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## **Soil Assessment and Remediation Work Plan**

Emerald PWH 20 No. 62H \* 30-015-43372 \* 3377

Talon Project No. 700794.191.01

### **Prepared For:**

Devon Energy Production Company,  
6488 Seven Rivers Hwy  
Artesia, New Mexico 88210

### **Prepared By:**

Kimberly M. Wilson  
Talon/LPE  
408 West Texas  
Artesia, New Mexico 88210

**August 16, 2016**

Mr. Mike Bratcher  
NMOCD District 2  
811 S. 1<sup>st</sup> Street  
Artesia, NM 88210

Subject: **Soil Assessment and Remediation Work Plan**  
Devon Energy  
Emerald PWH 20 #62H \* 30-015-43372

Dear Mr. Bratcher,

Devon Energy has contracted Talon/LPE (Talon) to perform soil assessment and remediation services at the above referenced location. The results of our soil assessment and proposed remediation activities consist of the following.

#### **Incident Date**

October 31, 2015

#### **Site Information**

The Emerald PWH 20 #62H is located approximately seventeen (17) miles southeast of Artesia, New Mexico. The legal location for the site is Section 20, Township 19 South and Range 29 East in Eddy County, New Mexico. More specifically the latitude and longitude for the location are 32.6424438 North and 104.1049327 West. See site plan in [Appendix I](#).

According to the soil survey provided by the United States Department of Agriculture Natural Resources Conservation Service (NRCS), the soil in this area is made up of Tonuco loamy fine sand with 0 to 3 percent slopes. Drainage courses in this area are normally dry.

#### **Ground Water and Site Ranking**

According to the Chevron Texaco ground water trend map, the ground water in this area is 50-100 feet below ground surface (BGS). See [Appendix II](#). Therefore the ranking for this site is a **10** based on the following:

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

Based upon the site ranking of **10**, NMOCD Recommended Remedial Action Levels (RRAL) are 50 mg/kg for BTEX, 10 mg/kg for Benzene, 5,000 mg/kg for TPH and 1,000 mg/kg for total chlorides.

## Incident Description

On the night of October 31, 2015 the H2S alarms went off while drilling. The drilling crew evacuated the rig floor immediately leaving the pumps engaged causing the mud pits to overflow. This resulted in a release of 15 barrels of brine water on location. The location was scraped and the contaminated soil was placed in the cutting bin. A site plan is presented in [Appendix I](#) which illustrates the impacted area.

On, June 9 2016, Talon mobilized personnel to begin the preliminary site assessment and to collect initial soil samples from the impacted area with a hand auger to a depth of 0.25-feet deep, where refusal was encountered. Laboratory results are presented below in [Table 1](#).

On June 20, 2016, Talon returned to the site with a backhoe for further vertical delineation of the impacted area. Laboratory results are presented below in [Table 2](#).

## Laboratory Results

See [Appendix III](#) for complete report of laboratory results.

June 13, 2016

[Table 1](#)

Sample ID	Depth (feet)	BTEX (mg/kg)	Chlorides (mg/kg)	TPH (mg/kg) GRO	TPH (mg/kg) DRO
S-1	0'	--	33200	--	--
	0.25'	--	12300	--	--
S-2	0'	--	29200	--	--
	0.25'	--	13300	--	--

--Analyte Not Tested

June 24, 2016

[Table 2](#)

Sample ID	Depth (feet)	BTEX (mg/kg)	Chlorides (mg/kg)	TPH (mg/kg) GRO	TPH (mg/kg) DRO
S-1	1'	--	96	--	--
	2'	--	16	--	--
	3'	--	<16	--	--
	4'	--	16	--	--
	5'	--	<16	--	--
S-2	1'	--	5040	--	--
	2'	--	1800	--	--
	3'	--	32	--	--
	4'	--	112	--	--
	5'	--	48	--	--

--Analyte Not Tested

### Proposed Remedial Actions

- The impacted area at sample location S-2 (measuring approximately 30-feet wide by 45-feet long) will be excavated to a depth of 2-feet deep. The remaining contaminated soil will be excavated to a depth of 0.5-feet deep.
- All contaminated soil will be transported to Lea Land, LLC, an NMOCD approved disposal facility.
- The excavation will be backfilled with caliche and contoured to match the surrounding location.
- A final closure report documenting all remedial actions will be provided to the NMOCD Artesia Office along with a Final C-141 Form.

Should you have any questions or if further information is required, please do not hesitate to contact our office at (575)-746-8768

Respectfully submitted,

TALON/LPE



Kimberly M. Wilson  
Project Manager



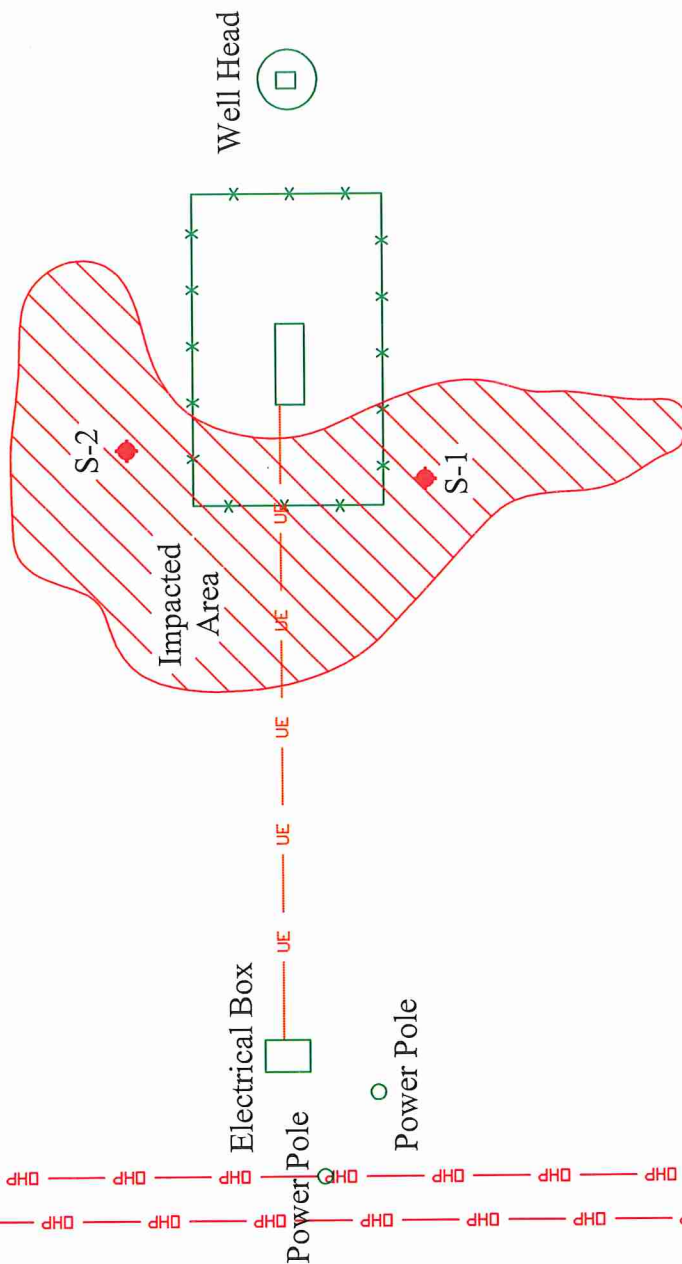
David J. Adkins  
District Manager

### Attachments:

- Appendix I Site Plan
- Appendix II Groundwater Data & Initial C-141
- Appendix III Laboratory Results

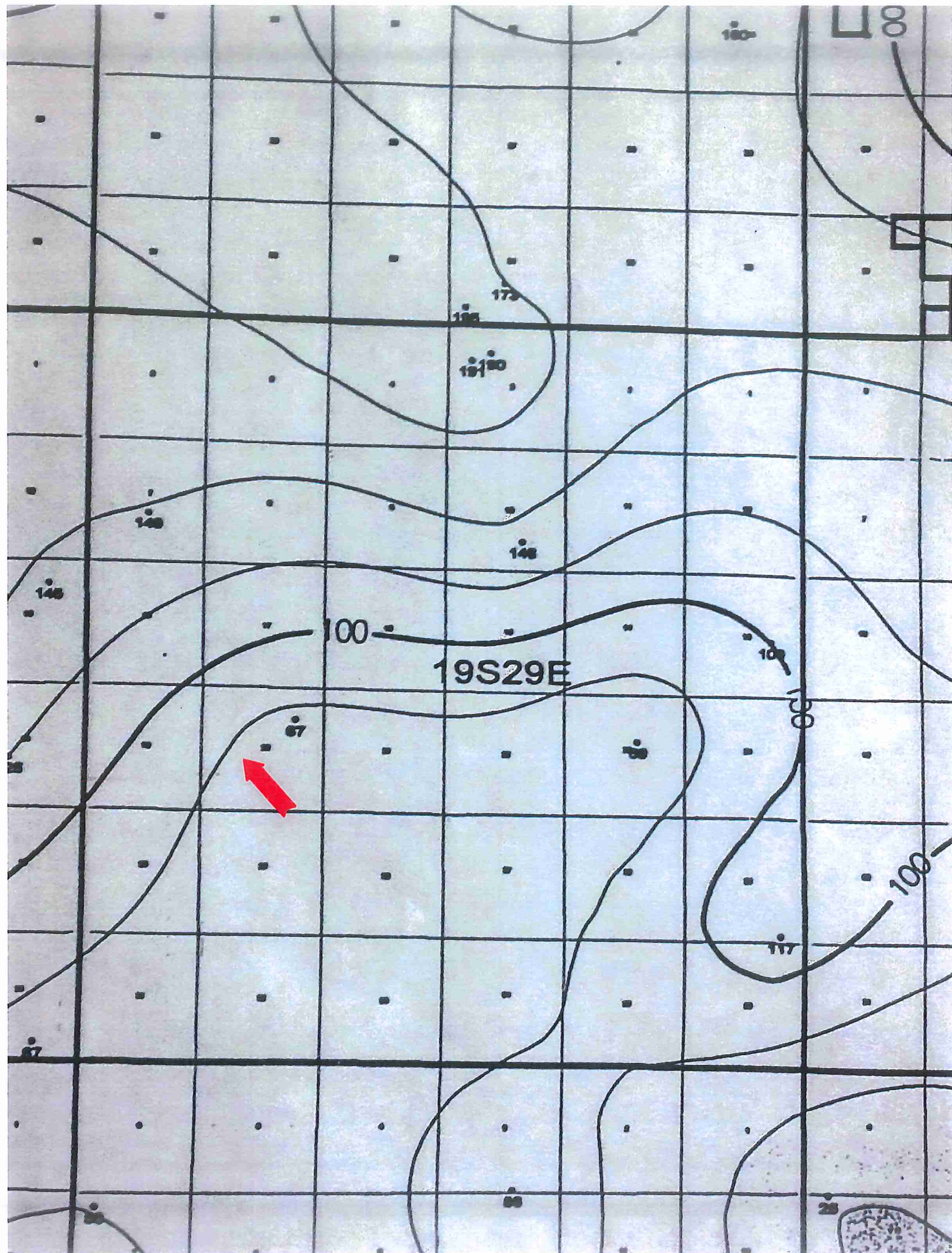
## **APPENDIX I**

### **SITE MAP**



**TALON-LPE**

**APPENDIX II**  
**GROUNDWATER DATA**  
**INITIAL C-141**



District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

700794-191.01  
State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

2,500  
Form C-141  
Revised August 8, 2011  
Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

### Release Notification and Corrective Action

#### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy Production	Contact Brett Fulks
Address 6488 Seven Rivers Hwy Artesia, NM 88220	Telephone No. 432-301-3223
Facility Name Emerald PWU 20 62H	Facility Type New Well

Surface Owner State	Mineral Owner State	API No. 30-015-43372
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#### LOCATION OF RELEASE

Unit Letter M	Section 20	Township 19S	Range 29E	Feet from the 1238	North/South Line FSL	Feet from the 248	East/West Line FWL	County EDDY
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Latitude: 32.6424438 Longitude: -104.1049327

#### NATURE OF RELEASE

Type of Release Spill Brine water	Volume of Release 15 BBL	Volume Recovered 14 BBL
Source of Release Drilling pit	Date and Hour of Occurrence 10/31/15 at 7:00 am	Date and Hour of Discovery 10/31/15 at 7:00 am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour 11/02/15 12:00 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse N/A	

If a Watercourse was Impacted, Describe Fully.\* N/A

Describe Cause of Problem and Remedial Action Taken.\*

H2s alarms went off so the drilling crew evacuated the rig floor, leaving the pumps engaged. This resulted in the mud pits running over.

Describe Area Affected and Cleanup Action Taken.\*

Scraped contaminated 20 x 20 area and placed in cuttings bin. Will conduct sampling to confirm chloride levels.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Jeanette Barron</i>	<u>OIL CONSERVATION DIVISION</u>		
Printed Name: Jeanette Barron			
Title: Field Admin Support	Approval Date:	Expiration Date:	
E-mail Address: Jeanette.barron@dvnm.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 11/06/15 Phone: 575.748.1813			

\* Attach Additional Sheets If Necessary

**APPENDIX III**  
**LABORATORY RESULTS**

June 13, 2016

KIMBERLY WILSON

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: EMERALD PWU 20 #62H

Enclosed are the results of analyses for samples received by the laboratory on 06/10/16 13:45.

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](http://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  
 KIMBERLY WILSON  
 408 W. TEXAS AVE.  
 ARTESIA NM, 88210  
 Fax To: (575) 745-8905

Received:	06/10/2016	Sampling Date:	06/09/2016
Reported:	06/13/2016	Sampling Type:	Soil
Project Name:	EMERALD PWU 20 #62H	Sampling Condition:	Cool & Intact
Project Number:	700794.191.01	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

**Sample ID: S-1 0' (H601277-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	33200	16.0	06/10/2016	ND	432	108	400	0.00	

**Sample ID: S-1 0.25' REFUSAL (H601277-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12300	16.0	06/10/2016	ND	432	108	400	0.00	

**Sample ID: S-2 0' (H601277-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	29200	16.0	06/10/2016	ND	432	108	400	0.00	

**Sample ID: S-2 0.25' REFUSAL (H601277-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13300	16.0	06/10/2016	ND	432	108	400	3.77	QM-07

Cardinal Laboratories

\* = Accredited Analyte

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 client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**


QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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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Cardinal Laboratories

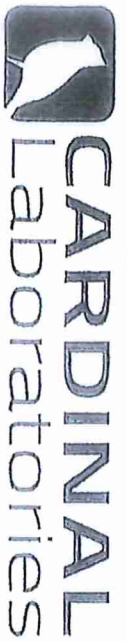
\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Talon/LPE		P.O. #:		ANALYSIS REQUEST	
Project Manager: Kimberly Wilson		Company: Talon/LPE			
Address: 408 W. Texas Ave.		Attn:			
City: Artesia		State: NM		Zip: 88210	
Phone #: 575-746-8768		Fax #: 575-746-8905		Address:	
Project #: 700794.19.01		Project Owner: JWH		City:	
Project Name: Emerald Pw 20 #624		State:		Zip:	
Project Location: Eddy City		Phone #:			
Sample Name: Kim Wilson		Fax #:			
FOR LAB USE ONLY		MATRIX		PRESERV	
Lab I.D.		Sample I.D.		DATE	
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PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

June 24, 2016

KIMBERLY WILSON

TALON LPE

408 W. TEXAS AVE.

ARTESIA, NM 88210

RE: EMERALD PW 20 62H

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Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

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

 Received: 06/22/2016  
 Reported: 06/24/2016  
 Project Name: EMERALD PW 20 62H  
 Project Number: 700794.191.01  
 Project Location: EDDY COUNTY, NM

 Sampling Date: 06/20/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: S-1 1' (H601366-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-1 2' (H601366-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-1 3' (H601366-03)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-1 4' (H601366-04)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	06/24/2016	ND	416	104	400	0.00	

Cardinal Laboratories

\* = Accredited Analyte

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 Reported: 06/24/2016  
 Project Name: EMERALD PW 20 62H  
 Project Number: 700794.191.01  
 Project Location: EDDY COUNTY, NM

 Sampling Date: 06/20/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: S-1 5' (H601366-05)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-2 1' (H601366-06)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5040	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-2 2' (H601366-07)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1800	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-2 3' (H601366-08)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/24/2016	ND	416	104	400	0.00	

**Sample ID: S-2 4' (H601366-09)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	06/24/2016	ND	416	104	400	0.00	

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Received: 06/22/2016  
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Project Name: EMERALD PW 20 62H  
Project Number: 700794.191.01  
Project Location: EDDY COUNTY, NM

Sampling Date: 06/20/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S-2 5' (H601366-10)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/24/2016	ND	416	104	400	0.00	

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**Notes and Definitions**

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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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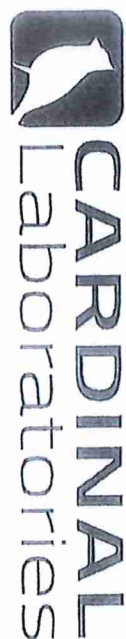
\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Talon/LPE

Project Manager: Kimberly M. Wilson

Address: 408 W. Texas Ave.

City: Artesia

Phone #: 575-746-8768

State: NM Zip: 88210

Project #: 700794, 191.01

Project Owner: Heaton

Project Location: Emerald Field 62 H

Sample Name: Eddy City

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

#0306

5-1 1'

5-1 2'

5-1 3'

5-1 4'

5-1 5'

5-2 1'

5-2 2'

5-2 3'

5-2 4'

5-2 5'

5-2 6'

5-2 7'

5-2 8'

5-2 9'

5-2 10'

5-2 11'

5-2 12'

5-2 13'

5-2 14'

5-2 15'

5-2 16'

5-2 17'

5-2 18'

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

6/21/16

Chlorides

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