LOWRY environmental

APPROVED
By CHernandez at 10:11 am, Jan 16, 2019

Incident ID	nCH1815552862
District RP	1RP-5082
Facility ID	30-025-02709
Application ID	pCH1815554047

November 12, 2018

Olivia Yu & Christina Hernandez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, District 1
1625 French Drive
Hobbs, NM 88240

Ryan Mann
Hobbs Field Office
New Mexico State Land Office
2827 North Dal Paso Street, Suite 117
Hobbs, NM 88240

Re: **Site Assessment Report and Proposed Remediation Plan**
Site Name: State B
GPS: Latitude: 32.95652 Longitude: -103.41013
Legals: UL "J", Sec. 1, T16S, R35E
Lea County, New Mexico
NMOCD Ref. No. 1RP-5082

Lowry Environmental & Associates, LLC (LEA), on behalf of Energen Resources Corporation, has prepared this Site Assessment Report and Proposed Remediation Plan for the Release Site known as the State B. Details of the release are summarized on the table below:

Nature and Volume of Release			
Date Release Discovered	6/1/2018	**Source of Release**	Tank Battery
Type of Release	Crude Oil	**Volume Released (bbls)**	136
		Volume Recovered (bbls)	None
Cause of Release A hole developed in the oil tank as a result of corrosion; the fluid was not immediatedly discovered.			
Affected Area The release affected and area within an unlined earthen containment.			
Was this a major release? Yes	**If YES, for what reasons (s) is this considered a major release?** Volume Greater than 25 bbls		
If Yes, was immediate notice given to the OCD? By whom? To whom? When and by what means? N/A			

A copy of the Release Notification (NMOCD Form C-141) is provided as Attachment #8.

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Site Assessment/Characterization	
What is the shallowest depth to groundwater beneath the area affected by the release?	>63'
Did this release impact groundwater or surface water?	No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	No
Are the lateral extents of the release within 300 feet of a wetland?	No
Are the lateral extents of the release overlying a subsurface mine?	No
Are the lateral extents of the release overlying an unstable area such as karst geology?	No
Are the lateral extents of the release within a 100-year floodplain?	No
Did the release impact areas **not** on an exploration, development, production or storage site?	No

A search of groundwater databases maintained by the New Mexico Office of the State Engineer (NMOSE) and United States Geological Survey was conducted in an effort to determine the average depth to groundwater within a 1 Mile radius of the Site and identify any registered water wells within a 1/2 Mile radius of the Site. A search of the NMOSE database suggested the presence of 1 water well (L10272) within 1,000 ft. of the Site. A field survey indicated available geographic information for L10272 was outdated and/or incorrect; there was no water well in that vicinity. A search of the USGS database did not identify any water wells within a 1/2 Mile radius.

Based on the volume and nature of the release, inferred depth to groundwater and NMOCD Siting Criteria, the NMOCD Closure Criteria for the Site is as follows:

Closure Criteria for Soil Impacted by a Release	
Benzene	**10 mg/kg**
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	**50 mg/kg**
Total Petroleum Hydrocarbons	**2,500 mg/kg**
Combined GRO and DRO	**1,000 mg/kg**
Chloride	**10,000 mg/kg**

NMOCD Siting Criteria data was gathered from available resources including Bureau of Land Management (BLM) shapefiles; topographic maps; NMOSE and USGS databases; and aerial imagery. The results are depicted on Figures 1 & 2. Depth to groundwater information is provided as Attachment #4. A Photographic Log is provided as Attachment #7.

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INITIAL SITE ASSESSMENT

On **July 31, 2018**, two (2) investigative soil bores (SP-1 and SP-2) were advanced at the Site in an effort to determine the vertical extent of impacted soil affected above the NMOCD Closure Criteria. Soil bore SP-1 was advanced to a depth of 30 ft. bgs. During the advancement of the soil bore, 10 soil samples were collected and submitted to the laboratory for analysis of BTEX, TPH and/or chloride. Laboratory analytical results indicated soil was not affected above the NMOCD Closure Criteria for TPH and chloride beyond 12 ft. bgs in the area represented by soil bore SP-1.

Soil bore SP-2 was advanced to a depth of 63 ft. bgs. During the advancement of the soil bore, 14 soil samples were collected and submitted to the laboratory for analysis of BTEX, TPH and/or chloride. Laboratory analytical results indicated soil was not affected above the NMOCD Closure Criteria for TPH and chloride beyond 9 ft. bgs in the area represented by soil bore SP-1.

On **November 2, 2018,** four (4) soil samples (North @ 1', East @ 1', South @ 1' and West @ 1') were collected from the inferred edges of the affected area in an effort to determine the horizontal extent of impacted soil affected above the NMOCD Closure Criteria. The collected soil samples were submitted to an NMOCD-approved laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were below the NMOCD Closure Criteria in each of the submitted soil samples, with the exception of soil sample North @ 1', which exhibited a GRO+DRO concentration of 2,311.4 mg/kg and a TPH concentration of 2,793.4 mg/kg. Collection of soil samples from deeper intervals was precluded due to the presence of an impenetrable rock layer.

A table summarizing laboratory analytical results from soil samples collected during the initial site assessment is provided on the following page:

Incident ID	nCH1815552862
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Concentrations of BTEX, TPH and/or Chloride in Soil - Initial Assessment(s)

Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					E300/4500Cl
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C_6-C_{10} (mg/kg)	DRO C_{10}-C_{28} (mg/kg)	GRO + DRO C_6-C_{28} (mg/kg)	ORO C_{28}-C_{36} (mg/kg)	TPH C_6-C_{36} (mg/kg)	Chloride (mg/kg)
SP1 @ Surf.	7/31/18	0-6"	In-Situ	2.79	307	2,530	29,500	32,030	3,790	35,820	96.0
SP1 @ 3'	7/31/18	3'	In-Situ	-	-	389	4,400	4,789	447	5,236	1,260
SP1 @ 6'	7/31/18	6'	In-Situ	-	-	1,140	6,980	8,120	837	8,957	480
SP1 @ 9'	7/31/18	9'	In-Situ	-	-	112	1,490	1,602	204	1,806	96.0
SP1 @ 12'	7/31/18	12'	In-Situ	-	-	<10.0	31.0	31.0	<10.0	31.0	48.0
SP1 @ 15'	7/31/18	15'	In-Situ	<0.050	<0.300	<10.0	47.4	47.4	<10.0	47.4	32.0
SP1 @ 18'	7/31/18	18'	In-Situ	-	-	<10.0	21.2	21.2	<10.0	21.2	32.0
SP1 @ 21'	7/31/18	21'	In-Situ	-	-	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SP1 @ 24'	7/31/18	24'	In-Situ	-	-	<10.0	198	198	68.5	266.5	48.0
SP1 @ 27'	7/31/18	27'	In-Situ	-	-	<10.0	309	309	27.8	336.8	48.0
SP1 @ 30'	7/31/18	30'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SP2 @ Surf.	7/31/18	0-6"	In-Situ	<1.00	157	877	7,500	8,377	601	8,978	800
SP2 @ 3'	7/31/18	3'	In-Situ	-	-	2,680	12,300	14,980	1,430	16,410	352
SP2 @ 9'	7/31/18	9'	In-Situ	-	-	33.3	556	589	45.0	634.3	1,410
SP2 @ 15'	7/31/18	15'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,920
SP2 @ 21'	7/31/18	21'	In-Situ	-	-	<10.0	<10.0	<10.0	<10.0	<10.0	2,120
SP2 @ 27'	7/31/18	27'	In-Situ	-	-	<10.0	<10.0	<10.0	<10.0	<10.0	1,360
SP2 @ 33'	7/31/18	33'	In-Situ	-	-	30.0	388	418	68.8	486.8	1,090
SP2 @ 39'	7/31/18	39'	In-Situ	-	-	<10.0	66.4	66.4	14.8	81.2	720
SP2 @ 45'	7/31/18	45'	In-Situ	<0.050	<0.300	<10.0	29.1	29.1	<10.0	29.1	368
SP2 @ 48'	7/31/18	21'	In-Situ	-	-	<10.0	49.6	49.6	<10.0	49.6	368
SP2 @ 54'	7/31/18	21'	In-Situ	-	-	<10.0	34.5	34.5	<10.0	34.5	256
SP2 @ 57'	7/31/18	57'	In-Situ	-	-	<10.0	50.6	50.6	<10.0	50.6	224
SP2 @ 60'	7/31/18	60'	In-Situ	-	-	<10.0	37.6	37.6	<10.0	37.6	128
SP2 @ 63'	7/31/18	63'	In-Situ	<0.050	<0.300	<10.0	144	144	41.5	185.5	128
East @ 1'	11/2/18	1'	In-Situ	<0.050	<0.300	13.4	406	419.4	62.5	481.9	64.0
North @ 1'	11/2/18	1'	In-Situ	<0.050	0.332	11.4	2,300	2,311.4	482	2,793.4	480
West @ 1'	11/2/18	1'	In-Situ	<0.050	<0.300	<10.0	60.1	60.1	36.6	96.7	1,060
South @ 1'	11/2/18	1'	In-Situ	<0.050	<0.300	<10.0	195	195	119	314	3,080
Closure Criteria				**10**	**50**	**-**	**-**	**1,000**	**-**	**2,500**	**10,000**

A "Site & Sample Location Map" is provided as Attachment #3. Field Data, if applicable, is provided as Attachment #9. Soil profile observations are provided on Attachment #5. Laboratory analytical reports are provided as Attachment #6.

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PROPOSED REMEDIATION PLAN

Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment, Energen Resources Corporation proposes the following remediation activities designed to advance the Site toward an approved closure:

•Utilizing mechanical equipment, excavate impacted soil within the release margins in the area characterized by sample point SP-1 to a depth beyond 9 ft. bgs, until laboratory analytical results from confirmation soil samples indicate concentrations of BTEX, TPH and chloride are below the NMOCD Closure Criteria.
•Excavate impacted soil within the release margins in the area characterized by sample point SP-2 to a depth beyond 3 ft. bgs, until laboratory analytical results from confirmation soil samples indicate concentrations of BTEX, TPH and chloride are below the NMOCD Closure Criteria.
•Excavation sidewalls will be advanced horizontally until laboratory analytical results from confirmation soil samples indicate BTEX, TPH and chloride concentrations are below the NMOCD Closure Criteria. This will include the impacted area characterized by soil sample North @ 1'.
• Excavated soil will be temporarily stockpiled on-site, pending transportation under manifest to an NMOCD-approved disposal facility.
• Upon receiving favorable laboratory analytical results from confirmation soil samples (below the NMOCD Closure Criteria) excavated areas will be backfilled with locally sourced, non-impacted "like" material. Excavation backfill will be placed at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable.

SAMPLING PLAN

Upon completion of excavation activities, representative five-point composite excavation confirmation soil samples will be collected from the excavation sidewalls in each cardinal direction, representing no more than **50 linear ft**. A minimum of **one (1**) representative five-point composite excavation confirmation soil sample will be collected from the base of the excavated area representing every **500 square feet**. Additional, "discrete" confirmation soil samples will be collected from wet or visibly stained areas inferred to have been affected by the release, as necessary.

TIMELINE AND ESTIMATED VOLUME OF SOIL TO BE REMEDIATED

Remediation activities are expected to be completed **within 90 days** of receiving necessary approval(s) of this Site Assessment Summary and Proposed Remediation Plan. Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment it is estimated that approximately **1,070 cubic yards** of soil has been affected above the NMOCD Closure Criteria.

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RESTORATION, RECLAMATION AND RE-VEGETATION PLAN

Areas affected by remediation and closure activities will be substantially restored to the condition that existed prior to the release, to the extent practicable. Excavated areas will be backfilled with locally sourced, non-impacted "like" material placed at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable. Affected areas not on production pads and/or lease roads will be reseeded with an agency and/or landowner-approved seed mixture during the first favorable growing season following closure of the site.

If you have any questions, or need any additional information, please feel free to contact Andy Cobb or the undersigned by phone or email.

Respectfully,

Joel W. Lowry
Environmental Professional
Lowry Environmental & Associates, LLC

Attachments:
Attachment #1- Figure 1 - Topographic Map
Attachment #2- Figure 2 - Aerial Map
Attachment #3- Figure 3 - Site & Sample Location Map
Attachment #4- Depth to Groundwater Information
Attachment #5- Soil Profile
Attachment #6- Laboratory Analytical Reports
Attachment #7- Photographic Log
Attachment #8- Release Notification (FORM C-141)
Attachment #9- Field Data

LIMITATIONS

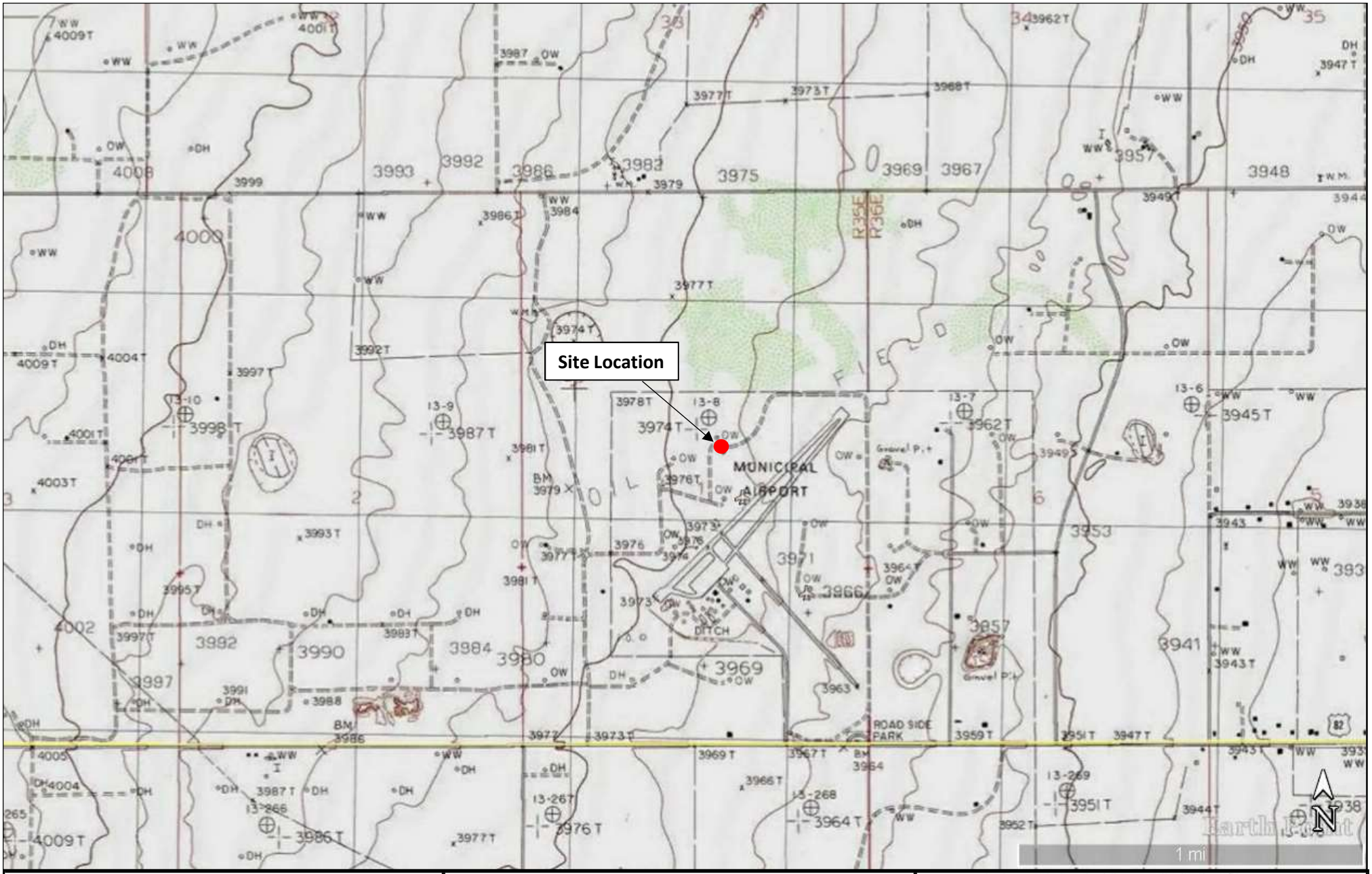
This document has been prepared on behalf of Energen Resources Corporation. Use of information contained in this report, including exhibits and attachments, by any other party without the consent of LEA and/or Energen Resources Corporation is prohibited.

This document has been prepared in a professional manner, using the degree of skill and care exercised by similar environmental professionals. LEA notes that the facts and conditions referenced in this document may change over time and that the conclusions and recommendations are only applicable to the facts and conditions as described at the time this document was prepared.

LEA has prepared this report to the best of its ability. No other warranty, expressed or implied, is made or intended.

ATTACHMENT #1

Figure 1 - Topograpic Map



LEGEND:

- Site Location

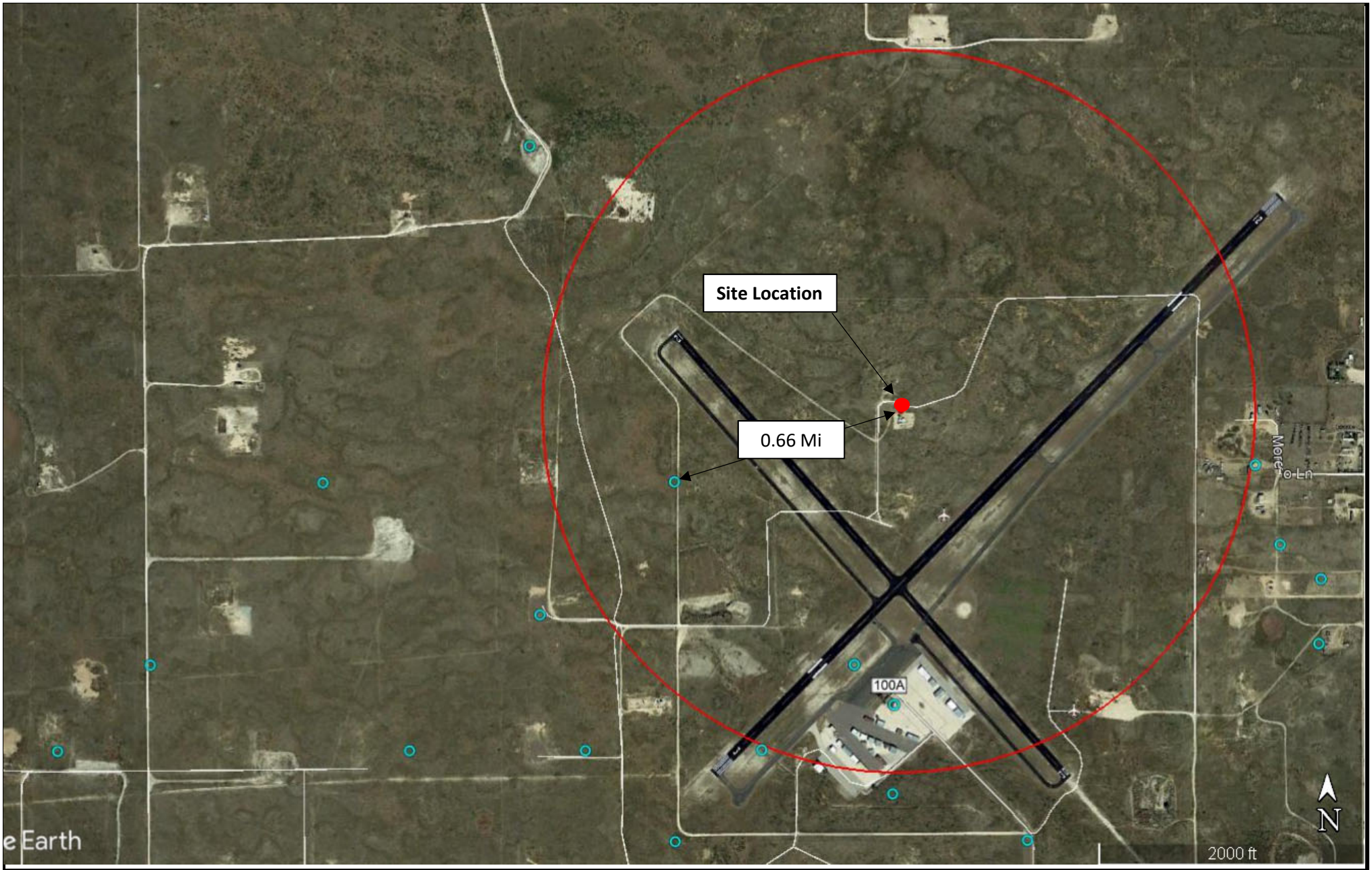
Figure 1
Topographic Map
Energen Resources Corporation
State B
GPS: 32.95652, -103.41013
Lea County, New Mexico

LOWRY environmental

Drafted by: jwl Checked by: client Date: 11/5/2018

ATTACHMENT #2

Figure 2 - Aerial Map



LEGEND:

- Site Location
- Fresh Water Well
- 100-Year Floodplain
- High/Critical Karst
- Non-Inustrial Building
- Subsurface Mine
- 1/2 Mile Radius

Figure 2

Aerial Map

Energen Resources Corporation

State B

GPS: 32.95652, -103.41013

Lea County, New Mexico

LOWRY environmental

Drafted by: jwl Checked by: client Date: 11/9/2018

ATTACHMENT #3

Figure 3 - Site & Sample Location Map

LEGEND:

- Sample Location
- Soil Boring
- Affected Area
- Earthen Berm

Figure 3

Site & Sample Location Map

Energen Resources Corporation

State B

GPS: 32.95652, -103.41013

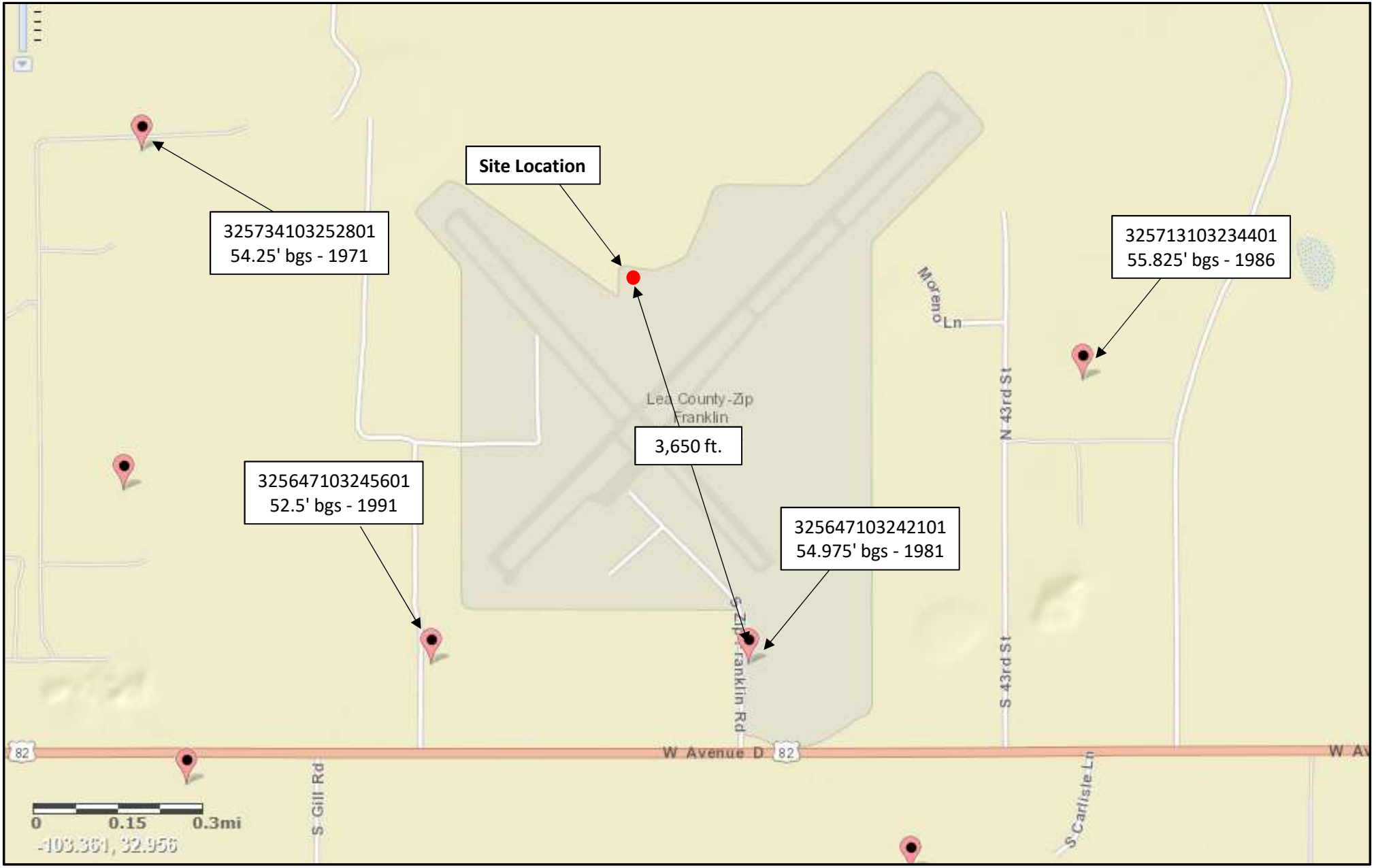
Lea County, New Mexico

LOWRY environmental

Drafted by: jwl Checked by: client Date: 11/12/2018

ATTACHMENT #4

Depth to Groundwater Information



LEGEND:

- Site Location

Figure 4

USGS Well Proximity Map

Energen Resources Corporation

State B

GPS: 32.95652, -103.41013

Lea County, New Mexico

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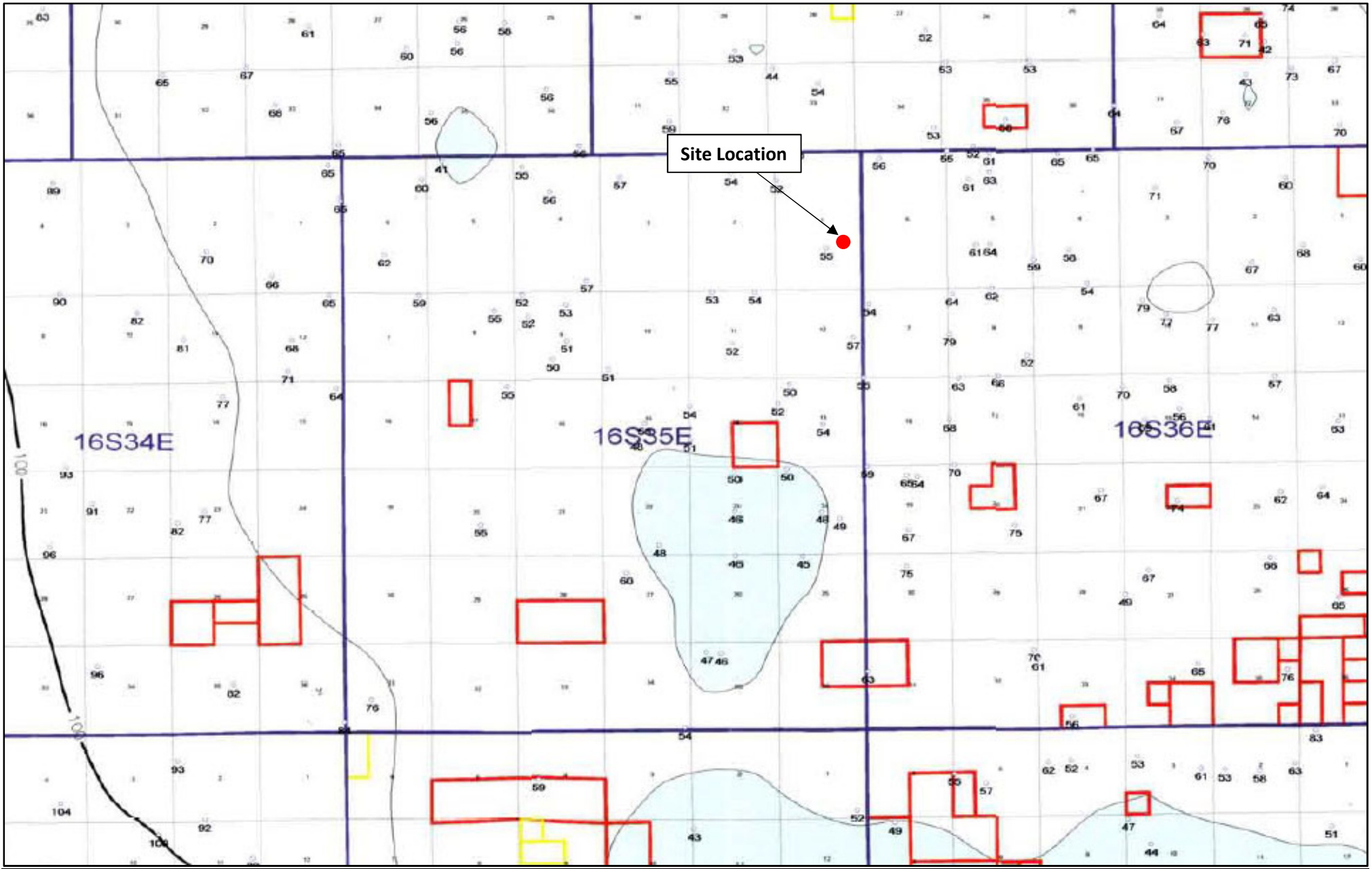
Drafted by: jwl Checked by: client Date: 11/5/2018



LEGEND:

- Site Location

Figure 5

Inferred Depth to Groundwater Trend Map

Energen Resources Corporation

State B

GPS: 32.95652, -103.41013

Lea County, New Mexico

LOWRY environmental

Drafted by: jwl Checked by: client Date: 11/9/2018

National Water Information System: Web Interface

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- Please see news on new formats
- **UPDATE, 11/2: The USGS continues to make progress on restoring all of its gages. As of 3 p.m. Friday, November 2, less than 3 percent of USGS streamgages are still not transmitting due to an issue with the telemetry system that records and transmits streamgage data. The USGS will continue to work through the weekend to bring the streamgages back online. Read more**
- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 325713103234401

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 325713103234401 16S.36E.06.112414

Available data for this site Groundwater: Field measurements | GO

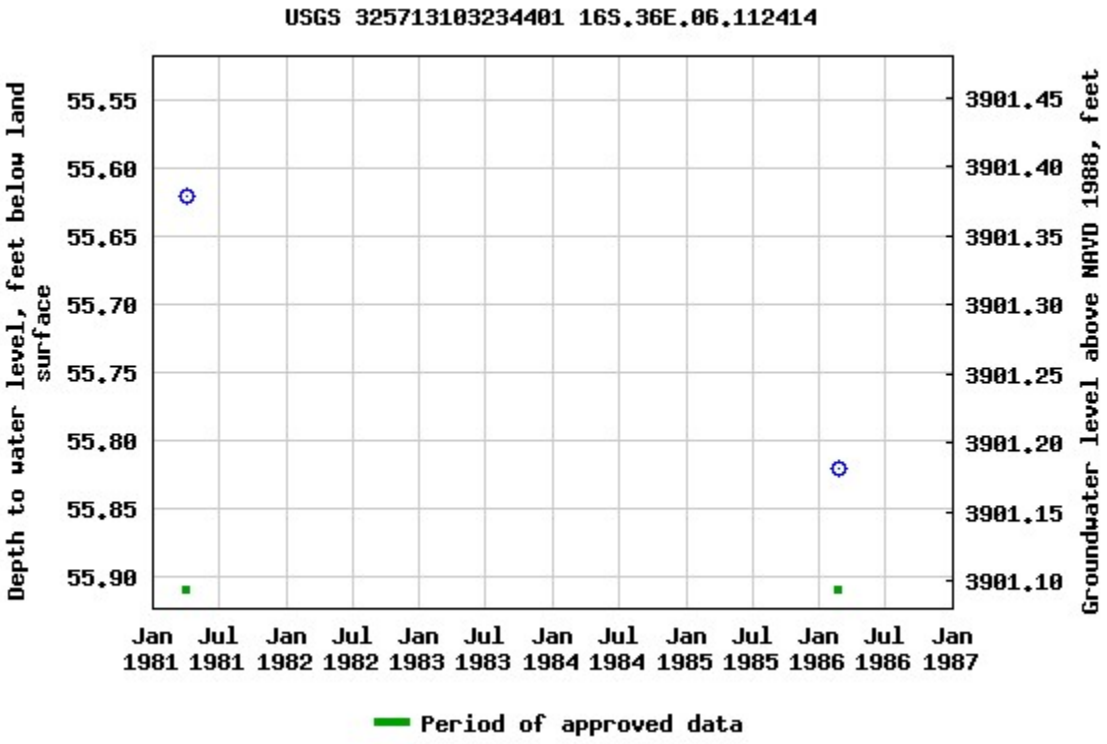
Lea County, New Mexico
Hydrologic Unit Code --
Latitude 32°57'13", Longitude 103°23'44" NAD27
Land-surface elevation 3,957 feet above NAVD88
The depth of the well is 102 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data

Graph of data

Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
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Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 325647103242101

Minimum number of levels = 1

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USGS 325647103242101 16S.35E.01.41120

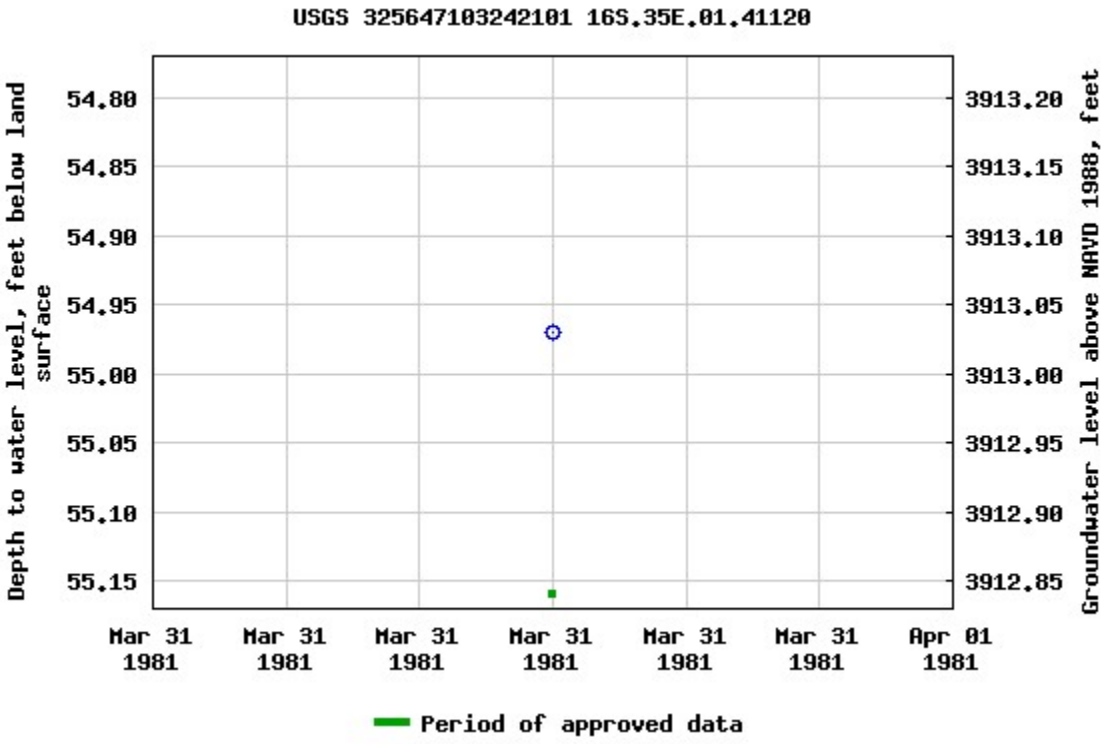
Available data for this site Groundwater: Field measurements | GO

Lea County, New Mexico
Hydrologic Unit Code --
Latitude 32°56'47", Longitude 103°24'21" NAD27
Land-surface elevation 3,968 feet above NAVD88
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data

Reselect period



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- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 325647103245601

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 325647103245601 16S.35E.01.131312

Available data for this site Groundwater: Field measurements | GO

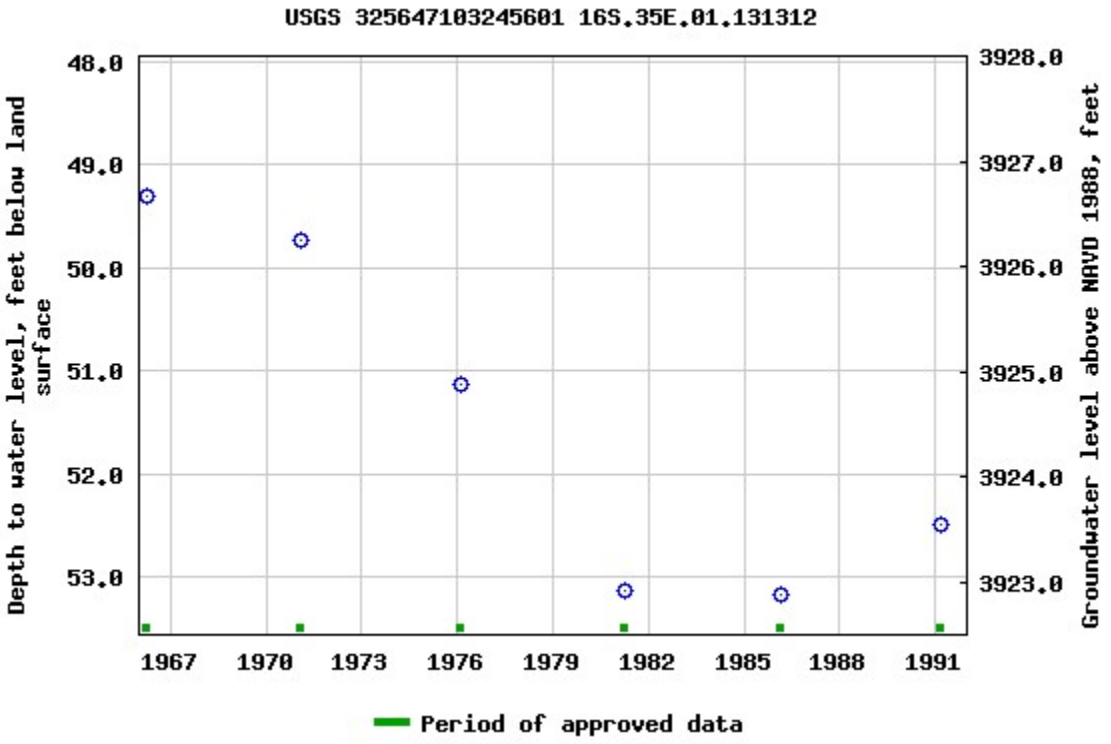
Lea County, New Mexico
Hydrologic Unit Code 12080003
Latitude 32°56'47", Longitude 103°24'56" NAD27
Land-surface elevation 3,976 feet above NAVD88
The depth of the well is 75 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data

Graph of data

Reselect period



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Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2018-11-05 12:40:26 EST
1 0.88 nadww01

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Search Results -- 1 sites found

site_no list =

- 325734103252801

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 325734103252801 16S.35E.02.211134

Available data for this site Groundwater: Field measurements | GO

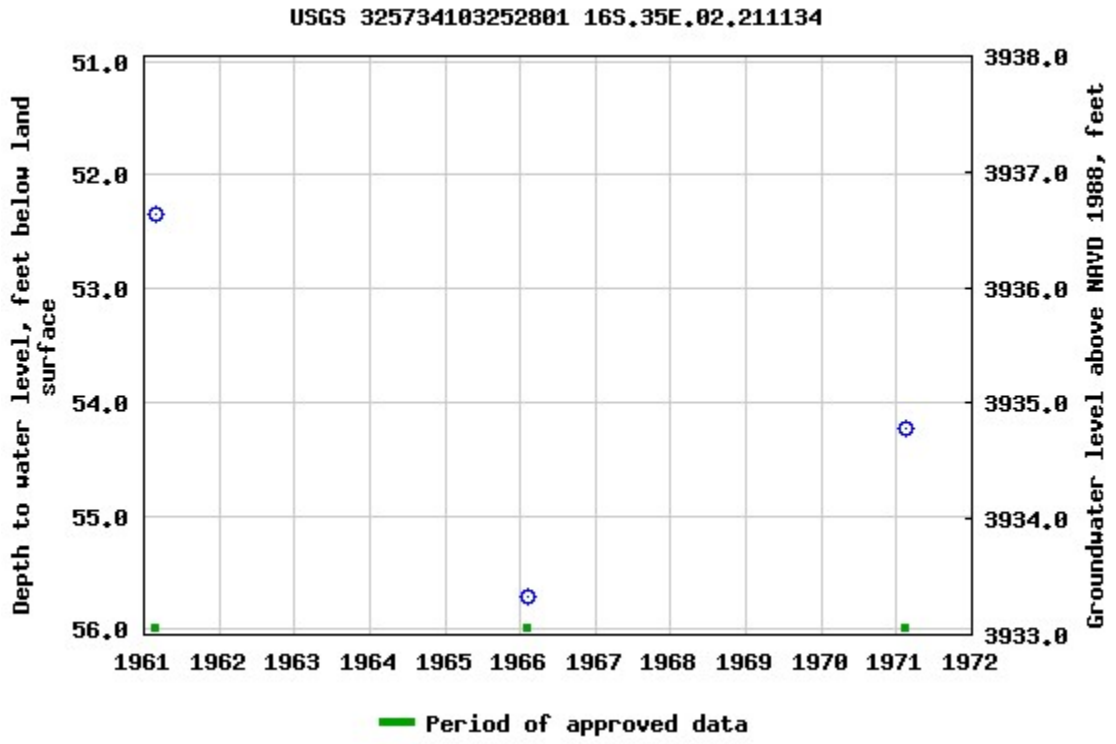
Lea County, New Mexico
Hydrologic Unit Code 12080003
Latitude 32°57'34", Longitude 103°25'28" NAD27
Land-surface elevation 3,989 feet above NAVD88
The depth of the well is 100 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data

Graph of data

Reselect period



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

Questions about sites/data?
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New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y		Distance	Depth Well	Depth Water	Water Column
L 10272		L	LE	4	2	1	01	16S	35E	648409	3647475*		228	120	80	40
L 05904	R	L	LE			1	01	16S	35E	648116	3647369*		539	150	70	80
L 03357		L	LE				01	16S	35E	648532	3646966*		579	120	60	60
L 03420		L	LE				01	16S	35E	648532	3646966*		579	120	60	60
L 03663 POD2	R	L	LE	1	1	4	01	16S	35E	648624	3646878*		659	164	60	104

Average Depth to Water: **66 feet**
Minimum Depth: **60 feet**
Maximum Depth: **80 feet**

Record Count: 5

UTMNAD83 Radius Search (in meters):

Easting (X): 648628.7 **Northing (Y):** 3647537.3 **Radius:** 805

***UTM location was derived from PLSS - see Help**

ATTACHMENT #5

Soil Profile

SOIL PROFILE

Site Name: State "B"

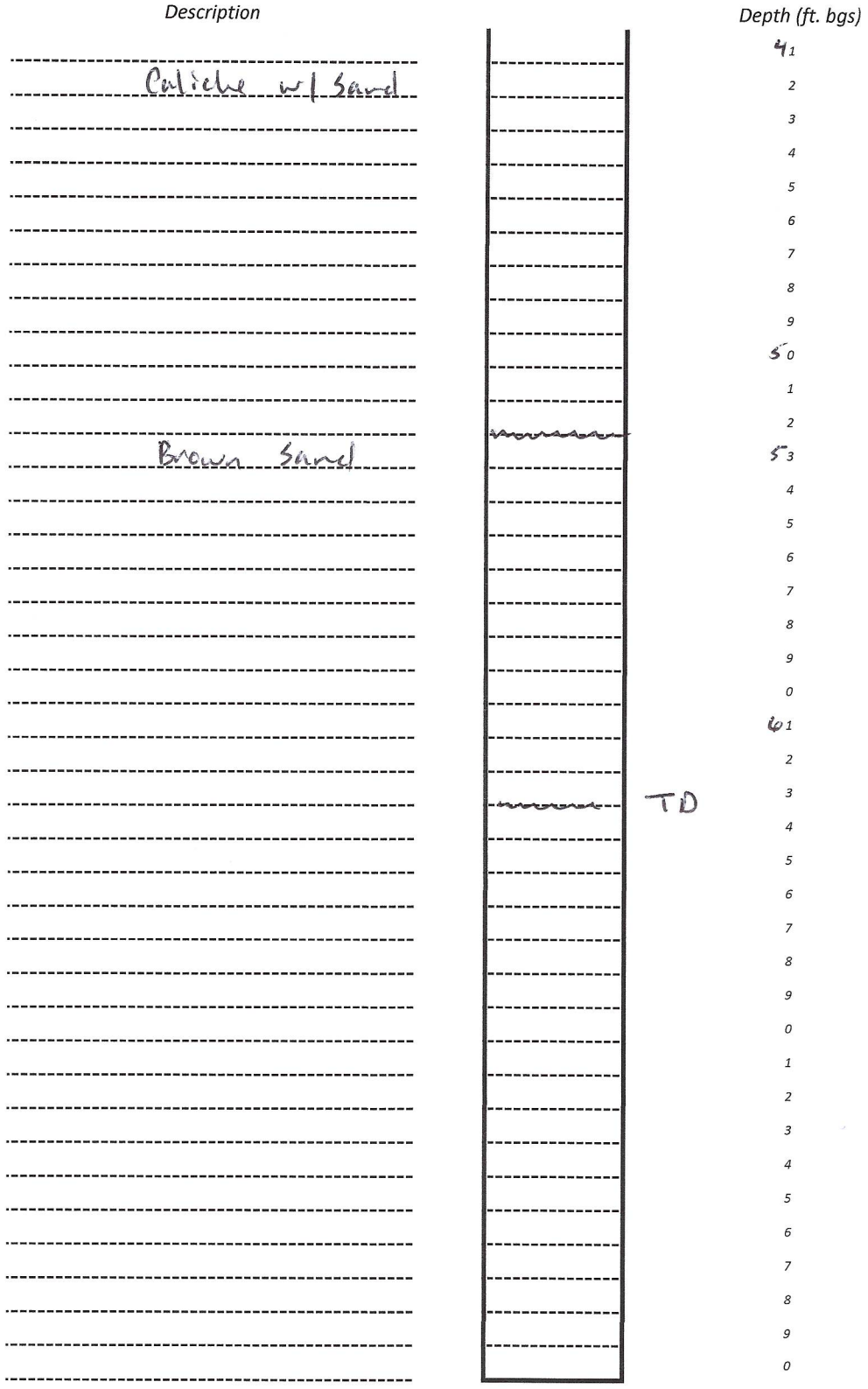
Date: 7/31/2018

Description	Depth (ft. bgs)
Top soil - Brown	1
Hardpan	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
Caliche w/ Sand	16
	17
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27
	28
	29
	30
	31
	32
	33
	34
	35
	36
	37
	38
	39
	40

SOIL PROFILE

Site Name: State "B"

Date: 7/31/2018



ATTACHMENT #6

Laboratory Analytical Reports

CARDINAL Laboratories

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

August 01, 2018

STEVE TAYLOR

CAPROCK SERVICES

P.O. BOX 457

LOVINGTON, NM 88260

RE: STATE B

Enclosed are the results of analyses for samples received by the laboratory on 07/31/18 15:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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 accreditated through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ SURFACE (H802084-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**2.79**	1.00	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	**38.3**	1.00	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	**53.6**	1.00	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	**212**	3.00	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	**307**	6.00	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *123 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**2530**	50.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**29500**	50.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**3790**	50.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *321 %* *41-142*

Surrogate: 1-Chlorooctadecane *1110 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 3' (H802084-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1260**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**389**	50.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**4400**	50.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**447**	50.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*140 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*243 %*	*37.6-147*

Sample ID: SP 1 @ 6' (H802084-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**480**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**1140**	50.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**6980**	50.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**837**	50.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*172 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*308 %*	*37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 9' (H802084-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**112**	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**1490**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**204**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*98.6 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*137 %*	*37.6-147*

Sample ID: SP 1 @ 12' (H802084-05)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**31.0**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*81.0 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*76.4 %*	*37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 15' (H802084-06)

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	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	**0.054**	0.050	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	**0.062**	0.050	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	**0.168**	0.150	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	<0.300	0.300	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**47.4**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *93.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *87.5 %* *37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 18' (H802084-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/01/2018	ND	432	108	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**21.2**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*93.5 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*88.0 %*	*37.6-147*

Sample ID: SP 1 @ 21' (H802084-08)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	<10.0	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*95.3 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*88.0 %*	*37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 24' (H802084-09)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**198**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**68.5**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*87.3 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*84.2 %*	*37.6-147*

Sample ID: SP 1 @ 27' (H802084-10)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**309**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**27.8**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*93.4 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*98.1 %*	*37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 1 @ 30' (H802084-11)

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	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	<0.050	0.050	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	<0.050	0.050	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	<0.150	0.150	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	<0.300	0.300	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	<10.0	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *90.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *82.1 %* *37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ SURFACE (H802084-12)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<1.00	1.00	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	**8.41**	1.00	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	**6.84**	1.00	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	**142**	3.00	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	**157**	6.00	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *123 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**877**	50.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**7500**	50.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**601**	50.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *156 %* *41-142*

Surrogate: 1-Chlorooctadecane *384 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 3' (H802084-13)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**352**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**2680**	50.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**12300**	50.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**1430**	50.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*247 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*503 %*	*37.6-147*

Sample ID: SP 2 @ 9' (H802084-14)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1410**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**33.3**	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	**556**	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	**45.0**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*93.7 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*113 %*	*37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 15' (H802084-15)

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	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	<0.050	0.050	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	<0.050	0.050	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	<0.150	0.150	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	<0.300	0.300	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1920**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	<10.0	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *88.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *84.5 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 21' (H802084-16)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2120**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	<10.0	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*88.0 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*83.3 %*	*37.6-147*

Sample ID: SP 2 @ 27' (H802084-17)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1360**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	184	91.9	200	5.30	
DRO >C10-C28*	<10.0	10.0	08/01/2018	ND	174	86.9	200	12.8	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*76.1 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*72.3 %*	*37.6-147*

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CARDINAL Laboratories

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 33' (H802084-18)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1090**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**30.0**	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**388**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	**68.8**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*81.7 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*89.9 %*	*37.6-147*

Sample ID: SP 2 @ 39' (H802084-19)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**720**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**66.4**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	**14.8**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*87.2 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*83.6 %*	*37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 45' (H802084-20)

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	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	<0.050	0.050	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	<0.050	0.050	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	<0.150	0.150	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	<0.300	0.300	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *109 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**29.1**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *89.7 %* *41-142*

Surrogate: 1-Chlorooctadecane *83.0 %* *37.6-147*

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 48' (H802084-21)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**49.6**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*90.6 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*83.7 %*	*37.6-147*

Sample ID: SP 2 @ 54' (H802084-22)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**34.5**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*88.6 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*82.8 %*	*37.6-147*

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CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 57' (H802084-23)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	201	100	200	2.41	
DRO >C10-C28*	**50.6**	10.0	08/01/2018	ND	199	99.6	200	5.75	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*82.8 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*78.0 %*	*37.6-147*

Sample ID: SP 2 @ 60' (H802084-24)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	190	95.2	200	4.97	
DRO >C10-C28*	**37.6**	10.0	08/01/2018	ND	204	102	200	1.15	
EXT DRO >C28-C36	<10.0	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane	*97.6 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*94.7 %*	*37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	07/31/2018	Sampling Date:	07/31/2018
Reported:	08/01/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	ENERGEN		

Sample ID: SP 2 @ 63' (H802084-25)

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	08/01/2018	ND	2.24	112	2.00	3.16	
Toluene*	<0.050	0.050	08/01/2018	ND	2.28	114	2.00	3.97	
Ethylbenzene*	<0.050	0.050	08/01/2018	ND	2.27	114	2.00	4.41	
Total Xylenes*	<0.150	0.150	08/01/2018	ND	6.67	111	6.00	4.50	
Total BTEX	<0.300	0.300	08/01/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	08/01/2018	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/01/2018	ND	190	95.2	200	4.97	
DRO >C10-C28*	**144**	10.0	08/01/2018	ND	204	102	200	1.15	
EXT DRO >C28-C36	**41.5**	10.0	08/01/2018	ND					

Surrogate: 1-Chlorooctane *99.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *98.4 %* *37.6-147*

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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.
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

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Caprock Services	**BILL TO**
Project Manager: Steve Taylor	P.O. #:
Address: PO Box 457	Company: Energen
City: Lovington State: NM Zip: 88260	Attn: Tommy York
Phone #: 575-704-2718 Fax #:	Address: HCR 4 Box 546 A
Project #: Project Owner: Energen	City: Seminole
Project Name: State "B"	State: TX Zip: 79360
Project Location:	Phone #: (432)-209-2483
Sampler Name: Steve Taylor	Fax #:

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Chlorides	TPH	B-Tex									
H8020284																										
1	SP1 Surface	G	1			X					X		7-31-18	8:15 AM	X	X	X									
2	SP1 @ 3'	G	1			X					X		7-31-18	8:30 AM	X	X										
3	SP1 @ 6'	G	1			X					X		7-31-18	8:45 AM	X	X										
4	SP1 @ 9'	G	1			X					X		7-31-18	9:05 AM	X	X										
5	SP1 @ 12'	G	1			X					X		7-31-18	9:10 AM	X	X										
6	SP1 @ 15'	G	1			X					X		7-31-18	9:15 AM	X	X	X									
7	SP1 @ 18'	G	1			X					X		7-31-18	9:20 AM	X	X										
8	SP1 @ 21'	G	1			X					X		7-31-18	9:30 AM	X	X										
9	SP1 @ 24'	G	1			X					X		7-31-18	9:30 AM	X	X										
10	SP1 @ 27'	G	1			X					X		7-31-18	9:35 AM	X	X										

Relinquished By:	Date: 7/31/18	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 3:25		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: RUSH!!
	Time:		
Delivered By: (Circle One) #75	Sample Condition: Cool ☐ Yes ☐ No / Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other: 4.3°C / 4.25°C			

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Caprock Services	BILL TO
Project Manager: Steve Taylor	P.O. #:
Address: PO Box 457	Company: Energen
City: Lovington State: NM Zip: 88260	Attn: Tommy York
Phone #: 575-704-2718 Fax #:	Address: HCR 4 Box 5464
Project #: Project Owner: Energen	City: Seminole
Project Name:	State: TX Zip: 79360
Project Location:	Phone #: 432-209-2483
Sampler Name: Steve Taylor	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chloride	TPH	B-Tex
H8D2084																	
11	SP1@ 30'	G	1			X					X		7-31-18	9:45 AM	X	X	X
12	SP1@ Surface	G	1			X					X		7-31-18	8:30 AM	X	X	X
13	SP2@ 3'	G	1			X					X		7-31-18	9:43 AM	X	X	
14	SP2@ 9'	G	1			X					X		7-31-18	9:45 AM	X	X	
15	SP2@ 15'	G	1			X					X		7-31-18	9:50 AM	X	X	X
16	SP2@ 21'	G	1			X					X		7-31-18	9:58 AM	X	X	
17	SP2@ 27'	G	1			X					X		7-31-18	10:05 AM	X	X	
18	SP2@ 33'	G	1			X					X		7-31-18	10:30 AM	X	X	
19	SP2@ 39'	G	1			X					X		7-31-18	10:36 AM	X	X	
20	SP2@ 45'	G	1			X					X		7-31-18	10:50 AM	X	X	X

Relinquished By:	Date: 7/31/18	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 3:35		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Rush!!
	Time:		
Delivered By: (Circle One) #75	Sample Condition: Cool ☐ Yes ☐ No / Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other: 4.3°C / 4.2°C			

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Caprock Services	**BILL TO**
Project Manager: Steve Taylor	P.O. #:
Address: PO Box 457	Company: Energen
City: Lovington State: NM Zip: 88260	Attn: Tommy York
Phone #: 575-704-2718 Fax #:	Address: HCR4 546 H
Project #: Project Owner: Energen	City: Seminole
Project Name: State "B"	State: Tx Zip: 7436
Project Location:	Phone #: 432-209-2483
Sampler Name: Steve Taylor	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chloride	TPH	B-Tex									
H902084																										
21	SP2 @ 48'	6	1			X					X		7-31-18	10:55 AM	X	X										
~~22~~	~~SP2 @ 51'~~	6	1			X					X		7-31-18	11:00 AM	X	X			NO	51'	of	T.				
22 23	SP2 @ 54'	6	1			X					X		7-31-18	11:10 AM	X	X										
23 24	SP2 @ 57'	6	1			X					X		7-31-18	11:15 AM	X	X										
24 25	SP2 @ 60'	6	1			X					X		7-31-18	11:20 AM	X	X										
25 26	SP2 @ 63'	6	1			X					X		7-31-18	11:30 AM	X	X	X									

Relinquished By:	Date: 7/31/18	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Time: 3:25	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) #75	Date:	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other: 4.3°C / 4.2°C	Time:		REMARKS: Rush!!

CARDINAL Laboratories

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

November 08, 2018

STEVE TAYLOR

CAPROCK SERVICES

P.O. BOX 457

LOVINGTON, NM 88260

RE: STATE B

Enclosed are the results of analyses for samples received by the laboratory on 11/02/18 10:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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 accreditated through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	11/02/2018	Sampling Date:	11/02/2018
Reported:	11/08/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	ENERGEN		

Sample ID: EAST @ 1' (H803144-01)

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	11/07/2018	ND	2.07	104	2.00	0.283	
Toluene*	<0.050	0.050	11/07/2018	ND	1.97	98.7	2.00	0.860	
Ethylbenzene*	<0.050	0.050	11/07/2018	ND	1.81	90.6	2.00	0.418	
Total Xylenes*	**0.199**	0.150	11/07/2018	ND	5.82	97.1	6.00	0.330	
Total BTEX	<0.300	0.300	11/07/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.1 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	11/06/2018	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**13.4**	10.0	11/03/2018	ND	218	109	200	8.04	
DRO >C10-C28*	**406**	10.0	11/03/2018	ND	224	112	200	4.73	
EXT DRO >C28-C36	**62.5**	10.0	11/03/2018	ND					

Surrogate: 1-Chlorooctane *95.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *98.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	11/02/2018	Sampling Date:	11/02/2018
Reported:	11/08/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	ENERGEN		

Sample ID: NORTH @ 1' (H803144-02)

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	11/07/2018	ND	2.07	104	2.00	0.283	
Toluene*	<0.050	0.050	11/07/2018	ND	1.97	98.7	2.00	0.860	
Ethylbenzene*	**0.085**	0.050	11/07/2018	ND	1.81	90.6	2.00	0.418	
Total Xylenes*	**0.247**	0.150	11/07/2018	ND	5.82	97.1	6.00	0.330	
Total BTEX	**0.332**	0.300	11/07/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**480**	16.0	11/06/2018	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**11.4**	10.0	11/03/2018	ND	218	109	200	8.04	
DRO >C10-C28*	**2300**	10.0	11/03/2018	ND	224	112	200	4.73	
EXT DRO >C28-C36	**482**	10.0	11/03/2018	ND					

Surrogate: 1-Chlorooctane *95.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *173 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	11/02/2018	Sampling Date:	11/02/2018
Reported:	11/08/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	ENERGEN		

Sample ID: WEST@ 1' (H803144-03)

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	11/07/2018	ND	2.07	104	2.00	0.283	
Toluene*	<0.050	0.050	11/07/2018	ND	1.97	98.7	2.00	0.860	
Ethylbenzene*	<0.050	0.050	11/07/2018	ND	1.81	90.6	2.00	0.418	
Total Xylenes*	<0.150	0.150	11/07/2018	ND	5.82	97.1	6.00	0.330	
Total BTEX	<0.300	0.300	11/07/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.0 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1060**	16.0	11/06/2018	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/03/2018	ND	218	109	200	8.04	
DRO >C10-C28*	**60.1**	10.0	11/03/2018	ND	224	112	200	4.73	
EXT DRO >C28-C36	**36.6**	10.0	11/03/2018	ND					

Surrogate: 1-Chlorooctane *100 %* *41-142*

Surrogate: 1-Chlorooctadecane *92.5 %* *37.6-147*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

CAPROCK SERVICES
STEVE TAYLOR
P.O. BOX 457
LOVINGTON NM, 88260
Fax To:

Received:	11/02/2018	Sampling Date:	11/02/2018
Reported:	11/08/2018	Sampling Type:	Soil
Project Name:	STATE B	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	ENERGEN		

Sample ID: SOUTH @ 1' (H803144-04)

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	11/07/2018	ND	2.07	104	2.00	0.283	
Toluene*	<0.050	0.050	11/07/2018	ND	1.97	98.7	2.00	0.860	
Ethylbenzene*	<0.050	0.050	11/07/2018	ND	1.81	90.6	2.00	0.418	
Total Xylenes*	<0.150	0.150	11/07/2018	ND	5.82	97.1	6.00	0.330	
Total BTEX	<0.300	0.300	11/07/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.2 %* *69.8-142*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3080**	16.0	11/06/2018	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/05/2018	ND	184	92.2	200	2.91	
DRO >C10-C28*	**195**	10.0	11/05/2018	ND	208	104	200	1.90	
EXT DRO >C28-C36	**119**	10.0	11/05/2018	ND					

Surrogate: 1-Chlorooctane *86.4 %* *41-142*

Surrogate: 1-Chlorooctadecane *91.6 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Caprock Services	**BILL TO**
Project Manager: Steve Taylor	P.O. #:
Address: P.O. Box 457	Company: Energen
City: Lovington State: NM Zip: 88260	Attn: Tommy York
Phone #: (575) 704-2718 Fax #:	Address: HCR4 Box 546A
Project #: Project Owner:	City: Seminole
Project Name:	State: TX Zip: 79360
Project Location: State B	Phone #: (432) 209-2483
Sampler Name: Matt Taylor	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chloride	TPH	B-Tex
H803144 1	East @ 2'	G	1			X					X		11-2-18	8:00 AM	X	X	X
2	North @ 2'	G	1			X					X		11-2-18	8:10 AM	X	X	X
3	West @ 2'	G	1			X					X		11-2-18	8:15 AM	X	X	X
4	South @ 2'	G	1			X					X		11-2-18	8:20 AM	X	X	X

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 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 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: Matt Taylor	Date: 11-2-18 Time: 10:03 AM	Received By: Tamara Oldaker	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 10.1°C #97		Sample Condition Cool Intact ☐ Yes ☐ No / ☑ Yes ☐ No — CHECKED BY: (Initials) TO	REMARKS:

ATTACHMENT #7

Photographic Log

PHOTOGRAPHIC LOG

Figure 1 View of surface staining from the initial release, facing East.

Figure 2 View of surface staining from the initial release, facing Northwest.

PHOTOGRAPHIC LOG

Figure 3 View of the affected area upon removal of the above-ground tanks.

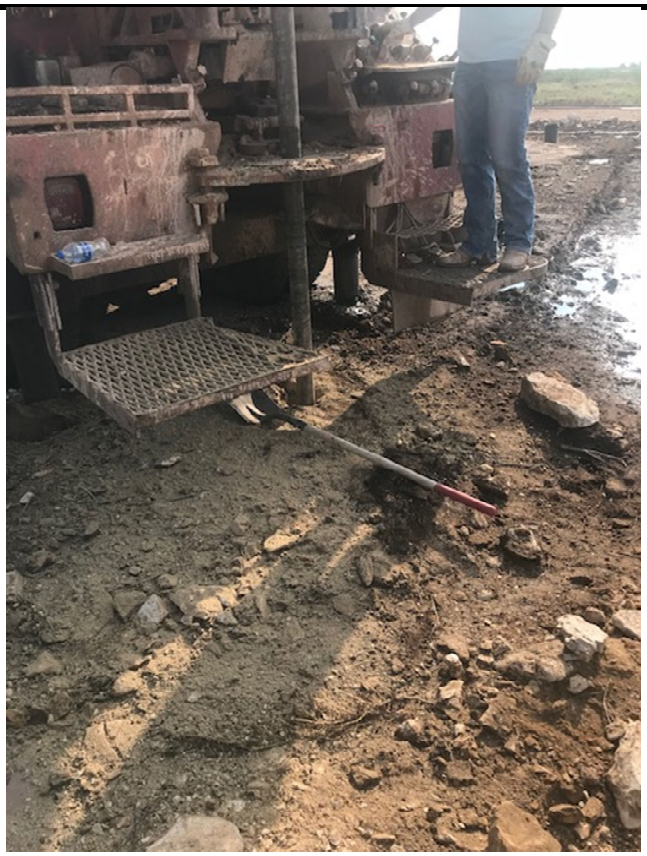


Figure 4 View of drilling activities.

ATTACHMENT #8

Release Notification (FORM 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

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

[x] Initial Report [ ] Final Report

Name of Company Energen Resources Corporation	Contact Andy Cobb
Address 3510 N A Street, Midland, TX 79705	Telephone No. 432-686-3599
Facility Name State B	Facility Type Oil and Gas Production Facility

Surface Owner Dan Field/Branch Ranch	Mineral Owner State of New Mexico	API No. 3002502709

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	1	16S	35E	4610	FSL	2301	FEL	LEA

Latitude 32.9565239 Longitude -103.4101334 NAD83

NATURE OF RELEASE

Type of Release Crude Oil	Volume of Release 136 barrels	Volume Recovered 0
Source of Release Oil Tank	Date and Hour of Occurrence 5/22/18	Date and Hour of Discovery 6/1/18
Was Immediate Notice Given? [ ] Yes [x] No [ ] Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? [ ] Yes [x] No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By CHernandez at 2:31 pm, Jun 04, 2018

Describe Cause of Problem and Remedial Action Taken.*
Corrosion caused a hole to develop in the oil tank and release fluid. The fluid was not immediately discovered.

Describe Area Affected and Cleanup Action Taken.*
The area inside the berm was affected and remediation will be as soon as possible.

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: Andy Cobb	OIL CONSERVATION DIVISION
Printed Name: Andy Cobb	Approved by Environmental Specialist: CH
Title: Director EH&S	Approval Date: 6/4/2018 Expiration Date:
E-mail Address: andy.cobb@energen.com	Conditions of Approval: See attached directive Attached [x]
Date: 6/4/2018 Phone: 432-686-3599	

* Attach Additional Sheets If Necessary

1RP-5082 nCH1815552862

pCH1815554047

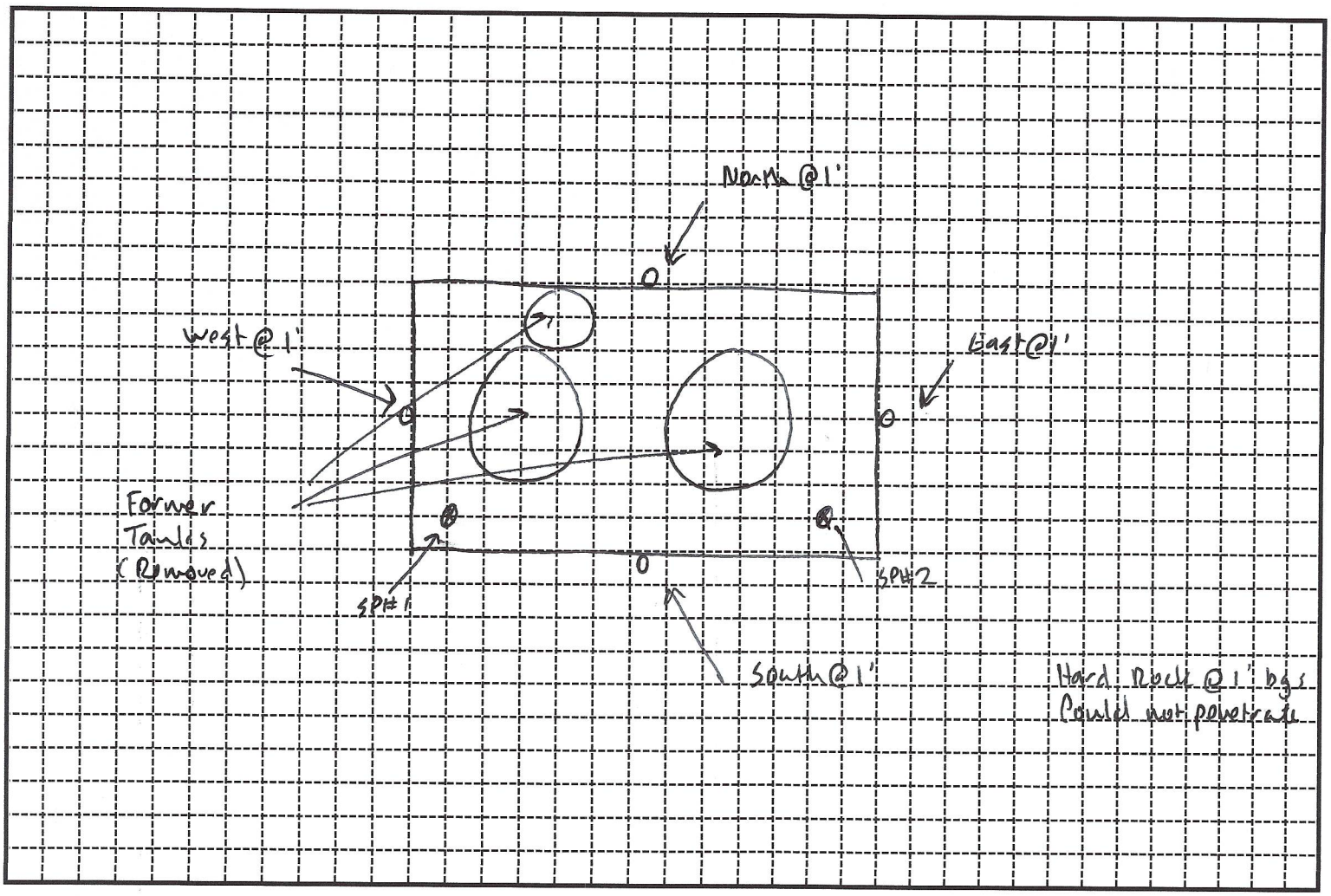
ATTACHMENT #9

Field Data

FIELD NOTES

Site Name: State B

Date: 11/2/2018



Hard Rock @ 1' bgs. Could not penetrate

Field ID	Odor/PID	Chloride
North @1'	None	330
East @1'	Slight	<120
South @1'	None	2,652
West @1'	None	942

Field ID	Odor/PID	Chloride

Field ID	Odor/PID	Chloride

Field ID	Odor/PID	Chloride

Field ID	Odor/PID	Chloride

Field ID	Odor/PID	Chloride