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 August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: Resolute Natural Resources Co, LLC	Contact: Patrick Flynn
Address: 1700 Lincoln Street Suite 2800, Denver, CO 80203	Telephone No. 303.534.4600 X1145
Facility Name: State A Tank Battery	Facility Type: Tank Battery

Surface Owner	Mineral Owner	API No.: 30-025-05245

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	2	15S	37E					Lea

Latitude: 33.04461N **Longitude:** 103.17622W

NATURE OF RELEASE

Type of Release: Produced water and oil	Volume of Release: 238 Bbl water and 42-Bbl oil	Volume Recovered: 204 Bbl water and 36 Bbl oil
Source of Release: Overran water tank	Date and Hour of Occurrence: Within 24-hours of discovery	Date and Hour of Discovery: 12/12/14 @ 8:30AM
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? Reported by phone to Tomas Oberding on 12.15.14	
By Whom? Patrick Flynn	Date and Hour 12.15.14	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Water transfer pump failed, as did the in-field telemetry, allowing the water tank to overfill into the secondary containment area. The release impacted an area within secondary containment measuring approximately 65-ft x 30-ft. Infiltration was limited due to hard packed soil and clay underlying the facility and most of the fluid was recovered.

Describe Area Affected and Cleanup Action Taken.*

All released fluids were contained within the secondary containment berm. A vacuum truck was used to recover most of the fluid released. The recovered water was taken to disposal and oil was returned to the production tank. Approximately 15 cubic yards of affected pea gravel and soil was excavated for offsite disposal at the Gandy Marley landfarm. Confirmation soil samples were collected at four locations within the impacted area and analyzed for chlorides, TPH, and BTEX. Each of the samples was composited from ground surface to a depth of approximately one-ft bgs. The analytical results are summarized on the following page and the laboratory report and chain of custody form are attached.

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: Patrick Flynn	Approved by Environmental Specialist:	
Title: Vice President	Approval Date:	Expiration Date:
E-mail Address: pflynn@resoluteenergy.com	Conditions of Approval:	Attached ☐
Date: 1/21/15 Phone: 303.534.4600 X1145		

* Attach Additional Sheets If Necessary

Four soil samples were collected from each corner of the spill-affected area located entirely within the secondary containment berm. A fifth sample was collected from adjacent pasture for background analysis of chlorides. The samples were collected after the upper six- to twelve-inches of impacted pea gravel and soil were removed for offsite disposal. Soil analytical results are summarized below.

Sample No.	Sample Location	Analytical Results (mg/Kg)						
		Benzene	Toluene	Ethylbenzene	Xylene	TPH-D	TPH-G	Chlorides
SS-1	NE Corner	ND	ND	ND	ND	ND	ND	3780
SS-2	SW Corner	ND	0.107	ND	0.304	ND	ND	2110
SS-3	NW Corner	ND	ND	ND	ND	ND	ND	2160
SS-4	SE Corner	0.184	1.95	2.00	6.05	3220	172	1760
SS-5	Background	NA	NA	NA	NA	NA	NA	147

Notes: ND – Not Detected; NA – Not Analyzed

Review of observations associated with the drilling approximately 18 months ago of a water well located approximately 2.5 miles north of the State A tank battery indicate the depth to ground water exceeds 100-ft. The water well is located at lat. 33 deg 04'57"N long. 103 deg 10'11"W and the measured depth to water is 138-ft. Based on the depth to ground water and the analytical results, remedial activities associated with this release are deemed complete. Additional soil remediation will be performed when the facility is abandoned.

Summary Report

James Allison
Resolute Energy
4000 N. Big Spring
#500
Midland, TX 79705

Report Date: January 9, 2015

Work Order: 15010810

Project Location: Lea Co., NM
Project Name: State A Tank Battery

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
383887	SS-1	soil	2015-01-07	10:00	2015-01-08
383888	SS-2	soil	2015-01-07	10:00	2015-01-08
383889	SS-3	soil	2015-01-07	10:00	2015-01-08
383890	SS-4	soil	2015-01-07	10:00	2015-01-08
383891	SS-5	soil	2015-01-07	10:00	2015-01-08

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
383887 - SS-1	<0.0400 [1] Qs	<0.0400	<0.0400	<0.0400	<50.0	<8.00 [2] Qs
383888 - SS-2	<0.0400 [3] Qs	**0.107**	<0.0400	**0.304**	<50.0	<8.00 [4] Qs
383889 - SS-3	<0.0400 [5] Qs	<0.0400	<0.0400	<0.0400	<50.0	<8.00 [6] Qs
383890 - SS-4	**0.184** Qs	**1.95**	**2.00**	**6.05**	**3220**	**172** Qs

Sample: 383887 - SS-1

Param	Flag	Result	Units	RL
Chloride		**3780**	mg/Kg	4

Sample: 383888 - SS-2

[1]Dilution due to surfactants.
[2]Dilution due to surfactants.
[3]Dilution due to surfactants.
[4]Dilution due to surfactants.
[5]Dilution due to surfactants.
[6]Dilution due to surfactants.

Param	Flag	Result	Units	RL
Chloride		**2110**	mg/Kg	4

Sample: 383889 - SS-3

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4

Sample: 383890 - SS-4

Param	Flag	Result	Units	RL
Chloride		**1760**	mg/Kg	4

Sample: 383891 - SS-5

Param	Flag	Result	Units	RL
Chloride		**147**	mg/Kg	4

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, TX 79424 800•378•1296 806•794•1296 Fax 806•794•1298
200 East Sunset Road, Suite E El Paso, TX 79922 915•585•3443 Fax 915•585•4944
5002 Basin Street, Suite A1 Midland, TX 79703 432•689•6301 Fax 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, TX 75006 972•242•7750 Fax 972•242•7749
(Brandon & Clark) 3403 Industrial Blvd. Hobbs NM 88240 575•392•7561 Fax 575•392•4508
E-Mail: lab@traceanalysis.com Web: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

James Allison
Resolute Energy
4000 N. Big Spring
#500
Midland, TX, 79705

Report Date: January 9, 2015

Work Order: 15010810

Project Location: Lea Co., NM
Project Name: State A Tank Battery
Project Number: State A Tank Battery

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
383887	SS-1	soil	2015-01-07	10:00	2015-01-08
383888	SS-2	soil	2015-01-07	10:00	2015-01-08
383889	SS-3	soil	2015-01-07	10:00	2015-01-08
383890	SS-4	soil	2015-01-07	10:00	2015-01-08
383891	SS-5	soil	2015-01-07	10:00	2015-01-08

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project State A Tank Battery were received by TraceAnalysis, Inc. on 2015-01-08 and assigned to work order 15010810. Samples for work order 15010810 were received intact at a temperature of 3.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	100163	2015-01-07 at 11:20	118545	2015-01-09 at 12:40
Chloride (Titration)	SM 4500-Cl B	100198	2015-01-08 at 11:50	118504	2015-01-08 at 14:47
TPH DRO - NEW	S 8015 D	100187	2015-01-08 at 16:00	118521	2015-01-09 at 10:03
TPH GRO	S 8015 D	100163	2015-01-07 at 11:20	118546	2015-01-09 at 12:46

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15010810 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 383887 - SS-1

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	118545	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Q U	s	<0.0400	mg/Kg	2	0.0200
Toluene	U	s	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	s	<0.0400	mg/Kg	2	0.0200
Xylene	U	s	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.51	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.98	mg/Kg	2	4.00	100	70 - 130

Sample: 383887 - SS-1

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	Sample Preparation:	2015-01-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3780**	mg/Kg	5	4.00

Sample: 383887 - SS-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	118521	Date Analyzed:	2015-01-09	Analyzed By:	SC
Prep Batch:	100187	Sample Preparation:	2015-01-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		s	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	70 - 130

Sample: 383887 - SS-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	118546	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	2	Q ,U	s	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.68	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			3.85	mg/Kg	2	4.00	96	70 - 130

Sample: 383888 - SS-2

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	118545	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
Benzene	3	Q,U	s	<0.0400	mg/Kg	2	0.0200
Toluene			s	**0.107**	mg/Kg	2	0.0200
Ethylbenzene		U	s	<0.0400	mg/Kg	2	0.0200
Xylene			s	**0.304**	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.47	mg/Kg	2	4.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			3.84	mg/Kg	2	4.00	96	70 - 130

Sample: 383888 - SS-2

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	Sample Preparation:	2015-01-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2110**	mg/Kg	5	4.00

Sample: 383888 - SS-2

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	118521	Date Analyzed:	2015-01-09	Analyzed By:	SC
Prep Batch:	100187	Sample Preparation:	2015-01-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

Sample: 383888 - SS-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	118546	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	[4] Q, U		<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.59	mg/Kg	2	4.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			3.93	mg/Kg	2	4.00	98	70 - 130

Sample: 383889 - SS-3

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	118545	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Q-,U		<0.0400	mg/Kg	2	0.0200
Toluene	U		<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U		<0.0400	mg/Kg	2	0.0200
Xylene	U		<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.42	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.63	mg/Kg	2	4.00	91	70 - 130

Sample: 383889 - SS-3

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	Sample Preparation:	2015-01-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**2160**	mg/Kg	5	4.00

Sample: 383889 - SS-3

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	118521	Date Analyzed:	2015-01-09	Analyzed By:	SC
Prep Batch:	100187	Sample Preparation:	2015-01-08	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO			<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	70 - 130

Sample: 383889 - SS-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	118546	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [6]	Q-,U	8	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.44	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.70	mg/Kg	2	4.00	92	70 - 130

Sample: 383890 - SS-4

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	118545	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	Q	8	**0.184**	mg/Kg	4	0.0200
Toluene		8	**1.95**	mg/Kg	4	0.0200
Ethylbenzene		8	**2.00**	mg/Kg	4	0.0200
Xylene		8	**6.05**	mg/Kg	4	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.34	mg/Kg	4	8.00	79	70 - 130
4-Bromofluorobenzene (4-BFB)			8.94	mg/Kg	4	8.00	112	70 - 130

Sample: 383890 - SS-4

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	Sample Preparation:	2015-01-08	Prepared By:	AK

continued ...

sample 383890 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1760**	mg/Kg	5	4.00

Sample: 383890 - SS-4

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	118521	Date Analyzed:	2015-01-09	Analyzed By:	SC
Prep Batch:	100187	Sample Preparation:	2015-01-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		B	**3220**	mg/Kg	5	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q-07	Q-07		251	mg/Kg	5	100	251	70 - 130

Sample: 383890 - SS-4

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	118546	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	Sample Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q-06	B	**172**	mg/Kg	4	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.69	mg/Kg	4	8.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)	Q-07	Q-07	10.9	mg/Kg	4	8.00	136	70 - 130

Sample: 383891 - SS-5

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	Sample Preparation:	2015-01-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**147**		mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 118504

QC Batch:	118504	Date Analyzed:	2015-01-08	Analyzed By:	AK
Prep Batch:	100198	QC Preparation:	2015-01-08	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 118521

QC Batch:	118521	Date Analyzed:	2015-01-09	Analyzed By:	SC
Prep Batch:	100187	QC Preparation:	2015-01-08	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		s	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.0	mg/Kg	1	100	94	70 - 130

Method Blank (1) QC Batch: 118545

QC Batch:	118545	Date Analyzed:	2015-01-09	Analyzed By:	AK
Prep Batch:	100163	QC Preparation:	2015-01-07	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		s	<0.00533	mg/Kg	0.02
Toluene		s	<0.00645	mg/Kg	0.02
Ethylbenzene		s	<0.0116	mg/Kg	0.02
Xylene		s	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 118546

QC Batch: 118546 | Date Analyzed: 2015-01-09 | Analyzed By: AK
Prep Batch: 100163 | QC Preparation: 2015-01-07 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		a	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 118504
Prep Batch: 100198

Date Analyzed: 2015-01-08
QC Preparation: 2015-01-08

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2740	mg/Kg	5	2500	<19.2	110	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2600	mg/Kg	5	2500	<19.2	104	85 - 115	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 118521
Prep Batch: 100187

Date Analyzed: 2015-01-09
QC Preparation: 2015-01-08

Analyzed By: SC
Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		s	208	mg/Kg	1	250	<7.41	83	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		s	229	mg/Kg	1	250	<7.41	92	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	92.4	95.5	mg/Kg	1	100	92	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 118545 | Date Analyzed: 2015-01-09 | Analyzed By: AK
Prep Batch: 100163 | QC Preparation: 2015-01-07 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		s	1.71	mg/Kg	1	2.00	<0.00533	86	70 - 130
Toluene		s	1.79	mg/Kg	1	2.00	<0.00645	90	70 - 130
Ethylbenzene		s	1.88	mg/Kg	1	2.00	<0.0116	94	70 - 130
Xylene		s	5.67	mg/Kg	1	6.00	<0.00874	94	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		s	1.55	mg/Kg	1	2.00	<0.00533	78	70 - 130	10	20
Toluene		s	1.64	mg/Kg	1	2.00	<0.00645	82	70 - 130	9	20
Ethylbenzene		s	1.74	mg/Kg	1	2.00	<0.0116	87	70 - 130	8	20
Xylene		s	5.29	mg/Kg	1	6.00	<0.00874	88	70 - 130	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.73	1.66	mg/Kg	1	2.00	86	83	70 - 130
4-Bromofluorobenzene (4-BFB)	2.02	1.89	mg/Kg	1	2.00	101	94	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 118546 | Date Analyzed: 2015-01-09 | Analyzed By: AK
Prep Batch: 100163 | QC Preparation: 2015-01-07 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		s	14.3	mg/Kg	1	20.0	<2.32	72	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		s	16.3	mg/Kg	1	20.0	<2.32	82	70 - 130	13	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.62	1.77	mg/Kg	1	2.00	81	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.96	mg/Kg	1	2.00	97	98	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 383837

QC Batch: 118504 | Date Analyzed: 2015-01-08 | Analyzed By: AK
Prep Batch: 100198 | QC Preparation: 2015-01-08 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			12000	mg/Kg	5	2500	9216	111	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			11900	mg/Kg	5	2500	9216	107	78.9 - 121	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (xMS-1) Spiked Sample: 383857

QC Batch: 118521 | Date Analyzed: 2015-01-09 | Analyzed By: SC
Prep Batch: 100187 | QC Preparation: 2015-01-08 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		s	210	mg/Kg	1	250	<7.41	84	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		s	192	mg/Kg	1	250	<7.41	77	70 - 130	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	99.8	91.1	mg/Kg	1	100	100	91	70 - 130

Matrix Spike (MS-1) Spiked Sample: 383642

QC Batch: 118545 | Date Analyzed: 2015-01-09 | Analyzed By: AK
Prep Batch: 100163 | QC Preparation: 2015-01-07 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	Q	Q	1.37	mg/Kg	1	2.00	<0.00533	68	70 - 130
Toluene			1.48	mg/Kg	1	2.00	<0.00645	74	70 - 130
Ethylbenzene			1.59	mg/Kg	1	2.00	<0.0116	80	70 - 130
Xylene			4.81	mg/Kg	1	6.00	<0.00874	80	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Q	Q	1.34	mg/Kg	1	2.00	<0.00533	67	70 - 130	2	20
Toluene			1.43	mg/Kg	1	2.00	<0.00645	72	70 - 130	3	20
Ethylbenzene			1.52	mg/Kg	1	2.00	<0.0116	76	70 - 130	4	20
Xylene			4.65	mg/Kg	1	6.00	<0.00874	78	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.62	1.69	mg/Kg	1	2	81	84	70 - 130
4-Bromofluorobenzene (4-BFB)	1.84	1.90	mg/Kg	1	2	92	95	70 - 130

Matrix Spike (MS-1) Spiked Sample: 383703

QC Batch: 118546 | Date Analyzed: 2015-01-09 | Analyzed By: AK
Prep Batch: 100163 | QC Preparation: 2015-01-07 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q	Q	13.0	mg/Kg	1	20.0	<2.32	65	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO			15.6	mg/Kg	1	20.0	<2.32	78	70 - 130	18	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.65	1.72	mg/Kg	1	2	82	86	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.82	mg/Kg	1	2	90	91	70 - 130

Calibration Standards

Standard (ICV-1)

QC Batch: 118504 Date Analyzed: 2015-01-08 Analyzed By: AK

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2015-01-08

Standard (CCV-1)

QC Batch: 118504 Date Analyzed: 2015-01-08 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2015-01-08

Standard (CCV-1)

QC Batch: 118521 Date Analyzed: 2015-01-09 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		s	mg/Kg	250	228	91	80 - 120	2015-01-09

Standard (CCV-2)

QC Batch: 118521 Date Analyzed: 2015-01-09 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		s	mg/Kg	250	258	103	80 - 120	2015-01-09

Standard (CCV-1)

QC Batch: 118545 | Date Analyzed: 2015-01-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		s	mg/kg	0.100	0.0930	93	80 - 120	2015-01-09
Toluene		s	mg/kg	0.100	0.0940	94	80 - 120	2015-01-09
Ethylbenzene		s	mg/kg	0.100	0.0928	93	80 - 120	2015-01-09
Xylene		s	mg/kg	0.300	0.280	93	80 - 120	2015-01-09

Standard (CCV-2)

QC Batch: 118545 | Date Analyzed: 2015-01-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		s	mg/kg	0.100	0.0945	94	80 - 120	2015-01-09
Toluene		s	mg/kg	0.100	0.0941	94	80 - 120	2015-01-09
Ethylbenzene		s	mg/kg	0.100	0.0932	93	80 - 120	2015-01-09
Xylene		s	mg/kg	0.300	0.279	93	80 - 120	2015-01-09

Standard (CCV-3)

QC Batch: 118545 | Date Analyzed: 2015-01-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		s	mg/kg	0.100	0.0955	96	80 - 120	2015-01-09
Toluene		s	mg/kg	0.100	0.0962	96	80 - 120	2015-01-09
Ethylbenzene		s	mg/kg	0.100	0.0943	94	80 - 120	2015-01-09
Xylene		s	mg/kg	0.300	0.283	94	80 - 120	2015-01-09

Standard (CCV-1)

QC Batch: 118546 | Date Analyzed: 2015-01-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		s	mg/Kg	1.00	1.03	103	80 - 120	2015-01-09

Standard (CCV-2)

QC Batch: 118546 Date Analyzed: 2015-01-09 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		s	mg/Kg	1.00	0.928	93	80 - 120	2015-01-09

Standard (CCV-3)

QC Batch: 118546 Date Analyzed: 2015-01-09 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		s	mg/Kg	1.00	0.980	98	80 - 120	2015-01-09

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-103	El Paso
2	PJLA	L14-93	Lubbock
3	Kansas	Kansas E-10317	Lubbock
4	LELAP	LELAP-02002	El Paso
5	LELAP	LELAP-02003	Lubbock
6	NELAP	T104704221-12-3	El Paso
7	NELAP	T104704219-14-10	Lubbock
8	NELAP	T104704392-14-8	Midland
9		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction

F	Description
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Dilution due to surfactants.
2 Dilution due to surfactants.
3 Dilution due to surfactants.
4 Dilution due to surfactants.
5 Dilution due to surfactants.
6 Dilution due to surfactants.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

15010810

Analysis Request of Chain of Custody Record

PAGE: OF:

~~TETRA TECH~~
~~1910 N. Big Spring St.~~
~~Midland, Texas 79705~~
(432) 682-4559 • Fax (432) 682-3946

Resolute Energy,
4000 N. Big Spring #508
Midland, TX 79705
432-813-8069

CLIENT NAME: Resolute
SITE MANAGER: James Allison
PROJECT NO.: Location Lea Co., NM
PROJECT NAME: State A Tank Battery

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
388386	1/7	10 AM	Soil		✓	SS-1	1				✓	
888	1/7	10 AM	Soil		✓	SS-2	1				✓	
889	1/7	10 AM	Soil		✓	SS-3	1				✓	
890	1/7	10 AM	Soil		✓	SS-4	1				✓	
891	1/7	10 AM	Soil		✓	SS-5	1				✓	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. (Ext. to C35) TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
✓	✓											✓				
✓	✓											✓				
✓	✓											✓				
✓	✓											✓				
✓												✓				

RELINQUISHED BY: (Signature) Date: 1/8/15 Time: 10:37am
RECEIVED BY: (Signature) AM TA Date: 1-8-15 Time: 10:54
SAMPLED BY: (Print & Initial) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS
AIRBILL #:
OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
TETRA TECH CONTACT PERSON:
Results by:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.9
REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, TX 79424 800•378•1296 806•794•1296 Fax 806•794•1298
200 East Sunset Road, Suite E El Paso, TX 79922 915•585•3443 Fax 915•585•4944
5002 Basin Street, Suite A1 Midland, TX 79703 432•689•6301 Fax 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, TX 75006 972•242•7750 Fax 972•242•7749
(Brandon & Clark) 3403 Industrial Blvd. Hobbs, NM 88240 575•392•7561 Fax 575•392•4508
E-Mail: lab@traceanalysis.com Web: www.traceanalysis.com

Bill To: **Resolute Energy**
4000 N. Big Spring
#500
Midland, TX 79705

Attn: James Allison

Invoice No. 76935

Lab Location: Midland
Invoice Date: 2015-01-09
Payment Due: 2015-02-08

Send To: TraceAnalysis, Inc
6701 Aberdeen Ave, Ste 9
Lubbock, TX 79424-1515

Work Order: 15010810

Received Date: 2015-01-08
Project Location: Lea Co., NM
Project Name: State A Tank Battery

Test Description	Samples	Matrix	Qty	Price	Sub-Total
BTEX	(383887 - 383890)	soil	4	$60.00	$240.00
TPH DRO	(383887 - 383890)	soil	4	$60.00	$240.00
TPH GRO	(383887 - 383890)	soil	4	$60.00	$240.00
Chloride (Titration)	(383887 - 383891)	soil	5	$20.00	$100.00
Inorganic Soil Prep	(383887 - 383891)	soil	5	$5.00	$25.00

Payment Terms: Net-30

Total $845.00

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

State A

Jay Allison
Sent: Wednesday, January 21, 2015 9:00 AM
To: Patrick Flynn; Dwight Mallory
Attachments: State A 1-21-2015.pdf (57 KB)

Pat, attached is the diagram you sent me with the appropriate dimensions and coordinates. I tried to edit it, but it wouldn't allow it so I had to handwrite the notes.

According to Mike Dixon, the owner of the recently drilled water well is Patrick Whitman. I added the coordinates to the diagram. Driving from that location to the battery is exactly 3 miles south on lease roads. I estimate the direct path is 2.5 miles due north of the battery. His "mud level" starts at 138 feet and his water level is from 138 feet to 160 feet. The well was drilled approximately 18 months ago.

Jay

JayAllison
Community Relations Specialist
Resolute
4000 N Big Spring **Office: 432-684-7475 Ext. 8250**
Ste. 500 **Cell: 432-813-8069**
Midland TX 79705 **Fax: 432-684-7456**
E-mail jallison@resoluteenergy.com

Patrick Whitman
Water well
33° 04' 57" / 103° 10' 11"
2.5 miles

Resolute Natural Resources Company, LLC.

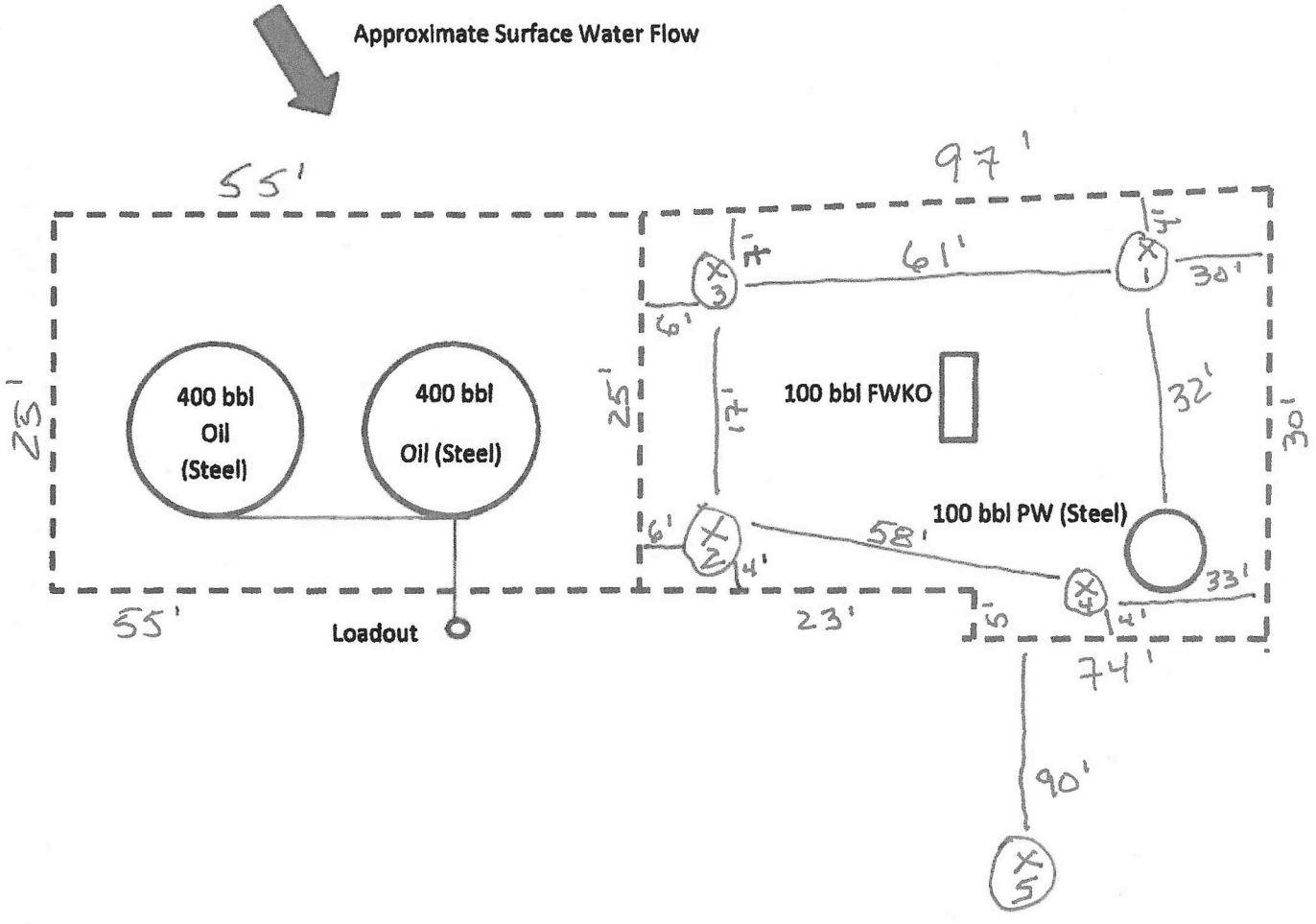
State A #2 Tank Battery
Sec 2 – T15S – R37E
Lea County, New Mexico
33° 02' 40" / 103° 10' 33"

LEGEND

- Aboveground Piping
- Underground Piping (location approximate)
- Berm

North

(not to scale)



Note: Underground piping is for process flow demonstration only.

No visible waterways within 500 feet.

Patrick Whitman
Water well
33° 04' 57" / 103° 10' 11"

2.5 miles

Resolute Natural Resources Company, LLC.

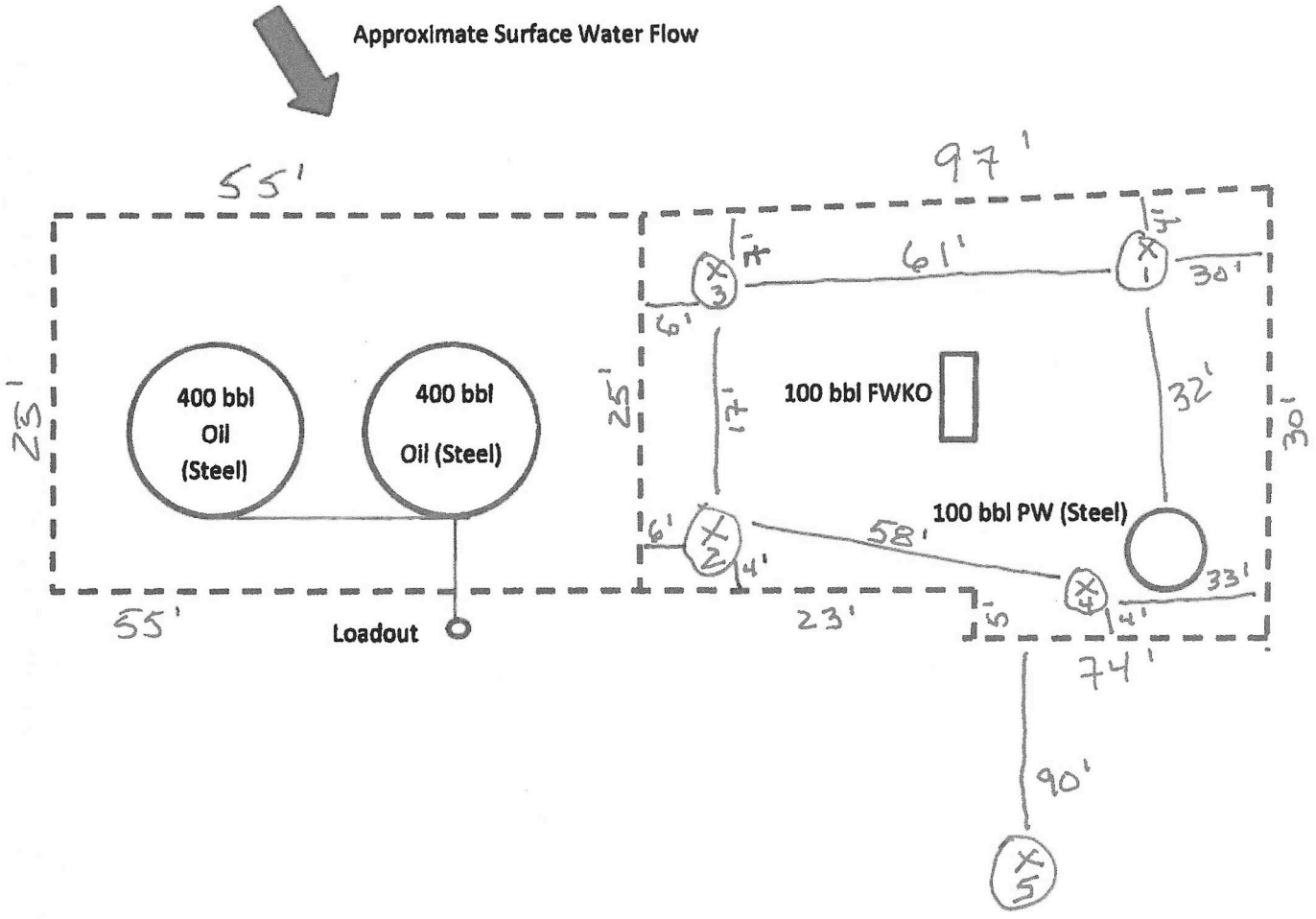
State A #2 Tank Battery
Sec 2 – T15S – R37E
Lea County, New Mexico
33° 02' 40" / 103° 10' 33"

LEGEND

- Aboveground Piping
- Underground Piping (location approximate)
- Berm

North

(not to scale)



Note: Underground piping is for process flow demonstration only.

No visible waterways within 500 feet.