1001 Noble Energy Way
Houston, TX 77070

Tel: 281.872.3100
nblenergy.com

noble energy

southwest royalties, inc.
a subsidiary of noble energy, inc.

September 29, 2017

Sent via email to Crystal.Weaver@state.nm.us and Mike.Bratcher@state.nm.us

NMOCD
Crystal Weaver, Environmental Specialist
Mike Bratcher, Environmental Specialist
811 S. 1st Street
Artesia, NM 88210

Dear Ms. Weaver and Mr. Bratcher,

Southwest Royalties, Inc. respectfully submits the enclosed Release Characterization Report and Remediation Work Plan for release site 2RP-4322.

Should you have any questions or concerns, please contact me at 832-427-7652 or jonathan.pennington@nblenergy.com.

Sincerely,

Jonathan Pennington
Environmental Coordinator

CC: Eric Garcia, Republic Backhoe Service LLC

:Enclosure

REPUBLIC BACKHOE SERVICE LLC

Crystal Weaver & Mike Bratcher
NMOCD District II
811 S. First St.
Artesia, NM 88210

September 29, 2017

Dear Ms. Weaver and Mr. Bratcher,

Subject: Release Characterization Report and Remediation Work Plan
Location: Southwest Royalties, Inc.
POGO 36 State #1 Battery
NMOCD Remediation Case #2RP-4322

Southwest Royalties, Inc. has contracted Republic Backhoe Service LLC (Republic) to perform a site assessment and remediation services at the above referenced location. The results of our spill summary and proposed remediation activities consist of the following.

Incident Date

June 25, 2017

Incident Description

On June 25, 2017 the pumper observed the Produced Water Tank overflowing at the battery. The pumper then manually turned off the transfer pump at the North Bushy Draw 35 Battery. The cause of the problem was a faulty low level shut off switch at the North Bushy Draw 35 Battery. An electrician was called out to replace the faulty low level switch. The produced water quickly soaked into the ground before a vacuum truck could be called to recover any of the release. A total of 8 barrels of produced water was released. The release of 8 barrels stayed inside of the tank battery containment. The size of the impacted area is approximately 4,300 square feet. A C-141 form was filled out and emailed to NMOCD District II on July 31, 2017 (See Attachment I).

Background Information

The Pogo 36 #1 Battery is located approximately twelve (12) miles southeast of Malaga, New Mexico. The legal location for the Battery is Unit C Section 36 Township 25 South and Range 29 East in Eddy County, New Mexico. The spill site lies within the berms of the Pogo 36 State #1 Battery location with the following GPS Coordinates: Latitude: 32.085529 North Longitude: -103.945357 West. (See Site Map attached in Appendix I and II).

According to the US Department of Agriculture Natural Resource Conservation Service Web Soil Survey, the surface soils are comprised of Upton-Simona Complex with 1 to 15% slope, eroded. The Upton-Simona Complex is classified as being gravelly fine sandy loam, and gravelly loam. Also, Upton-Simona Complex's permeability is moderately rapid at 2.50" to 5.00" per hour, which allowed the produced water to vertically migrate in the surface soil. The local surface geology is described as Quaternary Eolian and Piedmont deposits. The sub-surface geology is comprised of Brown fine Sand (5' bgs), Pink Sandstone with Carbonate Cement (10'-25' bgs), light brown fine sand with 5% ¼" gravel (30' bgs), light yellow silty to fine grain sand (38' and 40' bgs) and brown/yellow clayey sand (45' and 50'). The ground water is protected by the moderate permeability light brown sandstone at 30'. Also, it is protected by a low permeability brown/yellow clayey sand at (45' and 50').

Watercourses in the area are dry except for infrequent flows in response to major precipitation events. According to the New Mexico Office of the State Engineer's (OSE) Water Rights and Points of Diversion databases, no water wells are located within a two mile radius. The nearest well is located approximately 3 miles away with ground water greater than 175' below ground surface (bgs). (See Appendix IV and V for groundwater data)

Regulatory Requirements

New Mexico Oil Conservation Division evaluates each release of produced water or oil according to the Recommended Remediation Action Levels (RRAL). NMOCD uses RRALs as a ranking system when evaluating each spill in terms of Depth to Groundwater, Distance to Surface Water, and Distance to Wellhead Protection Area.

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

Depth to ground water: 178' (50'-99')	**0**
Wellhead Protection Area: > 1000'	**0**
Distance to Surface Water Body: > 1000'	**0**

Actions Taken

06/27/2017 through 06/29/2017 - A crew and backhoe went to the location and removed soil saturated with produced water from around the tanks. A total of 40 yards were hauled to NMOCD Approved Disposal Site R360. On 6/29/2017

6/29/2017 - Republic used a hand auger to perform four field samples. (See Appendix VI). Field Samples POGO 1, POGO 2, POGO 3, POGO 4 were collected at 4' bgs. All soil samples were performed by Republic Backhoe Service LLC personnel wearing clean nitrile groves. Field Samples were conducted at the following GPS Coordinates:

Pogo-1 32.085565N, -103.945296;

Pogo-2 32.085574N, -103.945449;

Pogo-3 32.0858489N, -103.945449W; and

Pogo-4 32.085470N, -103.945285W. (See Table below for Results)

On 9/20/2017 and 9/22/2017 Big Dog Drill Inc. was contracted to drill a bore hole at the Pogo 36 State #1 Battery. Based on field sample results conducted on 6/29/2017, one bore hole was drilled to satisfy the vertical delineation requirements. The bore hole (1) was drilled in the pooling area inside of the battery bermed area at the following GPS Coordinates 32.085485N, -103.945329W (See Appendix VI). Samples were taken at 5', 10', 15', 20', 25', 30', 38' 40', 45', and 50' bgs. The soil samples were placed in laboratory provided sample containers and transported to Cardinal Labs in Hobbs, NM for analysis. The chlorides samples were analyzed per Method SM4500C1-B.

Laboratory Results

Sample Date	Date Analyzed	Sample ID	Depth (feet)	Chlorides (mg/kg)	TPH (mg/kg)	BTEX (mg/kg)	LITHOLOGY	USCS
09/19/2017	09/22/2017	BAT-5	5	2200	<10.0	<0.300	Pale Brown fine Sand	SP
09/19/2017	09/22/2017	BAT-10	10	12800	<10.0	<0.300	Pink Sandstone w/ Carbonate Cement	SP
09/19/2017	09/22/2017	BAT-15	15	10700	<10.0	<0.300	Pink Sandstone w/ Carbonate Cement	SP
09/19/2017	09/21/2017	BAT-20	20	6930	NA	NA	Pink Sand Stone w/ Carbonate Cement	SP
09/19/2017	09/21/2017	BAT-25	25	7200	NA	NA	Pink Sandstone with Carbonate Cement	SP
09/19/2017	09/21/2017	BAT-30	30	6660	NA	NA	Lt. Brown fine Sand with 5% ¼" gravel	SM
09/19/2017	09/21/2017	BAT-38	38	2560	NA	NA	Lt. Yellow Silty to Fine grained Sand	SM
09/19/2017	09/21/2017	BAT-40	40	1220	NA	NA	Lt. Yellow Silty to Fine grained Sand	SM
09/22/2017	09/25/2017	BAT-45	45	224	NA	NA	Brown/yellow Clayey Sand	SC
09/22/2017	09/25/2017	BAT-50	50	112	NA	NA	Brown/yellow Clayey Sand	SC
06/29/2017	06/29/2017	Pogo-1	4	640	NA	NA		
06/29/2017	06/29/2017	Pogo-2	4	1624	NA	NA		
06/29/2017	06/29/2017	Pogo-3	4	3380	NA	NA		
06/29/2017	06/29/2017	Pogo-4	4	3780	NA	NA		

Notes: NA = Not Analyzed.

See Appendix VI for Site sample points.

Proposal

The Pogo 36 State #1 is a Salt Water Injection Well that disposes of water from the North Brushy Draw 35 Battery, Dunes 36 State #1, and the Dunes 36 State #2. According to the groundwater data, the release poses little threat to groundwater contamination in the area. The depth to ground water in the area is greater than 175' bgs. The Site Delineation concluded that there are no issues with TPH or BTEX. Chloride contamination is the only issue at the site. Also, sample results indicate that chloride concentrations in soil are below NMOCD permissible levels at 45' bgs. Southwest Royalties, Inc. respectfully requests that NMOCD will consider delaying additional remediation activities at the site until the end of life of the battery.

Republic Backhoe Service LLC evaluated the potential to remediate the spill area while allowing operation of the battery to continue at the same time during remediation; however, this work plan was found to be unsafe and the remediation incomplete, as described below. As stated in the Background Information, the surface soil is comprised of Upton-Simona Complex. The Upton-Simona Complex is classified as being gravelly fine sandy loam, and gravelly loam. According to the Unified Soil Classification System (USCS), the Upton-Simona Complex is classified as SP-Sand with Poor Gradation. This classification is useful in engineering and geology. The US Occupational Safety and Health Administration relies on the USCS to help protect workers from injury when working in excavations and trenches. OSHA uses 3 soil classifications based on strength and other factors which affect the stability of cut slopes. According to the guidelines set by OSHA the Pogo 36 State #1 Battery sits on Type C Soil. According to OSHA, Type C Soil consists of granular soils or cohesive soils with unconfined compressive strength between .5 tsf and 1.5 tsf. Type C Soils are considered low strength resulting in unstable excavations usually resulting in cave-ins. The weight of the Produced Water Tank and that of the Oil Tank will only increase the probability of cave-ins if excavation takes place around the tanks. Type C Soils are susceptible to erosion from wind and rain thus making excavation around the tanks with shoring and shielding systems unsafe and a nonviable option. Excavations taking place in Type C Soils require a larger work site to account for elongated slopes of 34°. This would require disturbing vegetation outside of the leased well pad. The end result of this remediation would likely be only a partial remediation that will still need attention after the end of life of the battery. (See Appendix VII for List of Equipment at the Pogo 36 State #1 Battery)

In addition, temporarily shutting down the facility to remove all equipment and fully remediate the site would also likely require shutting down the North Brushy Draw 35 Battery, Dunes 36 State #1 Well, and Dune 36 State #2 Well. This would cause an undue burden to the company, as these are low oil volume wells that require operation to remain economically viable.

According to the groundwater data, the release poses little threat to groundwater in the area. The depth to ground water in the area is greater than 175' bgs, whereas sample results indicate that chloride concentrations in soil are below NMOCD permissible levels at 45' bgs. Sample results also indicated no detections of TPH or BTEX. Therefore, Southwest Royalties, Inc.

respectfully requests that NMOCD will consider delaying additional remediation activities at the site until the end of life of the battery.

IF you have any questions please call (575) 631-1031.

Eric Garcia

Republic Backhoe Services LLC

Appendix I
C-141

NM OIL CONSERVATION
ARTESIA DISTRICT
JUL 31 2017
RECEIVED

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

nAB1721931827 21355 Southwest Royalties

OPERATOR ☒ Initial Report ☐ Final Report

Name of Company Noble Permian LLC	Contact Dave Dunlap
Address 1001 Noble Energy Way Houston Tx 77070 21355	Telephone No. (575) 390-2062
Facility Name Pogo 36 State #1	Facility Type Battery

Surface Owner State	Mineral Owner State	API No. 30-015-27398-00-00

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	36	25S	29E	2310	South	330	West	Eddy

Latitude 32.085529 Longitude -103.945357 NAD83

NATURE OF RELEASE

Type of Release P/W	Volume of Release 8 Barrels / Volume Recovered 0
Source of Release P/W Tank	Date and Hour of Occurrence / Date and Hour of Discovery 6/25/17 @ 11:55AM
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? N/A
By Whom? N/A	Date and Hour N/A
Was a Watercourse Reached? ☐ Yes ☒ 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.*

On 6/25/2017 at 11:55 AM the pumper noticed the water tank at the battery running over. The pumper then manually turned off the transfer pump at the North Bushy Draw 35 Battery. The cause of the problem was a faulty low level kill switch for the transfer pump at the North Bushy Draw 35 Battery. The low level kill switch was replaced. Then on Monday 6/26/2017 a crew went to the location to pressure wash the tanks and stairway. Although no fluids were vacuumed a total of 40 yards of soil were removed from the battery area and hauled to R360.

Describe Area Affected and Cleanup Action Taken.*

The release stayed inside of the containment area.A crew and backhoe removed dirty P/W saturated soil from around the tanks.Hauled 40 yards of contaminated soil to NMOCD approved site R360 (6-27-2017 through 6-29-2017). NM OSE search did not return any water wells within 2 miles. The closest well is 2.72 miles away with well records indicating that groundwater is encountered at a depth of 770'. Groundwater contamination is highly unlikely at the location, and ask that a full site characterization be postponed until the battery is permanently terminated. ← DENIED

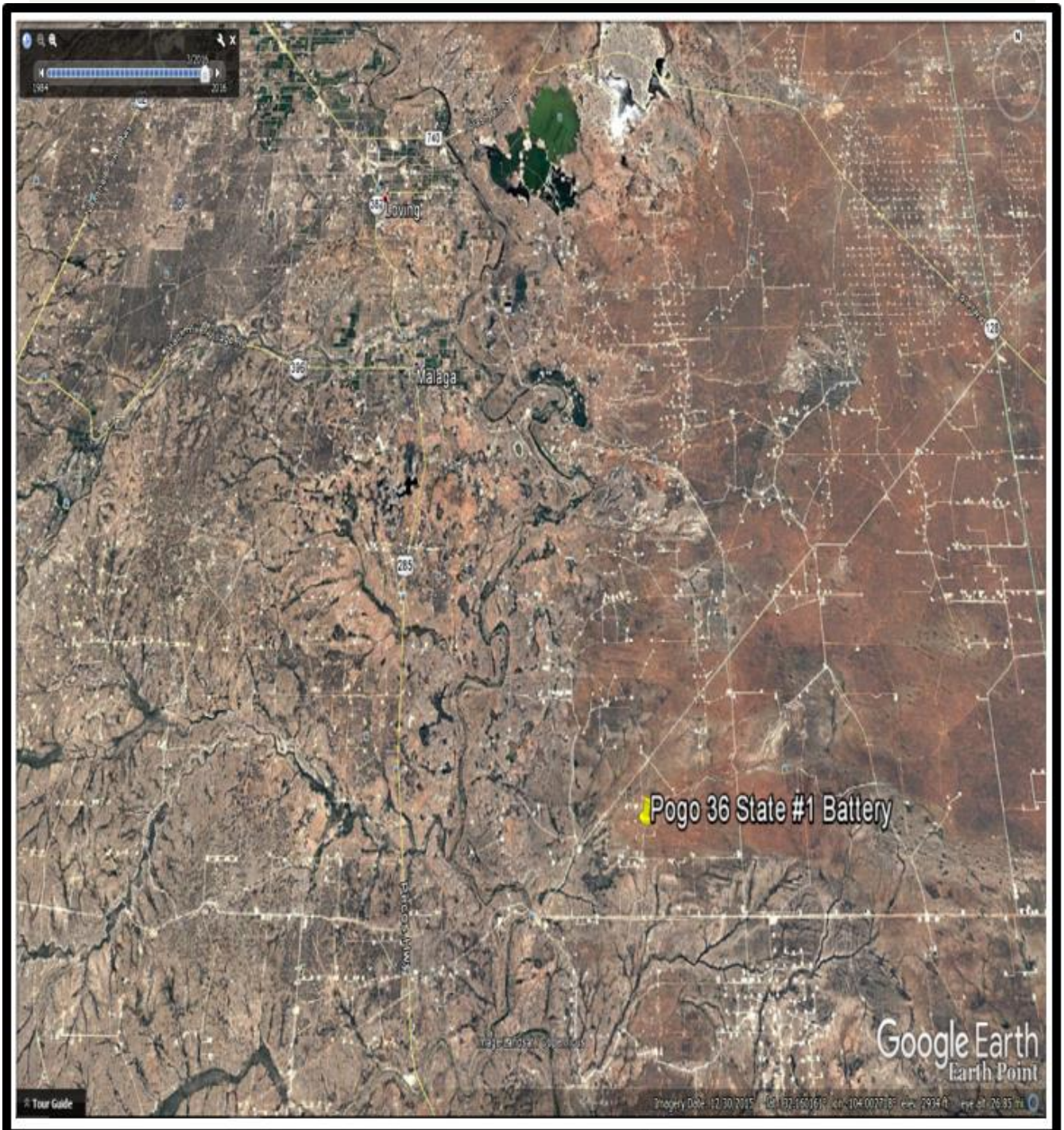
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger 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:	OIL CONSERVATION DIVISION
Printed Name: DAVE DUNLAP	Approved by Environmental Specialist: According to NMOCD NMOCD
Title: Foreman	Process Approval Date: 8/7/17 Expiration Date: N/A
E-mail Address: ddunlap@[illegible]	Conditions of Approval: See attached Attached ☒
Date: 7-10-17 Phone: 575-390-2062	

* Attach Additional Sheets If Necessary

Delineation Required 2RP-4322

Appendix II
Site Map 1



Southwest Royalties Inc. **Pogo 36 State #1 Battery Spill** **Eddy County, NM** **GPS 32.085529N,-103.945357W**	**Republic Backhoe Service LLC** **47 E. Dickens Rd.** **Lovington, NM 88260**	**Appendix II** **Site Map 1**

Appendix III
Site Map 2

Southwest Royalties Inc. Pogo 36 State #1 Battery Spill Eddy County, NM GPS 32.085529N,-103.945357W	Republic Backhoe Service LLC 47 E. Dickens Rd. Lovington, NM 88260	**Appendix III** **Site Map 2**

Appendix IV
Water Well Locations

Southwest Royalties Inc. **Pogo 36 State #1 Battery Spill** **Eddy County, NM** **GPS 32.085529N,-103.945357W**	**Republic Backhoe Service LLC** **47 E. Dickens Rd.** **Lovington, NM 88260**	**Appendix IV** **Water Wells**

Appendix V
Groundwater Data

Mozilla Firefox

nmwrrs.ose.state.nm.us/nmwrrs/ReportProxy?queryData={"report"%3A"waterColumn"%2C%0A"BasinDiv"%3A"true"%2C%0A"Basin"%3A""%2C%0A"County"%3

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	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 01360		C	ED	4	3	3	05	26S	30E	602997	3548152	3981	770	173	597
C 01361			ED	3	4	3	05	26S	30E	603240	3548157	4187	775	184	591

Average Depth to Water: **178 feet**

Minimum Depth: **173 feet**

Maximum Depth: **184 feet**

Record Count: 2

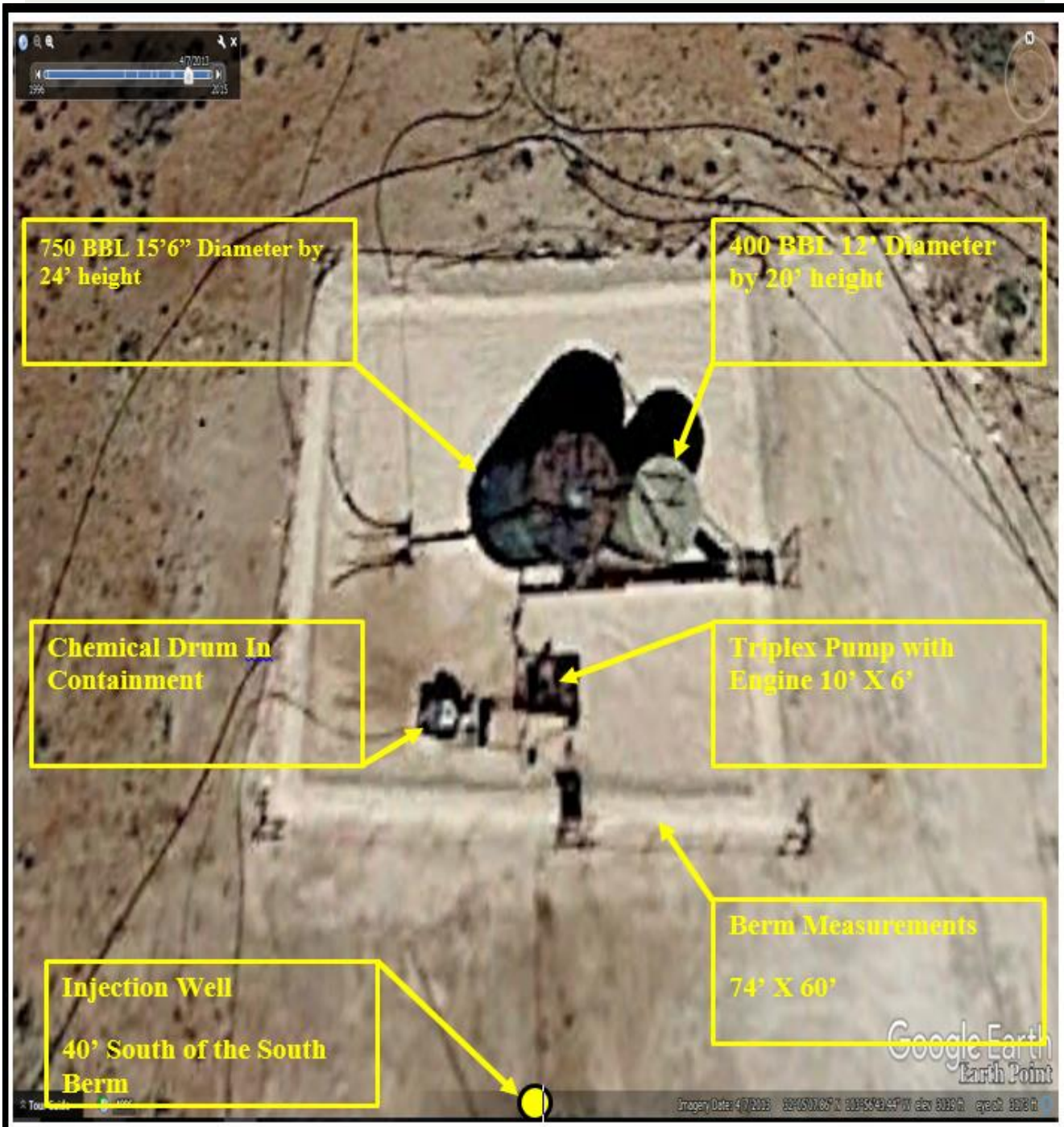
UTMNAD83 Radius Search (in meters):

Easting (X): 599631 **Northing (Y):** 3550280 **Radius:** 5000

Appendix VI
Sampling Map

Southwest Royalties Inc. **Pogo 36 State #1 Battery Spill** **Eddy County, NM** **GPS 32.085529N,-103.945357W**	**Republic Backhoe Service LLC** **47 E. Dickens Rd.** **Lovington, NM 88260**	**Appendix VI** **Field Samples** **Bore Hole**

Appendix VII
Battery Equipment



Southwest Royalties Inc. Pogo 36 State #1 Battery Spill Eddy County, NM GPS 32.085529N,-103.945357W	Republic Backhoe Service LLC 47 E. Dickens Rd. Lovington, NM 88260	**Appendix VII** **List of Equipment**

Appendix VII
Lab Analysis

CARDINAL Laboratories

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

September 26, 2017

ERIC GARCIA

REPUBLIC BACKHOE SERVICES

47 E. DICKENS RD

LOVINGTON, NM 88260

RE: POGO 36 STATE #1 BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 09/25/17 12:12.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

REPUBLIC BACKHOE SERVICES
ERIC GARCIA
47 E. DICKENS RD
LOVINGTON NM, 88260
Fax To: NONE

Received:	09/25/2017	Sampling Date:	09/22/2017
Reported:	09/26/2017	Sampling Type:	Soil
Project Name:	POGO 36 STATE #1 BATTERY	Sampling Condition:	** (See Notes)
Project Number:	2RP-4322	Sample Received By:	Celey D. Keene
Project Location:	NOBLE PERMIAN		

Sample ID: BAT-45 (H702602-01)

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	09/25/2017	ND	400	100	400	3.92	

Sample ID: BAT-50 (H702602-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	09/25/2017	ND	400	100	400	3.92	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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

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: Republic Bucklev Service LLC	**BILL TO**
Project Manager: Eric Garcia	P.O. #:
Address: 47 E. Dickens	Company: Noble Permian LLC
City: Covington State: NM Zip: 88260	Attn: Jonathan Pennington
Phone #: 575-631-0131 Fax #:	Address: 1001 Noble Energy Way
Project #: Project Owner: Noble Permian LLC	City: Houston
Project Name: Pogo 36 state #1	State: TX Zip: 77070
Project Location: Pogo 36 State #1	Phone #:
Sampler Name: Eric Garcia	Fax #:

ANALYSIS REQUEST

Lab I.D. (FOR LAB USE ONLY)	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	Cl
H702602															
1	BAT-45	G	1			✓							9-22	2:15pm	✓
2	BAT-50	G	1			✓							9-22	3:05pm	✓

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: Eric Garcia	Date: 9-25-17 Time: 12:12 pm	Received By: Haley Curbow	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) 19.8°C / 19.55°C #75	Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) HC	REMARKS: Email Eric garcia. 67@hotmail.com Rush
Sampler - UPS - Bus - Other:			

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

CARDINAL Laboratories

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

September 25, 2017

ERIC GARCIA

REPUBLIC BACKHOE SERVICES

47 E. DICKENS RD

LOVINGTON, NM 88260

RE: POGO 36 STATE #1 BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 09/20/17 11:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. 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.

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Method EPA 552.2	Haloacetic Acids (HAA-5)
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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

REPUBLIC BACKHOE SERVICES
ERIC GARCIA
47 E. DICKENS RD
LOVINGTON NM, 88260
Fax To: NONE

Received:	09/20/2017	Sampling Date:	09/19/2017
Reported:	09/25/2017	Sampling Type:	Soil
Project Name:	POGO 36 STATE #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	2RP-4322	Sample Received By:	Celey D. Keene
Project Location:	NOBLE PERMIAN		

Sample ID: BAT-5 (H702540-01)

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	09/22/2017	ND	2.00	100	2.00	1.00	
Toluene*	<0.050	0.050	09/22/2017	ND	1.86	93.1	2.00	0.535	
Ethylbenzene*	<0.050	0.050	09/22/2017	ND	1.94	96.9	2.00	0.366	
Total Xylenes*	<0.150	0.150	09/22/2017	ND	5.84	97.3	6.00	0.325	
Total BTEX	<0.300	0.300	09/22/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *72-148*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2200**	16.0	09/21/2017	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	09/22/2017	ND	197	98.5	200	1.81	
DRO >C10-C28	<10.0	10.0	09/22/2017	ND	214	107	200	1.01	
EXT DRO >C28-C36	<10.0	10.0	09/22/2017	ND					

Surrogate: 1-Chlorooctane *76.1 %* *28.3-164*

Surrogate: 1-Chlorooctadecane *80.8 %* *34.7-157*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

REPUBLIC BACKHOE SERVICES
ERIC GARCIA
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Fax To: NONE

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Project Name:	POGO 36 STATE #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	2RP-4322	Sample Received By:	Celey D. Keene
Project Location:	NOBLE PERMIAN		

Sample ID: BAT-10 (H702540-02)

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	09/22/2017	ND	2.00	100	2.00	1.00	
Toluene*	<0.050	0.050	09/22/2017	ND	1.86	93.1	2.00	0.535	
Ethylbenzene*	<0.050	0.050	09/22/2017	ND	1.94	96.9	2.00	0.366	
Total Xylenes*	<0.150	0.150	09/22/2017	ND	5.84	97.3	6.00	0.325	
Total BTEX	<0.300	0.300	09/22/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *72-148*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**12800**	16.0	09/21/2017	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	09/22/2017	ND	197	98.5	200	1.81	
DRO >C10-C28	<10.0	10.0	09/22/2017	ND	214	107	200	1.01	
EXT DRO >C28-C36	<10.0	10.0	09/22/2017	ND					

Surrogate: 1-Chlorooctane *81.4 %* *28.3-164*

Surrogate: 1-Chlorooctadecane *82.7 %* *34.7-157*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

REPUBLIC BACKHOE SERVICES
ERIC GARCIA
47 E. DICKENS RD
LOVINGTON NM, 88260
Fax To: NONE

Received:	09/20/2017	Sampling Date:	09/19/2017
Reported:	09/25/2017	Sampling Type:	Soil
Project Name:	POGO 36 STATE #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	2RP-4322	Sample Received By:	Celey D. Keene
Project Location:	NOBLE PERMIAN		

Sample ID: BAT-15 (H702540-03)

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	09/22/2017	ND	2.00	100	2.00	1.00	
Toluene*	<0.050	0.050	09/22/2017	ND	1.86	93.1	2.00	0.535	
Ethylbenzene*	<0.050	0.050	09/22/2017	ND	1.94	96.9	2.00	0.366	
Total Xylenes*	<0.150	0.150	09/22/2017	ND	5.84	97.3	6.00	0.325	
Total BTEX	<0.300	0.300	09/22/2017	ND					

Surrogate: 4-Bromofluorobenzene (PIL *107 %* *72-148*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10700**	16.0	09/21/2017	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	09/22/2017	ND	197	98.5	200	1.81	
DRO >C10-C28	<10.0	10.0	09/22/2017	ND	214	107	200	1.01	
EXT DRO >C28-C36	<10.0	10.0	09/22/2017	ND					

Surrogate: 1-Chlorooctane *80.4 %* *28.3-164*

Surrogate: 1-Chlorooctadecane *78.9 %* *34.7-157*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

REPUBLIC BACKHOE SERVICES
ERIC GARCIA
47 E. DICKENS RD
LOVINGTON NM, 88260
Fax To: NONE

Received:	09/20/2017	Sampling Date:	09/19/2017
Reported:	09/25/2017	Sampling Type:	Soil
Project Name:	POGO 36 STATE #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	2RP-4322	Sample Received By:	Celey D. Keene
Project Location:	NOBLE PERMIAN		

Sample ID: BAT-20 (H702540-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6930**	16.0	09/21/2017	ND	416	104	400	0.00	

Sample ID: BAT-25 (H702540-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**7200**	16.0	09/21/2017	ND	416	104	400	0.00	

Sample ID: BAT-30 (H702540-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6660**	16.0	09/21/2017	ND	416	104	400	0.00	

Sample ID: BAT-38 (H702540-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2560**	16.0	09/21/2017	ND	416	104	400	0.00	

Sample ID: BAT-40 (H702540-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1220**	16.0	09/20/2017	ND	432	108	400	3.64	

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Celey D. Keene, Lab Director/Quality Manager

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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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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:	Republic Backlog Source, LLC
Project Manager:	Eric Garcia
Address:	47 E. Dickens
City:	Lovington State: NM Zip: 88260
Phone #:	575-631-0131 Fax #:
Project #:	— 2RP-4322 Project Owner: Noble Permian
Project Name:	Pogo 36 State #1 Battery
Project Location:	
Sampler Name:	Eric Garcia.

BILL TO

P.O. #:	
Company:	Noble Permian LLC
Attn:	Jonathan Pennington
Address:	1001 Noble Energy Way
City:	Houston
State:	TX Zip: 77070
Phone #:	832-427-7652
Fax #:	

ANALYSIS REQUEST

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	TPH	Cl.	BTEX	
H202540																		
01	BAT-5	✓	1			✓					✓		9:19	10:05	✓	✓	✓	
02	BAT-10	✓	1			✓					✓		9:19	10:20	✓	✓	✓	
03	BAT-15	✓	1			✓					✓		9:19	11:00	✓	✓	✓	
04	BAT-20	✓	1			✓					✓		9:19	11:15		✓		
05	BAT-25	✓	1			✓					✓		9:19	11:35		✓		
06	BAT-30	✓	1			✓					✓		9:19	12:15		✓		
07	BAT-38	✓	1			✓					✓		9:19	1:10		✓		
08	BAT-40	✓	1			✓					✓		9:19	3:15		✓		Rush
			8															

Relinquished By: Eric Garcia	Date: 9:20:17 Time: 11:00 am	Received By:	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: 3.4 / 3.65°C Corrected to 25	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) CH #75	REMARKS: * Rush results on -58.

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