Project Manager: Andrew Parker

Sampler: Andrew Parker

On Ice: ☒ Yes ☐ No

Sample Temperature: 10.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1712538	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX only	8270 (Semi-VOA)		Chloride			Air Bubbles (Y or N)
12/5/17	8:45	Soil	Trench 1 at 3 ft	1-4oz	Ice	-001													X			
↓	8:50	↓	Trench 1 at 5ft	↓	↓	-002													↓			
	9:20		Trench 1 at 7 ft			-003																
↓	9:50	↓	Trench 1 at 10 ft	2-4oz	FAN 12/11/17	-004																
12/5/17	10:40	Soil	Pad West at 3 ft	1 8+4oz		-005																
12/5/17	11:35	Soil	Trench 2 at 3 ft	1+4oz		-006																
↓	11:53	↓	Trench 2 at 5 ft	↓		-007																
↓	12:10	↓	Trench 2 at 11 ft			-008																
12/5/17	13:40	Soil	Trench 5 at 3 ft			-009			X							X						
↓	14:25	↓	Trench 5 at 7.5 ft			-010																
↓	14:38	↓	Trench 5 at 9 ft	↓	↓	-011													↓			

Date	Time	Relinquished by:	Received by:	Date	Time
12/8	14:50			12/08/17	1450
Date	Time	Relinquished by:	Received by:	Date	Time

Remarks: Page 1 of 2

(If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: R.T. Hicks Consultants

Mailing Address: on-file

Phone #:

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Amtex Tomahawk SWD

Project #:

Project Manager: Andrew Parker

Sampler: Andrew Parker

On Ice: ☒ Yes ☐ No

Sample Temperature: 10.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1712538	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX ONLY	8270 (Semi-VOA)		Chloride				Air Bubbles (Y or N)
12/5/17	13:20	Soil	HA 4 at 1 ft	1-4oz	ICE	-012			X							X			X				
	13:30	Soil	HA 4 at 3 ft			-013			X							X			X				
	13:50		HA 4 at 6.5 ft			-014										~~X~~			X				
12/5/17	13:30	Soil	Trench 350 at 5 ft			-015													X				
	13:50		Trench 350 at 8 ft			-016													X				
	13:20		Trench 350 at 3 ft			-017			X	~~X~~ RAP						X			X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/8	14:50			12/08/17	1450
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: page (2) 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any subcontracted data will be clearly notated on the analytical report.

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

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: Amtex Tomahawk SWD
Lab Order: 1712541

Lab ID: 1712541-001 **Collection Date:** 12/5/2017 8:40:00 AM
Client Sample ID: Trench 1 at 1ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	58	30		mg/Kg	20	12/20/2017 3:36:13 PM

Lab ID: 1712541-002 **Collection Date:** 12/5/2017 10:00:00 AM
Client Sample ID: Trench 1 at 13ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	5700	300		mg/Kg	200	12/22/2017 10:14:40 PM

Lab ID: 1712541-003 **Collection Date:** 12/5/2017 10:35:00 AM
Client Sample ID: Pad West at 1ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	480	30		mg/Kg	20	12/20/2017 4:25:52 PM

Lab ID: 1712541-004 **Collection Date:** 12/5/2017 11:00:00 AM
Client Sample ID: Pad East at 1ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	250	30		mg/Kg	20	12/20/2017 4:38:17 PM

Lab ID: 1712541-005 **Collection Date:** 12/5/2017 11:10:00 AM
Client Sample ID: Pad East at 3ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	600	30		mg/Kg	20	12/20/2017 4:50:41 PM

Lab ID: 1712541-006 **Collection Date:** 12/5/2017 11:25:00 AM
Client Sample ID: Trench 2 at 1ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	30		mg/Kg	20	12/20/2017 5:03:05 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: Amtex Tomahawk SWD
Lab Order: 1712541

Lab ID: 1712541-007 **Collection Date:** 12/5/2017 12:00:00 PM
Client Sample ID: Trench 2 at 7ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	320	30		mg/Kg	20	12/20/2017 5:40:20 PM

Lab ID: 1712541-008 **Collection Date:** 12/5/2017 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: ANIONS						Analyst: **CJS**
Chloride	7600	300		mg/Kg	200	12/22/2017 10:27:04 PM

Lab ID: 1712541-009 **Collection Date:** 12/5/2017 1:35:00 PM
Client Sample ID: Trench 5 at 1ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **CJS**
Chloride	1700	75		mg/Kg	50	12/22/2017 10:39:29 PM

Lab ID: 1712541-010 **Collection Date:** 12/5/2017 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: ANIONS						Analyst: **MRA**
Chloride	ND	30		mg/Kg	20	12/20/2017 6:17:34 PM

Lab ID: 1712541-011 **Collection Date:** 12/5/2017 1:40:00 PM
Client Sample ID: HA 4 at 5 ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	41	30		mg/Kg	20	12/20/2017 6:29:58 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: Amtex Tomahawk SWD
Lab Order: 1712541

Lab ID: 1712541-012 **Collection Date:** 12/5/2017 1:10:00 PM
Client Sample ID: Trench 350 at 1ft **Matrix:** SOIL

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 **Collection Date:** 12/5/2017 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: 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.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1712541**

02-Jan-18

Client: R.T. Hicks Consultants, LTD

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: RT HICKS | Work Order Number: 1712541 | RcptNo: 1

Received By: Sophia Campuzano 12/8/2017 2:50:00 PM

Completed By: Ashley Gallegos 12/11/2017 10:08:22 AM

Reviewed By: IMO 12/11/17

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.4	Good	Not Present			

Chain-of-Custody Record

Client: RT Hicks Consultants

Mailing Address: on-file

Phone #: 970-570-9535

email or Fax#: andrew@rthicksconsult.com

QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other ______

☐ EDD (Type) ______

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: Amtex Tomahawk SWD

Project #:

Project Manager: Andrew Parker

Sampler: Andrew Parker

On Ice: ☒ Yes ☐ No

Sample Temperature: 10.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1712451 (1712459 EUH 12/11)	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		Chloride			Air Bubbles (Y or N)
12/5/17	8:40	Soil	Trench 1 at 1ft	1-4oz	ICE	-001													X			
↓	10:00	↓	Trench 1 at 13 ft	↓	↓	-002													↓			
12/5/17	10:35	Soil	Pad West at 1ft	↓	↓	-003													↓			
12/5/17	11:00	Soil	Pad East at 1ft	↓	↓	-004													↓			
↓	11:10	↓	Pad East at 3ft	↓	↓	-005													↓			
12/5/17	11:25	Soil	Trench 2 at 1ft	↓	↓	-006													↓			
↓	12:00	↓	Trench 2 at 7 ft	↓	↓	-007													↓			
↓	12:20	↓	Trench 2 at 13 ft	↓	↓	-008													↓			
12/5/17	13:35	Soil	Trench 5 at 1 ft	↓	↓	-009													↓			
↓	13:45	↓	Trench 5 at 5 ft	↓	↓	-010													↓			

Date	Time	Relinquished by	Received by	Date	Time
12/8	14:50	[signature]	[signature]	12/08/17	1450

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: R.T. Hicks Consultants

Mailing Address: on file

Phone #:

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Antex Tomahawk SWD

Project #:

Project Manager: Andrew Parker

Sampler: Andrew Parker
On Ice: ☒ Yes ☐ No
Sample Temperature: 0.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1712541	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		Chloride				Air Bubbles (Y or N)
12/5/17	13:40	Soil	HA 4 at 5 ft	1-4oz	TCE	-011													X				
12/5/17	13:10	Soil	Trench 350 at 1 ft	↓	↓	-012													↓				
~~↓~~	~~13:20~~	↓	~~Trench 350 at 3 ft~~	~~(3)~~																			
↓	13:40	↓	Trench 350 at 7 ft	↓	↓	-013													↓				

Date	Time	Relinquished by	Received by	Date	Time
12/8	14:50			12/08/17	1450
Date	Time	Relinquished by:	Received by:	Date	Time

Remarks: Page 2 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any subcontracted data will be clearly notated on the analytical report.

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

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: TOMAHAWK
Lab Order: 1803614

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 Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	37	30		mg/Kg	20	3/19/2018 2:05:14 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 Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	89	30		mg/Kg	20	3/19/2018 2:17:37 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 Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	160	30		mg/Kg	20	3/19/2018 2:54:51 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 Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	94	30		mg/Kg	20	3/19/2018 3:07:16 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 Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	310	30		mg/Kg	20	3/19/2018 3:44:30 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: TOMAHAWK
Lab Order: 1803614

Lab ID: 1803614-006 **Collection Date:** 3/7/2018 8:24:00 AM
Client Sample ID: Pad West 1 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	410	30		mg/Kg	20	3/19/2018 3:56:54 PM	37098

Lab ID: 1803614-007 **Collection Date:** 3/7/2018 8:28:00 AM
Client Sample ID: Pad West 2 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	260	30		mg/Kg	20	3/19/2018 4:09:19 PM	37098

Lab ID: 1803614-008 **Collection Date:** 3/7/2018 8:30:00 AM
Client Sample ID: Pad West 3 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	170	30		mg/Kg	20	3/19/2018 4:21:44 PM	37098

Lab ID: 1803614-009 **Collection Date:** 3/7/2018 8:33:00 AM
Client Sample ID: Pad West 4 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	66	30		mg/Kg	20	3/19/2018 4:34:09 PM	37098

Lab ID: 1803614-010 **Collection Date:** 3/7/2018 8:36:00 AM
Client Sample ID: Pad West 5 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: TOMAHAWK
Lab Order: 1803614

Lab ID: 1803614-011 **Collection Date:** 3/7/2018 8:39:00 AM
Client Sample ID: Pad West 7 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	120	30		mg/Kg	20	3/19/2018 4:58:58 PM	37098

Lab ID: 1803614-012 **Collection Date:** 3/7/2018 8:42:00 AM
Client Sample ID: Pad West 7 Ft Caliche **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3800	150		mg/Kg	100	3/21/2018 4:59:18 AM	37098

Lab ID: 1803614-013 **Collection Date:** 3/7/2018 9:14:00 AM
Client Sample ID: 225 S 1 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	3/19/2018 5:23:47 PM	37098

Lab ID: 1803614-014 **Collection Date:** 3/7/2018 9:15:00 AM
Client Sample ID: 225 S 2 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	130	30		mg/Kg	20	3/19/2018 5:36:12 PM	37098

Lab ID: 1803614-015 **Collection Date:** 3/7/2018 9:17:00 AM
Client Sample ID: 225 S 3 Ft **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: 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.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD
Project: TOMAHAWK

Lab Order: 1803614

Lab ID: 1803614-016
Collection Date: 3/7/2018 9:18:00 AM
Client Sample ID: 225 S 4 Ft
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	730	30		mg/Kg	20	3/19/2018 7:15:27 PM	37103

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1803614**

22-Mar-18

Client: R.T. Hicks Consultants, LTD

Project: TOMAHAWK

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:	**lcs**		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:	**lcs**		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
Chloride	14	1.5	15.00	0	92.1	90	110			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: RT HICKS | Work Order Number: 1803614 | RcptNo: 1

Received By: Anne Thorne 3/9/2018 1:05:00 PM

Completed By: Erin Melendrez 3/12/2018 11:02:04 AM

Reviewed By: JMG 3/12/18

labeled by: AG

Chain of Custody

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

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	20.9	Good	Not Present			

Chain-of-Custody Record

Client: R.T. Hicks Consultants

Mailing Address: 901 Rio Grande NW F-142
Albuquerque NM 98104

Phone #: 505 238 9515

email or Fax#: r@rthicksconsult.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☐ Rush

Project Name: TOMAHAWK

Project #

Project Manager: Andrew Parker

Sampler: RTH
On Ice: ☒ Yes ☐ No
Sample Temperature: 20.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1803614	Analysis Request: Chloride	Air Bubbles (Y or N)
3/7/2018	850	Soil	Pad East 1 ft	1 Glass		-001	x	
3/7/2018	854	Soil	Pad East 2 ft	1 Glass		-002	x	
3/7/2018	852	Soil	Pad East 3 ft	1 Glass		-003	x	
3/7/2018	856	Soil	Pad East 4 ft	1 Glass		-004	x	
3/7/2018	900	Soil	Pad East 7 ft Caliche	1 Glass		-005	x	
3/7/2018	824	Soil	Pad West 1 ft	1 Glass		-006	x	
3/7/2018	828	Soil	Pad West 2 ft	1 Glass		-007	x	
3/7/2018	830	Soil	Pad West 3 ft	1 Glass		-008	x	
3/7/2018	833	Soil	Pad West 4 ft	1 Glass		-009	x	
3/7/2018	836	Soil	Pad West 5 ft	1 Glass		-010	x	
3/7/2018	839	Soil	Pad West 7 ft	1 Glass		-011	x	
3/7/2018	842	Soil	Pad West 7 ft Caliche	1 Glass		-012	x	

Date	Time	Relinquished by	Received by	Date	Time	Remarks
3/9/18	1305			03/09/18	1305	
Date	Time	Relinquished by	Received by	Date	Time	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: R.T. Hicks Consultants

Mailing Address: 901 Ric Grande NW F-142
Albuquerque NM 98104

Phone #: 505 238 9515

email or Fax#: r@rthicksconsult.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☐ Rush

Project Name: TOMAHAWK

Project #:

Project Manager: Andrew Parker
Andrew@rthicksconsult.com

Sampler: RTH
On Ice: ☐ Yes ☒ No
Sample Temperature: 20.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1803614	Analysis Request: Chloride	Air Bubbles (Y or N)
3/7/2018	914	Soil	225 S 1 ft	1 Glass		-013	x	
3/7/2018	915	Soil	225 S 2 ft	1 Glass		-014	x	
3/7/2018	917	Soil	225 S 3 ft	1 Glass		-015	x	
3/7/2018	918	Soil	225 S 4 ft	1 Glass		-016	x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	
3/7/2018		Soil		1 Glass			x	

Date	Time	Relinquished by	Received by	Date	Time
3/9/18	1305			3/9/18	1305
Date	Time	Relinquished by	Received by	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

APPENDIX C

Logger:	Andrew Parker	**Client:**	**Trench ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Backhoe	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Trench #1
End Date:	12/5/2017	**Location:**	
		32.433203, -103.618398 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg) Field	Chloride (mg/kg) Lab	Depth (feet)
0.0						0.0
1.0					58	1.0
2.0	0 - 5'					2.0
3.0	Fine sand, silt; reddish brown				96	3.0
4.0						4.0
5.0					6,100	5.0
6.0						6.0
7.0	5' - 8'				11,000	7.0
8.0	Caliche; tan					8.0
9.0						9.0
10.0	8' - 10'				910	10.0
11.0	Fine sand, silt; orangish-brown					11.0
12.0	10' - 13'		hard, well-graded			12.0
13.0	Cemented sand, silt; reddish brown		TD at 13'		5,700	13.0
14.0						14.0
15.0						15.0
16.0						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
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51.0						51.0
52.0						52.0
53.0						53.0
54.0						54.0
55.0						55.0

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Logger:	Andrew Parker	**Client:**	**Trench ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Backhoe	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Trench #2
End Date:	12/5/2017	**Location:**	
		32.433012, -103.618511 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
				Field	Lab	
0.0	0 - 3"		Road base			0.0
1.0	Caliche Road				<30	1.0
2.0						2.0
3.0	3" - 5.5'				<30	3.0
4.0	Fine sand, silt; reddish brown					4.0
5.0					80	5.0
6.0						6.0
7.0	5.5' - 8.5'				320	7.0
8.0	Caliche; white, tan					8.0
9.0						9.0
10.0	8.5' - 12'					10.0
11.0	Fine sand, silt; orangish-brown				5,600	11.0
12.0						12.0
13.0	12' - 13'				7,600	13.0
	Cemented sand; reddish brown		TD at 13'			
14.0						14.0
15.0						15.0
16.0						16.0
17.0	Note: Moved proposed location to road.					17.0
18.0	New pipeline in right-of-way. Placed					18.0
19.0	trench within release flowpath according					19.0
20.0	to ranch hand (Bradley Blevins) and					20.0
21.0	Storm Construction					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
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Advanced Energy: Tomahawk SWD | **Appendix C**

Sample Trench Log and Chloride | **January 2017**

Logger:	Andrew Parker	**Client:**	**Trench ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Backhoe	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Trench #5
End Date:	12/5/2017	**Location:**	
		32.432822, -103.61957 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
				Field	Lab	
0.0						0.0
1.0	0 - 4'				1,700	1.0
2.0	Fine sand, silt; brown, red					2.0
3.0					360	3.0
4.0						4.0
5.0	4' - 7.5'				<30	5.0
6.0	Fine sand, silt, hard, clay; brownish-		Hard			6.0
7.0	orange				150 (7.5 ft)	7.0
8.0	7.5' - 0.5'					8.0
9.0	Caliche; white, tan		Hard at 10'		270	9.0
10.0			TD at 10.5'			10.0
11.0						11.0
12.0						12.0
13.0						13.0
14.0						14.0
15.0						15.0
16.0						16.0
17.0						17.0
18.0						18.0
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27.0						27.0
28.0						28.0
29.0						29.0
30.0						30.0
31.0						31.0
32.0						32.0
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Logger:	Andrew Parker	**Client:**	**Trench ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Backhoe	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Trench 350
End Date:	12/5/2017	**Location:**	
		32.431735, -103.61992 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg) Field	Chloride (mg/kg) Lab	Depth (feet)
0.0						0.0
1.0	0 - 3 ' Fine sand, silt; Brown, red			200	<30	1.0
2.0						2.0
3.0				401	210	3.0
4.0	3' - 4' Fine sand, silt; Grey					4.0
5.0	4' - 7' Fine sand, silt; Brown, red			401	520	5.0
6.0						6.0
7.0				401	540	7.0
8.0	7' - 8' Caliche		Hard TD at 8 ft	401	550	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						15.0
16.0						16.0
17.0						17.0
18.0						18.0
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55.0						55.0

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Logger:	Andrew Parker	**Client:**	**Auger ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Hand Auger	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Pad West
End Date:	12/5/2017	**Location:**	
		32.433488, -103.618082 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
0.0	0-3" Caliche		Production Pad	Field	Lab	0.0
1.0				401	480	1.0
2.0	3" - 4'					2.0
3.0	Fine sand, silt; brown			401	340	3.0
4.0			TD at 4'			4.0
5.0						5.0
6.0						6.0
7.0						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
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27.0						27.0
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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						36.0
37.0						37.0
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Advanced Energy: Tomahawk SWD

Appendix C

Sample Trench Log and Chloride

January 2017

Logger:	Andrew Parker	**Client:**	**Auger ID:**
Driller:	Storm Construction	Advanced Energy	
Drilling Method:	Hand Auger	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	Pad East
End Date:	12/5/2017	**Location:**	
		32.433599, -103.617771 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
				Field	Lab	
0.0	0 - 3"		Production Pad			0.0
1.0	3" - 2.75'			401	250	1.0
2.0	Fine sand, silt; brown					2.0
3.0				401	600	3.0
4.0	2.75' - 4'		TD at 4'			4.0
	Silt, clay; brown					
5.0						5.0
6.0						6.0
7.0						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
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Logger:	Andrew Parker	**Client:**	**Auger ID:**
Driller:	Storm Construction	Advanced Energy	HA-4 (near Trench 4)
Drilling Method:	Hand Auger	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	
End Date:	12/5/2017	**Location:**	
		32.432588, -103.619809 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg) Field	Chloride (mg/kg) Lab	Depth (feet)
0.0						0.0
1.0	0' - 4' Fine sand, silt; brown, red			200	<30	1.0
2.0						2.0
3.0				200	<30	3.0
4.0						4.0
5.0	4' - 6.5'		Hard	401	41	5.0
6.0	Fine sand, silt, clay; brownish orange		TD at 6.5 ft	802	1,000 (6.5 ft)	6.0
7.0						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						15.0
16.0						16.0
17.0	Fresh water pipeline recently installed on surface. Blocked access with backhoe.					17.0
18.0						18.0
19.0						19.0
20.0						20.0
21.0						21.0
22.0						22.0
23.0						23.0
24.0						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
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Advanced Energy: Tomahawk SWD

Sample Trench Log and Chloride

Appendix C

January 2017

Logger:	Andrew Parker	**Client:**	**Auger ID:**
Driller:	Storm Construction	Advanced Energy	HA-200' South
Drilling Method:	Hand Auger	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	
End Date:	12/5/2017	**Location:**	
		32.432149, -103.619916 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
				Field	Lab	
0.0	0 - 3'					0.0
1.0	Fine sand, silt, brown, red			200		1.0
2.0						2.0
	3'					
3.0	Caliche		TD at 3'	1,000		3.0
4.0						4.0
5.0						5.0
6.0						6.0
7.0						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						15.0
16.0						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
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Logger:	Andrew Parker	**Client:**	**Auger ID:**
Driller:	Storm Construction	Advanced Energy	HA-250' South
Drilling Method:	Hand Auger	**Project Name:**	
Start Date:	12/5/2017	Tomahawk SWD Characterization	
End Date:	12/5/2017	**Location:**	
		32.432011, -103.619928 (WGS84)	

Depth (feet)	Description	Lithology	Comments	Chloride (mg/kg)		Depth (feet)
				Field	Lab	
0.0						0.0
1.0	0 - 3'			200		1.0
2.0	Fine sand, silt; Brown, red					2.0
3.0				601		3.0
4.0	3' - 4' Fine sand, silt; Grey					4.0
5.0	4' - 6' Fine sand, silt; Brown,red					5.0
6.0	6' Caliche		TD at 6 ft	2,006		6.0
7.0						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						15.0
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17.0						17.0
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30.0						30.0
31.0						31.0
32.0						32.0
33.0						33.0
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37.0						37.0
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43.0						43.0
44.0						44.0
45.0						45.0
46.0						46.0
47.0						47.0
48.0						48.0
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55.0						55.0

APPENDIX D

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE: **CASE NO. 15959**

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
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Exhibit A – Proposed Rule 19.15.29 NMAC:

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 15 OIL AND GAS
PART 29 RELEASES

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:

A. "Major release" means:

(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;

(2) 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.

(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;

(b) a scaled sitemap showing release area with horizontal and vertical delineation points;

(c) estimated volume of impacted material to be remediated;

(d) proposed remediation technique; and

(e) proposed timeline for remediation activities.

(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.

(3) The responsible party shall remediate the impacted surface area of a release not occurring 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.

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

(a) within

(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);

(b) within 300 feet from an occupied permanent residence, school, hospital, 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

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

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

(e) within 100 feet of a wetland;

(f) within the area overlying a subsurface mine;

(g) within an unstable area; or

(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.

C. Closure Requirements.

(1) The responsible party must test the remediated areas for contamination with 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.

(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**
≤ 50 feet	Chloride***	EPA 300.0	600 mg/kg
	TPH	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
	TPH	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
	TPH	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?]

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?]

19.15.29.15 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?]