

Imagine the result

Apache Corporation

**EAU Pilot Project
Remediation
Proposal**

EAU M-141
C-11-T18S-R27E
225' FNL & 2280' FWL
30-015-22834
Eddy County, New Mexico

August 10, 2016

Jennifer Van Curen
Environmental Project Scientist

EAU Pilot Project

Remediation
Proposal
EAU M-141
C-11-T18S-R27E
225' FNL & 2280' FWL
30-015-22834

Prepared for:
Apache
Corporation
Eddy County, New Mexico

Prepared by:
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Our Ref.:
MT001200.0000.0000

Date:
August 10, 2016

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Release Area
Project 'A' Area

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Photos**

Appendix C

Constraints Maps

- Existing Development Map
- Geology Map
- Hydrology Map
- Karst Potential Map
- Soils Map
- Surface and Mineral Map
- Topo Map

Appendix D

Soil Sampling Results

1. INTRODUCTION

1.1 Site Information

The subject site is a ROW and pasture area located approximately 10 miles southeast of Artesia, New Mexico at GPS coordinates of 32°46'5.01"N, 104°15'3.87"W. The fiberglass line is owned and operated by Apache Corporation.

The OCD 2RP # is 3572. The release area fingers through an area of a total 52,922 square feet with a linear distance of 1,050 feet. There is a west side that is 918 ft. long by 1-4' wide, an east side that is 763 ft. long by .5-2' ft. wide, and area at point of release that encompasses an area of 4,846 square feet with area for fiberglass line repair adding 143 square feet. The elevation at the point of release is 3,719 ft. with a 5.55% grade leading to northernmost point of release at 3535.9 ft. The release primarily headed in a northern direction, down slope, and fingered out in several places as fluid moved around vegetation.

2. SUMMARY OF SITE INVESTIGATION ACTIVITIES

2.1 Initial Reporting and Incident Description

New Mexico Oil Conservation Division (NMOCD) was notified of the release by Bruce Baker (Apache Corporation) via e-mail to Mike Bratcher (NMOCD) and Shelly Tucker (BLM) February 25, 2016 at 10:47 am. A form C-141 was submitted on February 26, 2016 by Bruce Baker.

The release was reported to have had failure in a repair clamp on a buried four inch fiberglass line resulting in a 50 bbl release containing 40 bbls water and 10 bbls oil with 5 bbls of fluid recovered. The line was isolated and a vacuum truck was dispatched to pick up standing fluid. The entire release was in the pasture. The area was mapped and a one call placed to permanently repair the line.

2.2 Sampling Activities

Initial release site investigation activities were conducted on March 2, 2016 (0-2') and follow-up samples conducted on March 10, 2016 (SP-2 / 3-6'). Grab samples were collected utilizing a backhoe to a varied depth of down to 6-feet below ground surface (bgs). Laboratory results are presented below in Table 1, and the laboratory results is shown as Attachment 2 in Appendix A.

Table 1: Laboratory Sampling Results

Sample ID	BTEX	Chlorides	GRO	DRO
3/2/2016				
S-1				
0'	333	15600	7890	44500
1'	151	8600	823	1680
2'	26.2	6400	70.4	223
S-2				
0'	350	7200	7810	69100
1'	52.9	5730	276	870
2'	468	2320	2340	4200
3'	31.1	clay	289	947
4'	0.386	clay	<10	<10
5'	<0.300	clay	<10	<10
6'	<0.300	clay	<10	<10
S-3				
0'	599	6530	13200	66500
1'	202	8260	401	1240
2'	1.48	720	<10	47.2
S-4				
0'	115	14200	3100	61100
1'	6.13	416	153	1980
2'	<0.300	80	<10	47.2
S-5				
0'	98.4	2960	2620	48500
1'	9.33	3680	355	4210
2'	10.3	848	185	2590

3. ENVIRONMENTAL ASSESSMENT

3.1 Surface and Mineral Ownership

The release site falls inside BLM and state managed lands and on an existing ROW and pasture. Apache will work with the BLM and OCD to complete the in-situ remediation of the release site. (Figure 2 in Appendix C)

3.2 Hydrology

Water well depths were not located in the area. There is one intermittent storm water drainage area within a quarter mile to the north. There are no bodies of water, lakes, or streams near this release site. (Figure 5 in Appendix C)

The site ranking for this site is a 0 based on the following:

Depth to ground water	>100'
Wellhead Protection Area	>1000'
Distance to surface water body	>1000'

3.3 Karst

The area surrounding this release site has a high karst potential. A complete walk of the area showed there to be no known or visible signs of karst features in the area.

Mitigation measures will be to practice diligence with water movement through selected pilot area to collection tank. Records will be kept showing these volumes and differences.

3.4 Range

The range allotment is in the Turkey Track, 65075 and cattle are sometimes in the area. All open trenches or excavations will be fenced to prevent injury to cattle if left unattended. All equipment left overnight will be positioned to prevent injury to cattle.

3.5 Soils, Geology, and Vegetation

According to the soil survey data in the United States Department of Agriculture Natural Resources Conservation Service (NRCS), the soil description is RG – Reeves Gypsum land complex, 0-3 percent slopes. The natural drainage is well-drained. Water movement is very low. Shrink – swell potential is low. The soils in the area is loamy to gypsum soils. The soil has a sodic horizon within 30 inches of soil surface. According to United States Geological Survey, the underlying geology is in the Artesia Group (Pat). The Artesia is distinguishable from Moenkopi by its finer grain size, absence of conglomerate, predominance of brown, sandy siltstone. Contains: dolomite, sandstone, anhydrite, and siltstone. The vegetation in the area consist of mesquite, four-wing

saltbush, and grasses found in gypsum soils. All areas on the ROW and pasture will be seeded with the BLM 4 seed mix for gypsum soil types.

4. REMEDIATION PLAN

Apache has met with the BLM and OCD in order to review an in-situ remediation of the area. Apache has selected an area north of the point of release up to a surface steel pipeline as the initial in-situ remediation area. This area is a 6,023 square foot area.

4.1 Soil Remediation Plan

After many discussions with Apache, NMOCD and the Bureau of Land Management, our goal is not only to relieve the hydrocarbon and chloride contamination from the soil, but also to collect the effluent for off-site disposal. We will be able to achieve these goals by utilizing SuperAll for the hydrocarbons, BRINE-AID™ for the chlorides, and AWD collection system for the effluent removal. Effluent water will be utilized for the application of both remediation products.

1. Using a trench, we will excavate an area three and one-half feet deep and four inches wide throughout the contaminated area. We will then install ten separate collection lines running parallel on five-foot centers. All of the lines will be connected to a main header down grade. Coming out of the header will be a single four to six inch poly pipe to transport the effluent the rest of the way downhill to a holding tank. The treatment grid will be approximately 100 feet by 80 feet.
2. For the first application, we will use BRINE-AID™ at a dilution ratio of 20 parts effluent water to one part BRINE-AID™. This will be applied to the entire area. The application and subsequent flushes will require one 130-barrel and one 80-barrel vacuum truck.
3. One week after the first application, we will flush the entire site with just effluent water.
4. One week following the first flush, we will treat again with BRINE-AID™ using the same application process outlined in step 1.
5. One week following the second treatment, we will flush again as outlined in step 3.
6. One week following the second flush, we will apply SuperAll, using the quantity and dilution ratio recommended by them. The application will require two 130-barrel vacuum trucks.

7. One week following the application of SuperAll, we will flush with the balance of BRINE-AID™ and effluent water at a dilution ratio of approximately 30 to 1.

4.2 Seeding Plan

The ROW area will be seeded with the BLM seed mix #4 after the project has been completed. The seed bed will be prepared by raking area, broadcast seeding, and raking lightly to cover seed.

5. REMEDIATION WORK SCHEDULE

Initial section of the pilot project for in-situ remediation activities are expected to commence after receiving approval and funding of this proposed plan.

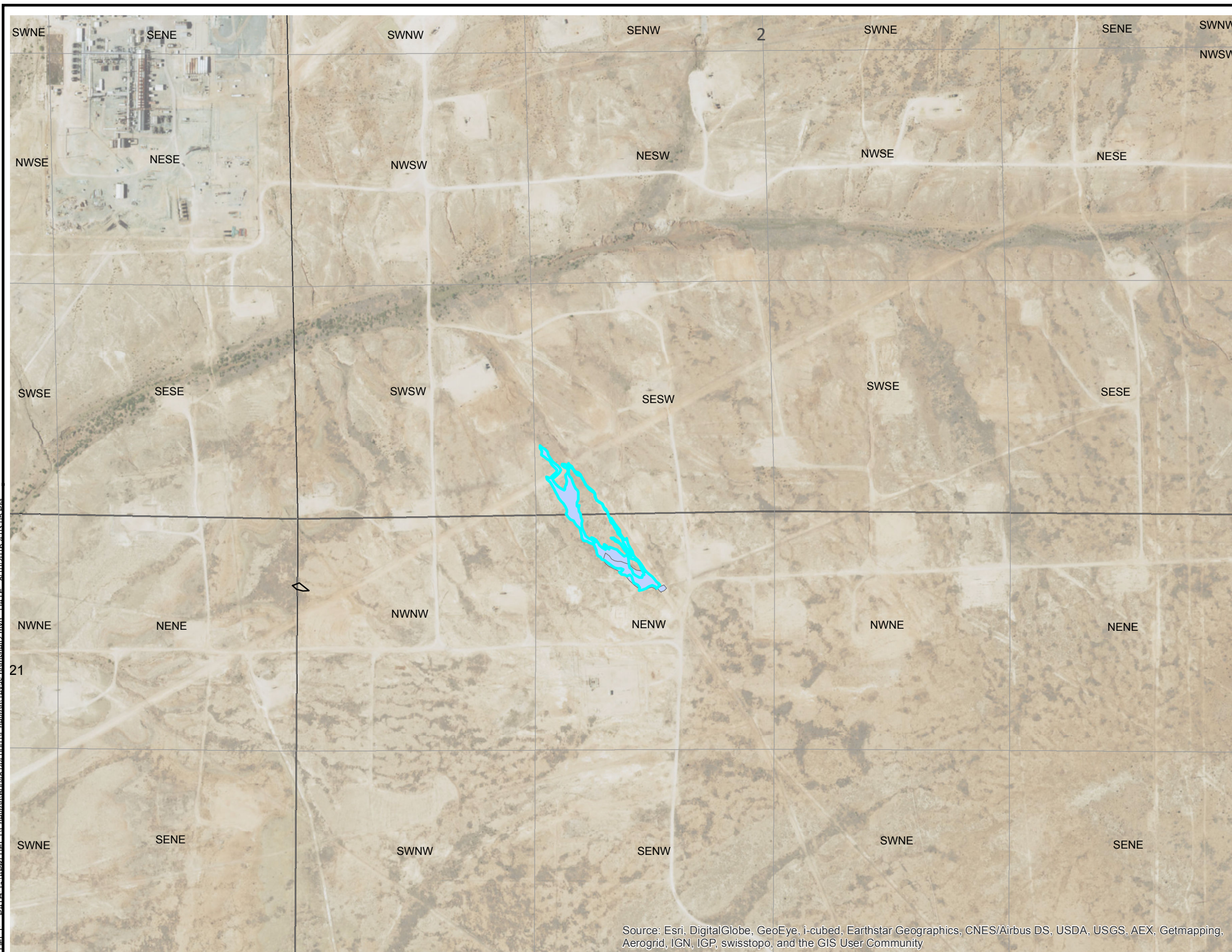
6. FOLLOW-UP SCHEDULE

A remediation report for this section will be completed and mailed within 30 days of remediation work being completed to BLM and OCD. This report will have the map of actual remediation area, photos of remediation, and finished product of proposed section.

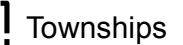
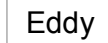


Appendix A

Mapped Release
Project 'A' Area



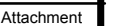
Area



World Imagery




Mapped Release





Project 'A' Area is in Pink outline

 EAU leak



Appendix B

Photos





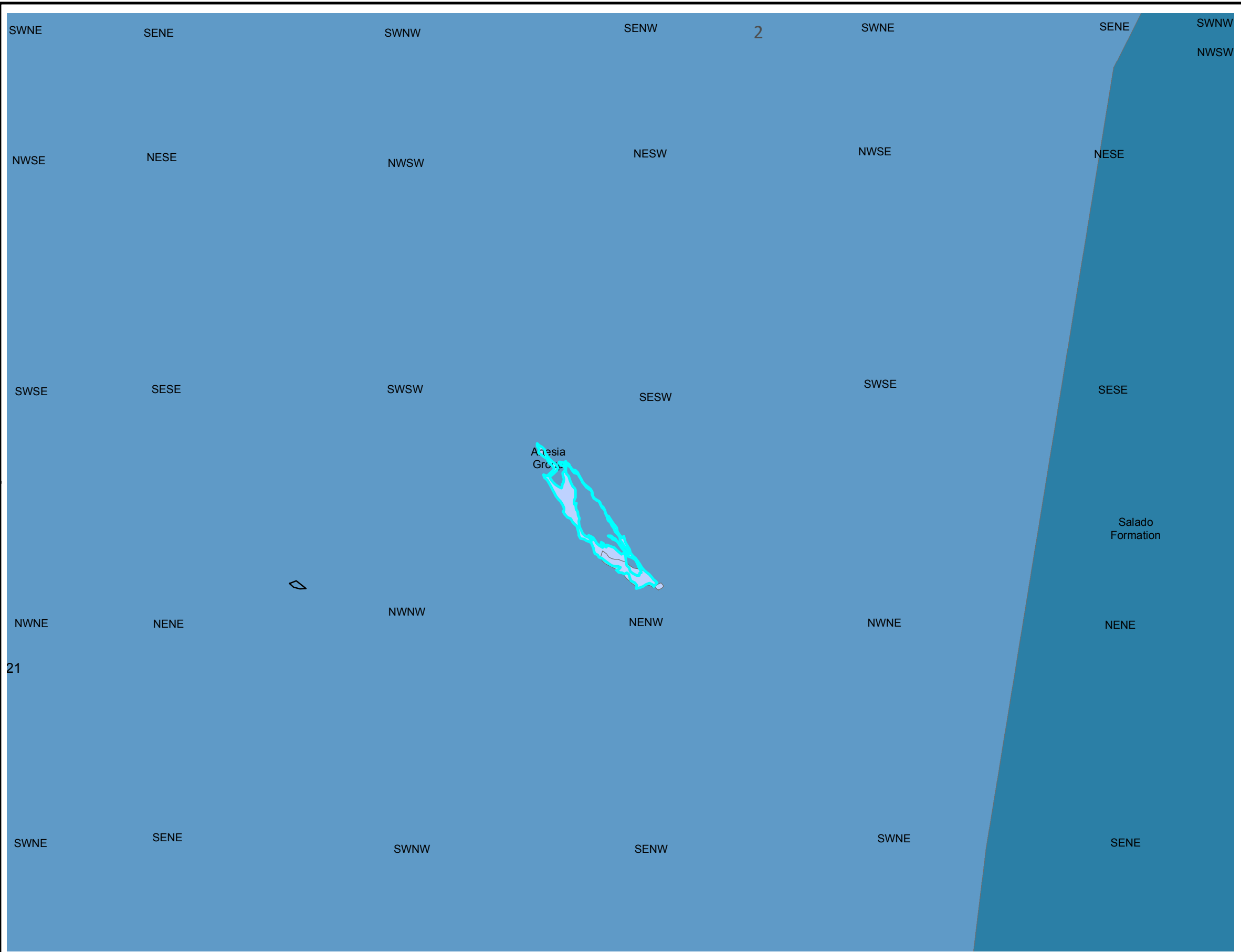




Appendix C

Constraint Maps

DIV/GRP: ENV/IMPV DB: jvarecuren LD: PIC: PM: TM:
PROJECT: PATH: C:\ARCADE\PROJECT\Apache\B004844\0001\Chevron\Terra-horshel02.mxd DATE: 8/10/2016 4:03:05 PM



LEGEND

Area

 Area

Aquifer

Aquifer Name



Geology

NAME

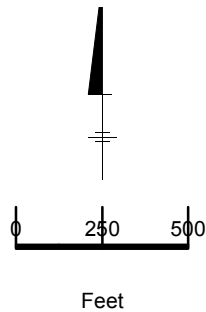
 Pat

 Psl

 Eddy

 Sections

 Townships



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EDDY COUNTY, NEW MEXICO

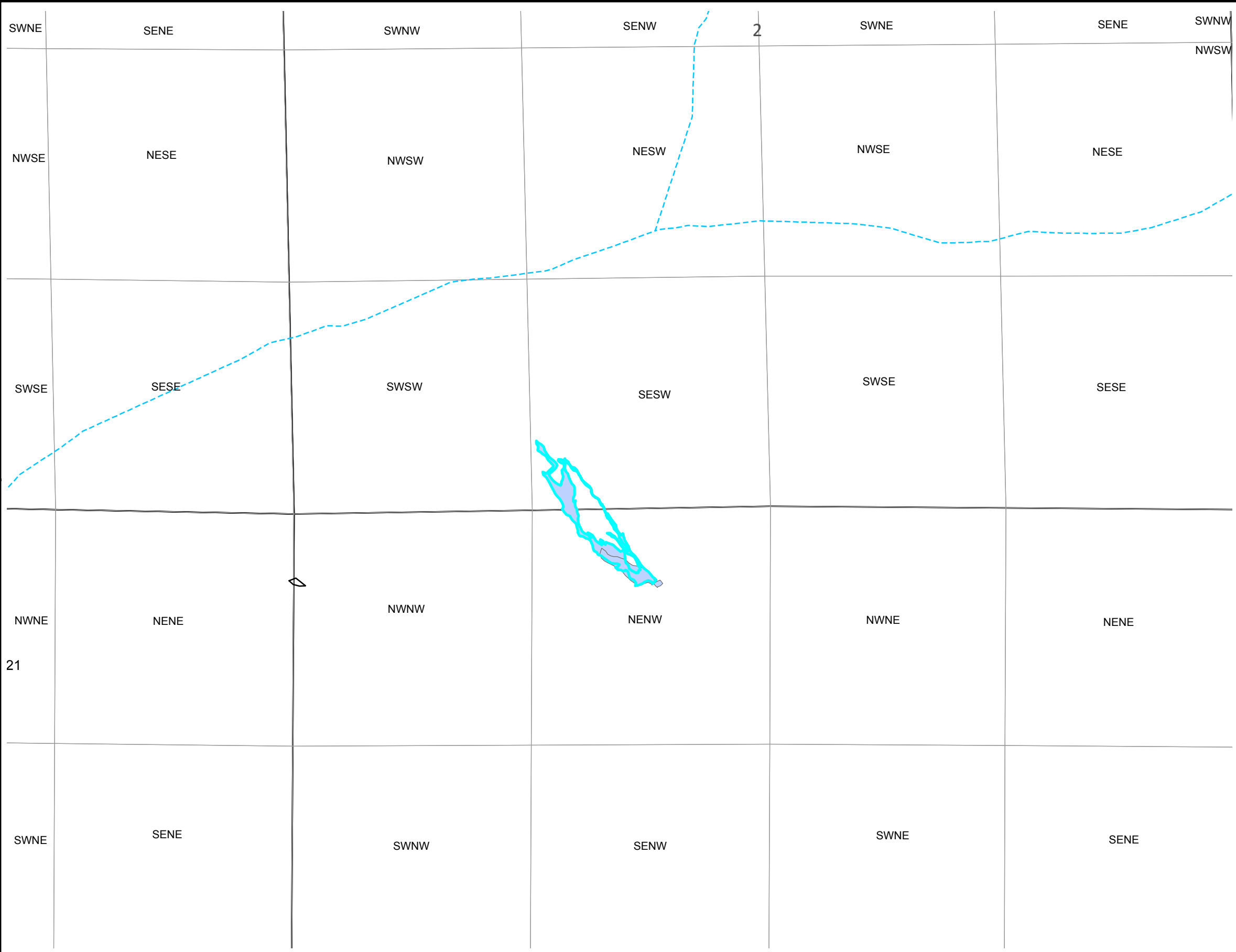
Geology



FIGURE

2

DIV/GRP: ENV/IMDV DB: jvarecuren LD: PIC: PM: TM:
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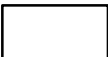
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Area

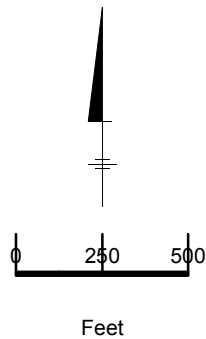
 Area

 Stream/River: Hydrographic Category = Intermittent

 Eddy

 Sections

 Townships



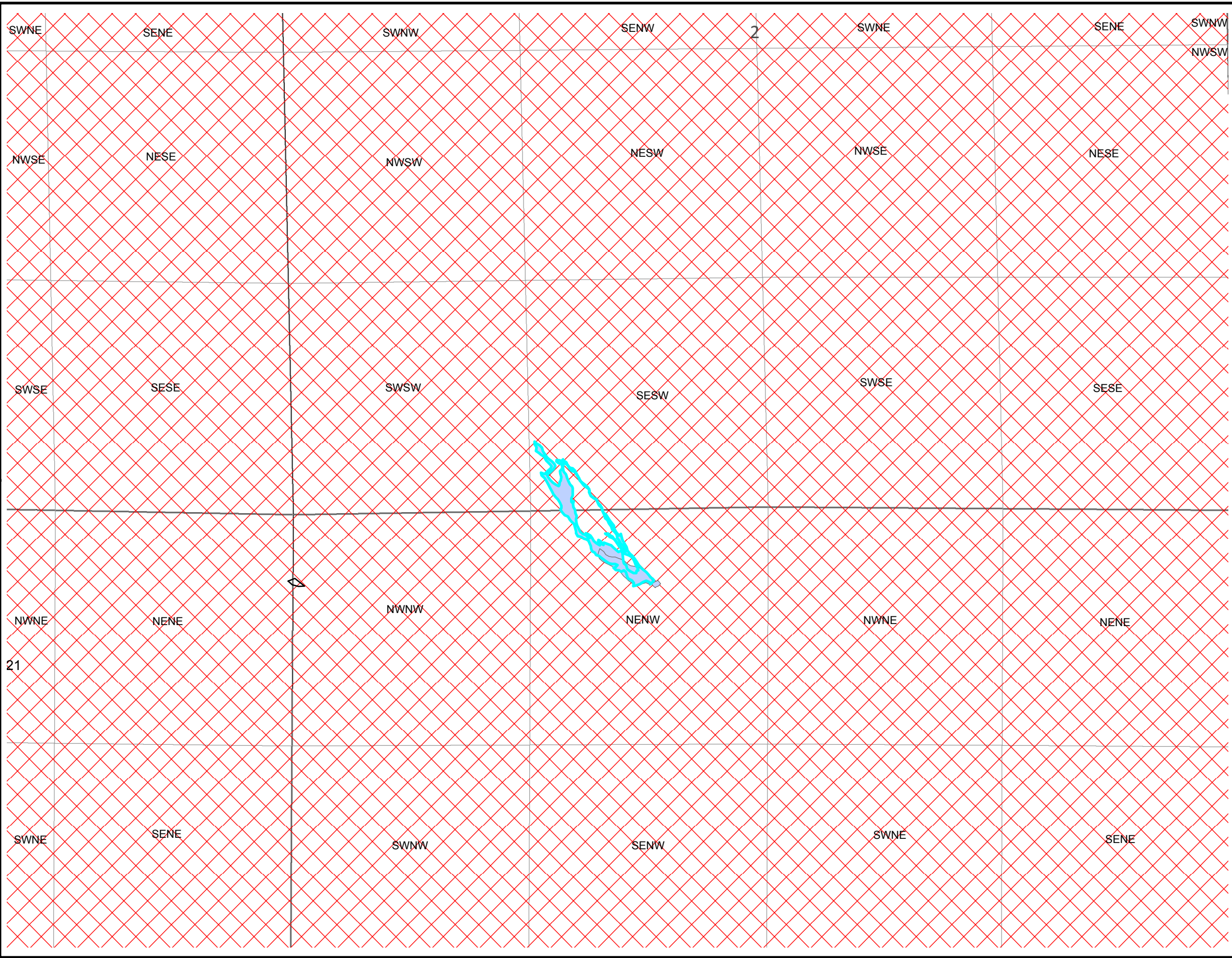
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EDDY COUNTY, NEW MEXICO

Hydrology



FIGURE
3

DIV/GRP: ENV/IMDV DB: iavacuren LD: PIC: PM: TM:
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LEGEND

Area

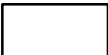
 Area

Karst Occure... Potential

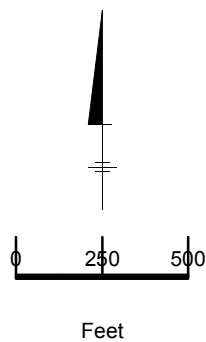
Potential

 High

 Eddy

 Sections

 Townships



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EDDY COUNTY, NEW MEXICO

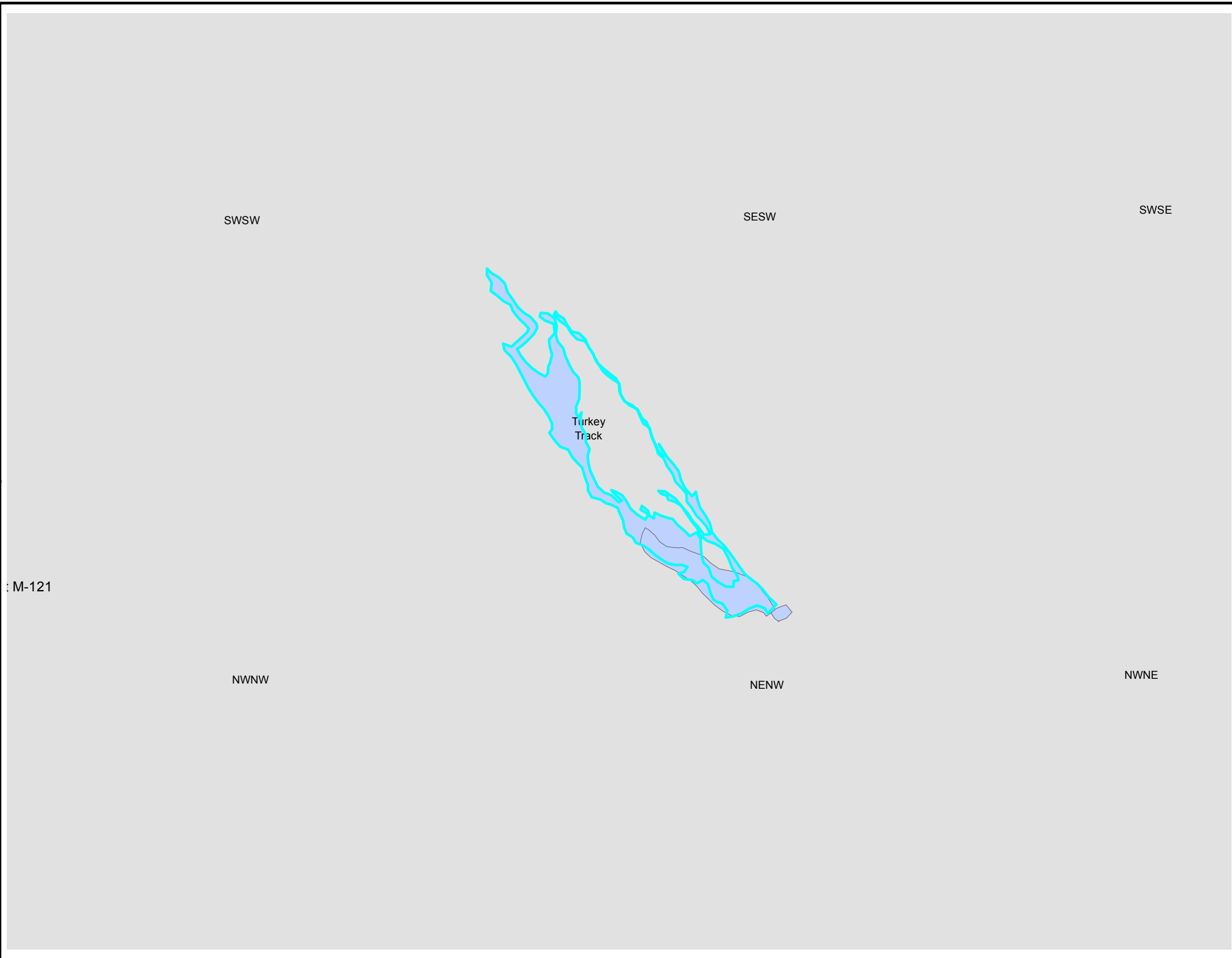
Karst Potential



FIGURE

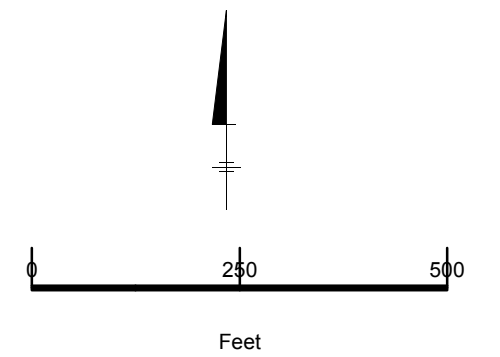
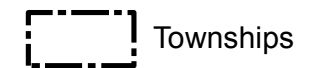
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LEGEND

Area



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EDDY COUNTY, NEW MEXICO

Range



FIGURE

6

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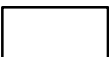
Copyright:© 2013 National Geographic Society, i-cubed

LEGEND

Area

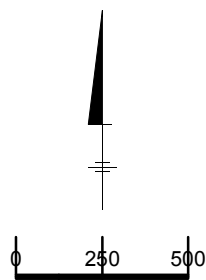
 Area

 Eddy

 Sections

 Townships

USA Topo Maps



Feet

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ENVIRONMENTAL ASSESSMENT
EDDY COUNTY, NEW MEXICO

Topos

 **ARCADIS**

FIGURE

8

Appendix D

Laboratory Results



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

March 10, 2016

DAVID ADKINS

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: EMULSION LINE

Enclosed are the results of analyses for samples received by the laboratory on 03/04/16 13:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-1 0' (H600484-01)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	10.1	5.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	82.5	5.00	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	47.5	5.00	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	193	15.0	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTX	333	30.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15600	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	7890	200	03/07/2016	ND	206	103	200	10.6		
DRO >C10-C28	44500	200	03/07/2016	ND	231	116	200	19.6		

Surrogate: 1-Chlorooctane 363 % 35-147

Surrogate: 1-Chlorooctadecane 1040 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TALON LPE
 DAVID ADKINS
 408 W. TEXAS AVE.
 ARTESIA NM, 88210
 Fax To: (575) 745-8905

 Received: 03/04/2016
 Reported: 03/10/2016
 Project Name: EMULSION LINE
 Project Number: 700745.058.01
 Project Location: EDDY COUNTY, NM

 Sampling Date: 03/02/2016
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: S-1 1' (H600484-02)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	7.70	0.500	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	42.8	0.500	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	26.0	0.500	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	74.4	1.50	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTX	151	3.00	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8600	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	823	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	1680	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 143 % 35-147

Surrogate: 1-Chlorooctadecane 107 % 28-171

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*=Accredited Analyte

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Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-1 2' (H600484-03)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	1.10	0.050	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	6.73	0.050	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	4.66	0.050	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	13.8	0.150	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	26.2	0.300	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 128 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6400	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	70.4	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	223	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 112 % 35-147

Surrogate: 1-Chlorooctadecane 115 % 28-171

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Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 0' (H600484-04)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	5.56	5.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	74.3	5.00	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	54.8	5.00	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	216	15.0	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	350	30.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7200	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	7840	200	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	69100	200	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 473 % 35-147

Surrogate: 1-Chlorooctadecane 1640 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 1' (H600484-05)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	1.89	0.100	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	14.1	0.100	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	9.66	0.100	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	27.3	0.300	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	52.9	0.600	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 118 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5730	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	276	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	870	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 136 % 35-147

Surrogate: 1-Chlorooctadecane 112 % 28-171

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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 2' (H600484-06)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	29.5	2.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	149	2.00	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	77.8	2.00	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	211	6.00	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	468	12.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2320	16.0	03/08/2016	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: CK					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	2340	50.0	03/07/2016	ND	206	103	200	10.6		
DRO >C10-C28	4200	50.0	03/07/2016	ND	231	116	200	19.6		

Surrogate: 1-Chlorooctane 221 % 35-147

Surrogate: 1-Chlorooctadecane 139 % 28-171

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DAVID ADKINS
408 W. TEXAS AVE.
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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-3 0' (H600484-07)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	6.13	5.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	114	10.0	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	116	10.0	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	363	30.0	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	599	55.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	6530	16.0	03/08/2016	ND	432	108	400	0.00		
TPH 8015M		mg/kg		Analyzed By: CK						S-06

TPH 8015M		mg/kg		Analyzed By: CK				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	13200	100	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	66500	100	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 616 % 35-147

Surrogate: 1-Chlorooctadecane 1390 % 28-171

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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-3 1' (H600484-08)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	6.11	0.200	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	48.4	0.200	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	36.3	0.200	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	111	0.600	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	202	1.20	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 135 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8260	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	401	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	1240	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 123 % 35-147

Surrogate: 1-Chlorooctadecane 110 % 28-171

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Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-3 2' (H600484-09)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	0.177	0.050	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	0.259	0.050	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	1.04	0.150	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTX	1.48	0.300	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	720	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	47.2	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 107 % 35-147

Surrogate: 1-Chlorooctadecane 117 % 28-171

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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-4 0' (H600484-10)

BTEX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<2.00	2.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	12.7	2.00	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	22.6	2.00	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	79.9	6.00	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	115	12.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14200	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	3100	100	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	61100	100	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 287 % 35-147

Surrogate: 1-Chlorooctadecane 1570 % 28-171

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DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-4 1' (H600484-11)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.100	0.100	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	0.321	0.100	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	1.08	0.100	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	4.73	0.300	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	6.13	0.600	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 116 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	153	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	1980	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 124 % 35-147

Surrogate: 1-Chlorooctadecane 129 % 28-171

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408 W. TEXAS AVE.
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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-4 2' (H600484-12)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	<0.050	0.050	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	<0.050	0.050	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	<0.150	0.150	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTX	<0.300	0.300	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.3 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	03/08/2016	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	150	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 104 % 35-147

Surrogate: 1-Chlorooctadecane 111 % 28-171

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DAVID ADKINS
408 W. TEXAS AVE.
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Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-5 0' (H600484-13)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<2.00	2.00	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	12.0	2.00	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	18.6	2.00	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	67.8	6.00	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	98.4	12.0	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2960	16.0	03/08/2016	ND	432	108	400	0.00	
TPH 8015M	mg/kg		Analyzed By: CK						S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	2620	50.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	48500	50.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 271 % 35-147

Surrogate: 1-Chlorooctadecane 1150 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-5 1' (H600484-14)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	0.578	0.200	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	1.69	0.200	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	7.06	0.600	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	9.33	1.20	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3680	16.0	03/08/2016	ND	432	108	400	7.69	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	355	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	4210	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 144 % 35-147

Surrogate: 1-Chlorooctadecane 140 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/04/2016
Reported: 03/10/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-5 2' (H600484-15)

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.100	0.100	03/08/2016	ND	2.07	103	2.00	3.33	
Toluene*	0.628	0.100	03/08/2016	ND	2.03	102	2.00	3.88	
Ethylbenzene*	1.95	0.100	03/08/2016	ND	1.82	91.2	2.00	4.85	
Total Xylenes*	7.70	0.300	03/08/2016	ND	5.66	94.4	6.00	4.50	
Total BTEX	10.3	0.600	03/08/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	848	16.0	03/08/2016	ND	432	108	400	7.69	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	185	10.0	03/07/2016	ND	206	103	200	10.6	
DRO >C10-C28	2590	10.0	03/07/2016	ND	231	116	200	19.6	

Surrogate: 1-Chlorooctane 131 % 35-147

Surrogate: 1-Chlorooctadecane 136 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

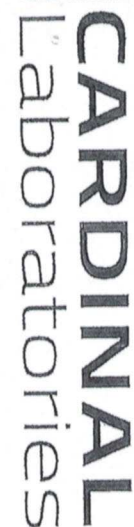
Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Page 1 of 2



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Page 2 of 2

ANALYSIS REQUEST

BILL TO

Company Name: Talon/LPE

Project Manager: David Adkins

Address: 408 W. Texas Ave.

City: Artesia State: NM Zip: 88210

Phone #: 575-746-8768 Fax #: 575-746-8905

Project #: 700745.05801 Project Owner: Apache

Project Name: Emulsion Line

Project Location: Eddy City

Sampler Name: Kim Wilson

FOR LAB USE ONLY

Lab I.D. Sample I.D.

11002484

(G)RAB OR (C)OMP.
CONTAINERS
GROUNDWATER
WASTEWATER
SOIL
OIL
SLUDGE
OTHER :
ACID/BASE:
ICE / COOL
OTHER :

DATE TIME

Chlorides
BTEX
TPH

11 3-4 1' 5 3/2/16 12:00
12 3-4 2' 6 12:10
13 3-5 0' 6 2:00
14 3-5 1' 6 2:10
15 3-5 2' 6 2:15

Relinquished By:

Date:

Received By:

Relinquished By:

Date:

Received By:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition

CHECKED BY:

REMARKS:

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

March 15, 2016

DAVID ADKINS

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: EMULSION LINE

Enclosed are the results of analyses for samples received by the laboratory on 03/10/16 15:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/10/2016
Reported: 03/15/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 3' (H600533-01)

BTX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.860	0.050	03/14/2016	ND	2.15	107	2.00	4.48	
Toluene*	6.99	0.050	03/14/2016	ND	2.09	104	2.00	5.31	
Ethylbenzene*	5.82	0.050	03/14/2016	ND	1.87	93.6	2.00	4.18	
Total Xylenes*	17.4	0.150	03/14/2016	ND	5.70	95.1	6.00	3.38	
Total BTX	31.1	0.300	03/14/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 133 % 73.6-140

TPH 8015M			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	289	10.0	03/12/2016	ND	200	100	200	2.14	
DRO >C10-C28	947	10.0	03/12/2016	ND	220	110	200	2.22	

Surrogate: 1-Chlorooctane 103 % 35-147

Surrogate: 1-Chlorooctadecane 95.0 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/10/2016
Reported: 03/15/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 4' (H600533-02)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/14/2016	ND	2.15	107	2.00	4.48	
Toluene*	0.097	0.050	03/14/2016	ND	2.09	104	2.00	5.31	
Ethylbenzene*	0.054	0.050	03/14/2016	ND	1.87	93.6	2.00	4.18	
Total Xylenes*	0.234	0.150	03/14/2016	ND	5.70	95.1	6.00	3.38	
Total BTEX	0.386	0.300	03/14/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/12/2016	ND	200	100	200	2.14	
DRO >C10-C28	<10.0	10.0	03/12/2016	ND	220	110	200	2.22	

Surrogate: 1-Chlorooctane 91.6 % 35-147

Surrogate: 1-Chlorooctadecane 102 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/10/2016
Reported: 03/15/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 5' (H600533-03)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/15/2016	ND	2.15	107	2.00	4.48	
Toluene*	<0.050	0.050	03/15/2016	ND	2.09	104	2.00	5.31	
Ethylbenzene*	<0.050	0.050	03/15/2016	ND	1.87	93.6	2.00	4.18	
Total Xylenes*	<0.150	0.150	03/15/2016	ND	5.70	95.1	6.00	3.38	
Total BTEX	<0.300	0.300	03/15/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/12/2016	ND	200	100	200	2.14	
DRO >C10-C28	<10.0	10.0	03/12/2016	ND	220	110	200	2.22	

Surrogate: 1-Chlorooctane 81.1 % 35-147

Surrogate: 1-Chlorooctadecane 91.1 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
DAVID ADKINS
408 W. TEXAS AVE.
ARTESIA NM, 88210
Fax To: (575) 745-8905

Received: 03/10/2016
Reported: 03/15/2016
Project Name: EMULSION LINE
Project Number: 700745.058.01
Project Location: EDDY COUNTY, NM

Sampling Date: 03/02/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: S-2 6' (H600533-04)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/15/2016	ND	2.15	107	2.00	4.48	
Toluene*	<0.050	0.050	03/15/2016	ND	2.09	104	2.00	5.31	
Ethylbenzene*	<0.050	0.050	03/15/2016	ND	1.87	93.6	2.00	4.18	
Total Xylenes*	<0.150	0.150	03/15/2016	ND	5.70	95.1	6.00	3.38	
Total BTEX	<0.300	0.300	03/15/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.6-140

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/12/2016	ND	200	100	200	2.14	
DRO >C10-C28	<10.0	10.0	03/12/2016	ND	220	110	200	2.22	

Surrogate: 1-Chlorooctane 84.2 % 35-147

Surrogate: 1-Chlorooctadecane 92.7 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

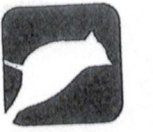
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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

ANALYSIS REQUEST

BILL TO

P.O. #: 700745, OSB.01

Company: Talon/LPE

Attn:

Address:

City:

State:

Phone #:

Fax #:

Company Name: Talon/LPE
Project Manager: D. ADAMS

Address: 408 W. Texas Ave.

City: Artesia State: NM Zip: 88210

Phone #: 575-746-8768 Fax #: 575-746-8905

Project #: 700745, OSB.01 Project Owner: Apache

Project Name: EMULSION LINE

Project Location: Eddy Co.

Sample Name: L20 / DA

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

HL000533

1 S-2 3'
2 S-2 4'
3 S-2 5'
4 S-2 6'

(G)RAB OR (C)OMP.

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

3/24/16

4/2/16

BTX
TPH

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:

Date: 3/19/16

Received By:

Relinquished By:

Date: 3/19/16

Received By:

Delivered By: (Circle One)

Time: 3:45

Sample Condition

Cool Intact

Yes Yes

No No

CHECKED BY:

(initials)

Sampler - UPS - Bus - Other:

4.68

Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

April 05, 2016

DAVID ADKINS

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: EMULSION LINE

Enclosed are the results of analyses for samples received by the laboratory on 03/04/16 13:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab_accred_certif.html.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:TALON LPE
408 W. TEXAS AVE.
ARTESIA NM, 88210Project: EMULSION LINE
Project Number: 700745.058.01
Project Manager: DAVID ADKINS
Fax To: (575) 745-8905Reported:
05-Apr-16 11:40

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
-----------	---------------	--------	--------------	---------------

S-2 1'	H600484-05	Soil	02-Mar-16 11:33	04-Mar-16 13:30
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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TALON LPE
 408 W. TEXAS AVE.
 ARTESIA NM, 88210

 Project: EMULSION LINE
 Project Number: 700745.058.01
 Project Manager: DAVID ADKINS
 Fax To: (575) 745-8905

 Reported:
 05-Apr-16 11:40

S-2 1'
H600484-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Conductivity	14300		1.00	uS/cm	1	6032901	AP	29-Mar-16	120.1	
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Green Analytical Laboratories
Sodium Saturation

Cation Exchange Capacity	32.6		0.04	meq/100 g	1	B604028	JLM	05-Apr-16	USDA-60 19	
--------------------------	------	--	------	-----------	---	---------	-----	-----------	------------	--

Exchangable Metals by ICP (Ammonium Acetate Extractable - Soluble)

Exchangable Sodium Percentage	20.9		1.00	%	1	B604029	JLM	05-Apr-16	USDA-60	
Sodium	1570		2.00	mg/kg dry	1	B604029	JLM	05-Apr-16	EPA200.7	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
408 W. TEXAS AVE.
ARTESIA NM, 88210

Project: EMULSION LINE
Project Number: 700745.058.01
Project Manager: DAVID ADKINS
Fax To: (575) 745-8905

Reported:
05-Apr-16 11:40

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch 6032901 - General Prep - Wet Chem

LCS (6032901-BS1)

Prepared & Analyzed: 29-Mar-16

Conductivity	489		uS/cm	500		97.8	80-120			
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Duplicate (6032901-DUP1)

Source: H600484-05

Prepared & Analyzed: 29-Mar-16

Conductivity	14500	1.00	uS/cm		14300			1.18	20	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TALON LPE
 408 W. TEXAS AVE.
 ARTESIA NM, 88210

 Project: EMULSION LINE
 Project Number: 700745.058.01
 Project Manager: DAVID ADKINS
 Fax To: (575) 745-8905

 Reported:
 05-Apr-16 11:40

Sodium Saturation - Quality Control
Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B604028 - Sodium Acetate Saturation
Blank (B604028-BLK1)

Prepared: 04-Apr-16 Analyzed: 05-Apr-16

Cation Exchange Capacity ND 0.04 meq/100 g

Duplicate (B604028-DUP1)

Source: H600484-05

Prepared: 04-Apr-16 Analyzed: 05-Apr-16

Cation Exchange Capacity 32.0 0.04 meq/100 g 32.6 1.86 200

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TALON LPE
408 W. TEXAS AVE.
ARTESIA NM, 88210

Project: EMULSION LINE
Project Number: 700745.058.01
Project Manager: DAVID ADKINS
Fax To: (575) 745-8905

Reported:
05-Apr-16 11:40

Exchangable Metals by ICP (Ammonium Acetate Extractable - Soluble) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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Batch B604029 - Exchangable (Ammonium Acetate less Soluble)

Blank (B604029-BLK1)

Prepared: 04-Apr-16 Analyzed: 05-Apr-16

Sodium	4.28	2.00	mg/kg dry						B1
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Duplicate (B604029-DUP1)

Source: H600484-05

Prepared: 04-Apr-16 Analyzed: 05-Apr-16

Sodium	1290	2.00	mg/kg dry		1570		20.0	20	
Exchangable Sodium Percentage	17.5	1.00	%		20.9		17.7	20	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

B1	Target analyte detected in method blank at or above method reporting limit. Sample concentration found to be 10 times above the concentration found in the method blank or less than the reporting limit.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Page 1 of 2

Company Name: Talon/LPE		P.O. #:		ANALYSIS REQUEST			
Project Manager: David Adkins		Company: Talon/LPE					
Address: 408 W. Texas Ave.		Attn:					
City: Artesia		Address:					
State: NM Zip: 88210		City:					
Phone #: 575-746-8768 Fax #: 575-746-8905		State:					
Project #: 700945-098.01 Project Owner: Apache		Zip:					
Project Name: Emulsion Line		Phone #:					
Project Location: Eddy City		Fax #:					
Sampler Name: Kimblison							
FOR LAB USE ONLY							
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	PRESERV.	SAMPLING	
			GROUNDWATER				
			WASTEWATER				
			SOIL				
			OIL				
			SLUDGE				
			OTHER :				
			ACID/BASE:				
			ICE / COOL				
			OTHER :				
			DATE	TIME			
1	5-1 0'		3/2/16	11:17	Chlorides		
2	5-1 1'			11:20	BTEX		
3	5-1 2'			11:22	TPH		
4	5-2 0'			11:30			
5	5-2 1'			11:33			
6	5-2 2'			11:35			
7	5-3 0'			11:45			
8	5-3 1'			11:47			
9	5-3 2'			11:49			
10	5-4 0'			11:55			
PLEASE NOTE: Liability and Damages. Cardinal's liability and clients exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable analysis. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruption, loss of use, or loss of profits, incurred by client, its subcontractors, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated causes or otherwise.		Relinquished By: Kimblison		Received By: Rudy Medrano		CHECKED BY: (initials)	
Date: 3/4/16		Time: 1:30		Sample Condition: Cool Intact		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Delivered By: (Circle One) Rudy Medrano		4.60c		No		Add'l Phone #: Add'l Fax #:	
Sampler - UPS - Bus - Other:							
REMARKS:							

* Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2626

#PC1



Page 282

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

Company Name: Talon/LE										P.O. #:	
Project Manager: David Adkins										Company: Talon/LE	
Address: 408 W. Texas Ave.										Attn:	
City: Artesia										Address:	
Phone #: 575-746-8768										City:	
Fax #: 575-746-8905										State:	
Project #: 700745.05801										Zip:	
Project Name: Emulsion Line										Phone #:	
Project Location: Eddy Hwy										Fax #:	
Sampler Name: Kim Wilson										FOR LAB USE ONLY	

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.	SAMPLING	DATE	TIME	Chlorides	BTEX	TPH
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :							
11	3-4 1'		1									3/2/16	12:00	1	1	1
12	3-4 2'		1									12:00	1	1	1	1
13	3-5 0'		1									2:00	1	1	1	1
14	3-5 1'		1									2:10	1	1	1	1
15	3-5 2'		1									2:15	1	1	1	1

Relinquished By: Kim Wilson										Date: 3/4/16		Received By: Rudy Medeiros	
Relinquished By: Rudy Medeiros										Date: 3/4/16		Received By: Kim Wilson	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: u/c										Sample Condition: Cool Intact		Checked By: [Signature]	

REMARKS:									
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