1001 Noble Energy Way Houston, TX 77070

> Tel: 281.872.3100 nblenergy.com



nbl permian llc a subsidiary of noble energy, inc.

March 7, 2018

**APPROVED** By Olivia Yu at 7:30 am, Apr 17, 2018

NMOCD approves of the vertical delineation completed for 1RP-4918. See email correspondence about completion of release characterization and request for deferral of remediation.

Sent via email to Olivia. Yu@state.nm.us

NMOCD Olivia Yu, Environmental Specialist 1625 N. French Drive Hobbs, NM 88240

Dear Ms. Yu,

Effective January 31, 2018, Southwest Royalties, Inc. was transferred from NBL Permian LLC (a subsidiary of Noble Energy, Inc.) to Desert Permian LLC. As part of the transfer agreement, NBL Permian LLC agreed to continue performing site delineation and remediation activities related to release site 1RP-4918. Therefore, NBL Permian LLC respectfully submits the enclosed Release Characterization Report and Remediation Work Plan for release site 1RP-4918.

Should you have any questions or concerns, please contact me at 281-874-6072 or jonathan.pennington@nblenergy.com.

Sincerely,

Jonathan Pennington Environmental Coordinator Jonathan.Pennington@nblenergy.com

CC: Al Garcia, Noble Energy

:Enclosure

## **REPUBLIC BACKHOE SERVICE LLC**

Olivia Yu NMOCD District I 1625 N. French Drive Hobbs, New Mexico 88240

March 7, 2018

Dear Ms. Yu,

Subject: Release Characterization Report and Remediation Work Plan

Location: Southwest Royalties, Inc. Eilliams Battery NMOCD Remediation Case **#1RP-4918** 

NBL Permian LLC 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

January 02, 2018

### **Incident Description**

On January 02, 2018, a pumper did not turn off a transfer pump at the Wyatt Philips battery, which transfers the produced water to the Eilliams Battery for disposal. The pumper then observed the Produced Water Tank overflowing at the Eilliams Battery, after which he manually turned off the transfer pump at the Wyatt/Philips Battery. A total of approximately 8 barrels of produced water were released. A vacuum truck was called to the site and vacuumed a total of approximately 1.5 barrels. The release of 8 barrels stayed inside of the tank battery containment (Appendix III). The size of the impacted area is approximately 1,855 square feet. A C-141 form was filled out and emailed to NMOCD District I on January 8, 2018 (See Attachment I).

### **Background Information**

The Eilliams Battery is located approximately nine (9) miles west of Buckeye, New Mexico. The legal location for the Battery is Unit A Section 34 Township 17 South and Range 33 East in Lea County, New Mexico. The spill area was contained to the Produced Water tank area which is on the north side of the Eilliams Battery with the GPS Coordinates as follows: Latitude: 32.795246 North, Longitude: -103.644286 West. See Site Map attached in Appendix II.

The Eilliams Battery Spill Site is located less than 1/2 mile east from the Mescalero Ridge (Caprock Escarpment). The soil in this area is made up of Kimbrough-Lea loamy soil. As per the New Mexico Bureau of Geology and Minerals Resources, the local surface is comprised of 5" to 24" loamy soil with hard caliche below the soil.

According to the New Mexico Office of the State Engineer water well database there are no active water wells within a mile radius. Well #L 04363 (POD Number) is inside of  $\frac{1}{2}$  mile radius and is shown to be plugged. Well #L 05096 (POD Number) is outside of the 1 mile radius and is shown to be active (Appendix IV). According to the NMOSE Data the average depth to ground water is 153' (Appendix V).

There are no natural surface water bodies in the area. There are man-made dirt ponds within 3/4 mile from the location. There pond are mostly dry during the year, except for infrequent flows in response to major precipitation events.

### **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 **O** based on the following:

Depth to ground water: 153' (50'-99')	0
Wellhead Protection Area: > 1000'	0
Distance to Surface Water Body: > 1000'	0

### **Actions Taken**

On January 3, 2018, a crew pressure washed the tanks and the stairway. Also, a vacuum truck removed approximately 1.5 barrels of produced water that were puddled inside of the tank battery berm.

On January 5, 2018, Southwest Royalties, Inc. submitted a completed C-141 to Ms. Olivia Yu, NMOCD District I office in Hobbs, NM.

On January 17 and 18, 2018, a crew with backhoe removed soil saturated with produced water from around the tanks. The area was excavated to remove saturated soil, and to provide a safe work environment for the operator. A total of 20 yards of impacted soil were hauled to NMOCD Approved Disposal Site R360. The excavated area was not backfilled.

On January 30 and 31, 2018, Atkins Engineering was contracted to drill a bore hole at the Eilliams Battery. One bore hole was drilled to satisfy the vertical delineation requirements. The bore hole was drilled in the area inside of the battery bermed area where the produced water had pooled at the following GPS Coordinates 32.795203N, -103.644331W (See Appendix VI). Soil samples were collected at depths of 5', 10', 15', 20', 25', 30', 35', 40', 45', 50', 55', 60', and 65'. The soil samples were placed in laboratory provided sample containers and transported to Cardinal Labs in Hobbs, NM for analysis (Appendix VII). The chlorides samples were analyzed per Method SM4500C1-B.

## Laboratory Results

Sample	-		Depth	Chlorides	TPH	BTEX	Lithology
Date	Analyzed	e ID	(feet)	(mg/kg)	(mg/kg)	(mg/kg)	
01/31/2018	02/05/2018	EW-5	5	2440	<10.0	<0.300	Caliche
01/31/2018	02/05/2018	EW-10	10	1600	<10.0	<0.300	Sand/Caliche Mix
01/31/2018	02/05/2018	EW-15	15	2040	<10.0	<0.300	Sandy
01/31/2018	02/05/2018	EW-20	20	3080	<10.0	<0.300	Sandy
01/31/2018	02/05/2018	EW-25	25	3160	<10.0	<0.300	Light Brown Sand Mix
01/31/2018	02/05/2018	EW-30	30	4160	<10.0	<0.300	Light Brown Sand Mix
01/31/2018	02/05/2018	EW-35	35	4720	<10.0	<0.300	Light Brown Sand Mix
01/31/2018	02/05/2018	EW-40	40	3200	<10.0	<0.300	Light Brown Sand Mix
01/31/2018	02/05/2018	EW-45	45	1880	<10.0	<0.300	Hard Cobble
01/31/2018	02/05/2018	EW-50	50	912	<10.0	<0.300	Sandstone, Sand
01/31/2018	02/05/2018	EW-55	55	496	<10.0	<0.300	Sandy
01/31/2018	02/05/2018	EW-60	60	288	<10.0	<0.300	Sandy
01/31/2018	02/05/2018	EW-65	65	32	<10.0	<0.300	Sandy

See Appendix VI for Site sample points.

### Proposal

The Eilliams Battery is a production facility for the Eilliams Lease, and is also a Salt Water Disposal facility for the Eilliams Lease, Wyatt Lease, and the Philips Lease. 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 150' 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 60' bgs. NBL Permian LLC 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 Kimbrough-Lea Loamy Complex. The Kimbrough-Lea Loamy Complex is classified as being gravelly fine sandy loam, and gravelly loam. According to the Unified Soil Classification System (USCS), the 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 Eilliams 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 Heater Treater 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 Eilliams Battery)

In addition, temporarily shutting down the facility to remove all equipment and fully remediate the site would also likely require shutting down the Eilliams Production Battery (Eilliams Lease), Wyatt Lease, and Philips Lease. 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 150' bgs, whereas sample results indicate that chloride concentrations in soil are below NMOCD permissible levels at 60' bgs. Sample results also indicated no detections of TPH or BTEX. Therefore, NBL Permian LLC 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

525 N. French Dr., Habbs, NM 88240 Estrict II Energy Minerals	F New Mexico Eorm C-141 and Natural Resources Revised April 3, 2017
11 S. First St., Artesia, NM 88210 District III Oil Conser	rostion Division Susti I Copy to appropriate District Office in
OKI Ria Ismitov Road, Attes, NM 87410 Biarrier IV 1220 Sout	h St. Francis Dr.
320 S. Sr. Finneis Dr., Santa Fe, NM 87905 Santa F	e, NM 87505
Release Notificatio	n and Corrective Action
	OPERATOR Initial Report I Final Report
Name of Company Southwest Royalties, Inc. Address 1001 Noble Energy Way, Houston, TX 77070	Contact Jonathan Permington Telephone No. 281-874-6072
Facility Name Filliams Fed Battery	Facility Type Battery
Surface Owner Fee Mineral Owner	BLM API No. 30-025-30778
LOCATIO	IN OF RELEASE
	South Line Feet from the bast/West Line County
A. 34 178 33E 1150	North 590 base Lea
Latitude 32.795246	Longitude -103.644286 NAD83
	OF RELEASE
Type of Release Produced Water	Volume of Release 8 bbls Volume Recovered 1.5 bbls
Source of Release Tank Overflow	Date and Hour of Occurrence Date and Hour of Discovery
Was Immediate Notice Given?	1/2/2018 12:00 1/2/2018 12:00
🗌 Yes 🗌 No 🕅 Not Required	
By Whom? N/A Was a Watercourse Reached?	Date and Hour N/A D'YES, Volume Innucting the Watercourse
Yes X No	N/A
If a Watercourse was Impacted, Describe Fully, <sup>3</sup>	
NZA	RECEIVED
NZA	RECEIVED By Olivia Yu at 2:12 pm, Jan 08, 2018
N/A Describe Cause of Problem and Remodial Action Taken.*	
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Appendix II Site Map 1



Appendix III Site Map 2



Appendix IV Water Well Locations



Appendix V Groundwater Data

### 💩 Mozilla Firefox

Immeris.ose.state.nm.us/nmwrrs/ReportProxy/jgueryData=[report %3A"waterColumn %2C%0A"BasinDiv %3A"true %2C%0A"Basin %3A" New Mexico Office of the State Engineer Water Column/Average Depth to Water (A CLW###### in the (R=POD has been POD suffix indicates the replaced, POD has been replaced O=orphaned, (quarters are 1=NW 2=NE 3=SW 4=SE) & no longer serves a C=the file is water right file.) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet) closed) POD Sub-QQQ Water Y **POD** Number Code basin County 6416 4 Sec Tws Rng x DistanceDepth WellDepth Water Column L 04363 LE 1 2 3 35 17S 33E 627634 3628855\* 886 226 66 L 160 L 05055 L LE 3 3 4 35 178 33E 628042 3628259\* 1589 233 150 83 3 3 4 35 17S 33E L 05096 L LE. 628042 3628259\* 1589 233 150 83 Average Depth to Water; 153 feet Minimum Depth: 150 feet Maximum Depth: 160 feet Record Count: 3 UTMNAD83 Radius Search (in meters): Easting (X): 626937.36 Northing (Y): 3629402.5 Radius: 1609 \*UTM location was derived from PLSS - see Help The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data WATER COLUMN/ AVERAGE DEPTH TO 2/12/18 12:27 PM WATER NMOSE Southwest Royalties Inc. **Republic Backhoe** Service LLC Water Column/Average Depth to **Eilliams Battery Spill** 47 E. Dickens Water GPS: 32.795216N -103.644230W Lovington, NM 88260 Lea County, NM 1 Mile Radius

Appendix VI Sampling Map



Appendix VII Battery Equipment



Appendix VIII Lab Analysis



February 05, 2018

ERIC GARCIA REPUBLIC BACKHOE SERVICES 47 E. DICKENS RD LOVINGTON, NM 88260

RE: EILLIAMS

Enclosed are the results of analyses for samples received by the laboratory on 02/02/18 9:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 <a href="http://www.tceg.texas.gov/field/ga/lab/accredicentif.html">www.tceg.texas.gov/field/ga/lab/accredicentif.html</a>.

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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager





### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		
	Reported: Project Name: Project Number:	Reported:     02/05/2018       Project Name:     EILLIAMS       Project Number:     BATTERY	Reported:         02/05/2018         Sampling Type:           Project Name:         EILLIAMS         Sampling Condition:           Project Number:         BATTERY         Sample Received By:

#### Sample ID: EW - 5 (H800348-01) -----

BTEX 80218	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3,29	
Ethylbenzene*	<0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
Total BTEX	<0.300	0.300	02/02/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 111 % 72-148

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2440	16.0	02/02/2018	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10,0	10.0	02/02/2018	ND					

Surrogate: 1-Chlorooctane 87.0 % 41-142

Surrogate: 1-Chlorooctadecane 85.1 % 37.6-147

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#### \*=Accredited Analyte

REACE NOTE: Liability and Exemption. Conduct's liability and electra exclusive memory for any dains under, whether based in contract or bort, shall be linked to the ansaute paid by deet for analyses. All chains, including mores for negligence and any other cause whethere what has deen early all be deened whether whether and in the contract or bort, shall be linked to the analyse. All chains, including mores for negligence and any other cause whethere what has deened whether analy all chains in the second or bort, shall be linked to the analyse. All chains, including mores for negligence and any other cause whethere what has deened whether analyses. It is also be included to consequential damager, moduling whether links without limbuling, whether analyses. It is also be included by Cardinal, ingendees of whether such chains have paid to be analyses. All the analyses of whether such chains have paid to be analyses. All the analyses and and the second to be analyses and the second to be analyses and the thermation.

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 10 (H800348-02)

BTEX 8021B	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3,29	
Ethylbenzene*	<0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
Total BTEX	<0.300	0.300	02/02/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 115 % 72-148

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1600	16,0	02/02/2018	ND	432	108	400	3.77		
TPH 8015M	mg	/kg	Analyze	d By: MS				1.00		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	02/02/2018	ND	214	107	200	0.652		
DR0 >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270		
EXT DRO >C28-C36	<10.0	10.0	02/02/2018	ND						

Surrogate: 1-Chlorooctadecane 83.0 % 37.6-147



\*=Accredited Analyte

REACT NOTE: Liability and Damages. Condital's lability and clients excludive memby for any dain arising whether leased in contract or tort, shall be limited in the second paid by client for analyses. All claims, including those for negligence and any other cause extensioner chall be determined in whiting and meximal by Cardinal within thining (2)) days after completion of the applicable anotas. To not went shall Cardinal is table for including those for completion of the applicable anotas. To not went shall Cardinal is table for including without simply of an emission of the applicable anotas. To not went shall Cardinal is table for including without simply of an emission of the applicable anotas. To not went shall Cardinal is table for including without simply of all or indicated in the presentation of the another tables to table tables that tables tables that and the input and example tables to table tables tab

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 15 (H800348-03)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifie
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3.29	
Ethylbenzene*	< 0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
Total BTEX	<0.300	0.300	02/02/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	112 9	72-148	1						
Chloride, SM4500CI-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2040	16.0	02/02/2018	ND	432	108	400	3.77	
TPH 8015M	mg/	'kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10,0	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270	
	<10.0	10.0	02/02/2018	ND					

Surrogate: 1-Chlorooctadecane 73.7 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018	
Reported:	02/05/2018	Sampling Type:	Soil	
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact	
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker	
Project Location:	NOBLE			

#### Sample ID: EW - 20 (H800348-04)

BTEX 8021B mg/kg Analyzed By: MS Qualifier % Recovery True Value QC Analyte Result Reporting Limit Analyzed Method Blank BS RPD Benzene\* < 0.050 0.050 02/02/2018 ND 2.09 104 2.00 3.58 Toluene\* <0.050 0.050 02/02/2018 ND 2.07 104 2.00 3.29 Ethylbenzene\* < 0.050 02/02/2018 0.050 ND 2.06 103 2.00 4.08 Total Xylenes\* <0.150 0.150 02/02/2018 ND 6.26 104 6.00 4.98 Total BTEX 02/02/2018 < 0.300 0.300 ND

Surrogate: 4-Bromofluorobenzene (PID 72-148 114 %

Chloride, SM4500CI-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3080	16.0	02/02/2018	ND	432	108	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	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10.0	10,0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10.0	10.0	02/02/2018	ND					

92.0 % 41-142

Surrogate: 1-Chlorooctadecane 90.4 % 37.6-147

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 25 (H800348-05)

Analyte	mg,	mg/kg		Analyzed By: MS					
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3.29	
Ethylbenzene*	<0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
Total BTEX	<0.300	0.300	02/02/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 112 % 72-148

Chloride, SM4500CI-B	mg/kg		Analyzed By: AC		_				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS % Recovery	True Value QC	RPD	Qualifier	
Chloride	3160	16.0	02/02/2018	ND	432	108	400	3.77	
TPH 8015M	mg.	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10.0	10,0	02/02/2018	ND					
Surrogate: 1-Chlorooctane	82.2	96 41-142	1						
Surrogate: 1-Chlorooctadecane	80.4	% 37.6-14	7						

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### Analytical Results For:

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

Received: 02/02/2018 02/05/2018 Reported: Project Name: EILLIAMS BATTERY Project Number: Project Location: NOBLE

Sampling Date:	01/31/2018
Sampling Type:	Soil
Sampling Condition:	Cool & Intact
Sample Received By:	Tamara Oldaker

Sample ID: EW - 30 (H800348-06)

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BTEX 8021B	mg	mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3.29	
Ethylbenzene*	<0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
Total BTEX	<0.300	0.300	02/02/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 111 % 72-148

91.3 %

Chloride, SM4500CI-B	mg	/kg		d By: AC		_	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC
Chloride	4160	16,0	02/02/2018	ND	432	108	400
TPH 8015M	mg	/kg	Analyze	d By: MS			

37.6-147

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2018	ND	214	107	200	0.652	
DR0 >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10.0	10.0	02/02/2018	ND					

Surrogate: 1-Chlorooctane 92.9 % 41-142

Surrogate: 1-Chlorooctadecane

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RPD

3.77

Qualifier

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 35 (H800348-07)

BTEX 8021B	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3.29	
ne*	<0.050	0.050	02/02/2018	ND	2.06	103	2.00	4.08	
nes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4.98	
	<0.300	0.300	02/02/2018	ND					
	Analyte me*	Analyte         Result           <0.050	Analyte         Result         Reporting Limit           <0.050	Analyte         Result         Reporting Limit         Analyzed           <0.050	Analyte         Result         Reporting Limit         Analyzed         Method Blank           <0.050	Analyte         Result         Reporting Limit         Analyzed         Method Blank         BS           <0.050	Analyte         Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery           <0.050	Analyte         Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery         True Value QC           <0.050	Analyte         Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery         True Value QC         RPD           <0.050

Surrogate: 4-Bromofluorobenzene (PID 114 % 72-148

Chloride, SM4500CI-B	mg/kg	Analyzed By: AC
enterine, arrester a	and and	range of the

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4720	16.0	02/02/2018	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS				_	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10.0	10.0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10.0	10.0	02/02/2018	ND					

Surrogate: 1-Chlorooctane 87.8 % 41-142

Surrogate: 1-Chlorooctadecane 87.2 % 37.6-147

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 40 (H800348-08)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/02/2018	ND	2.09	104	2.00	3.58	
Toluene*	<0.050	0.050	02/02/2018	ND	2.07	104	2.00	3.29	
thylbenzene*	<0.050	0.050	02/02/2018	ND	2.06	103	2,00	4.08	
Total Xylenes*	<0.150	0.150	02/02/2018	ND	6.26	104	6.00	4,98	
Total BTEX	<0.300	0.300	02/02/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	108 9	6 72-148							
Chloride, SM4500CI-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3200	16.0	02/02/2018	ND	432	108	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	02/02/2018	ND	214	107	200	0.652	
DRO >C10-C28*	<10,0	10.0	02/02/2018	ND	207	104	200	0.270	
EXT DRO >C28-C36	<10.0	10.0	02/02/2018	ND					

Surrogate: 1-Chlorooctane 87.4 % 41-142

Surrogate: 1-Chlorooctadecane 85.5 % 37.6-147

\*=Accredited Analyte

REACE MOTE: Libbly and Damages. Cardwal's haliby and clears exclusive money for any daim anting, whether based in content or tort, shall be limbed to the amount paid by clear for analyses. All claims, including those for negligence and any other cause whethere what have been exect values and and the second state of the second state and and the second state of the second state and and the second state of the second state and and the second state of the second state of the second state and the second state of the second state and the second state and the second state of the second state of the second state and the second state of the second state of the second state and the second statements.

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 45 (H800348-09)

	mg/kg		Analyzed By: MS			-		
Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<0.050	0.050	02/05/2018	ND	2.50	125	2.00	11.7	
<0.050	0.050	02/05/2018	ND	2.55	128	2.00	12.8	
<0.050	0.050	02/05/2018	ND	2.57	129	2.00	13.3	
<0.150	0.150	02/05/2018	ND	7.54	126	6.00	13.5	
<0.300	0.300	02/05/2018	ND					
	<0.050 <0.050 <0.050 <0.150	<0.050 0.050 <0.050 0.050 <0.050 0.050 <0.150 0.150	<0.050	<0.050         0.050         02/05/2018         ND           <0.050	<0.050         0.050         02/05/2018         ND         2.50           <0.050	<0.050         0.050         02/05/2018         ND         2.50         125           <0.050	<0.050         0.050         02/05/2018         ND         2.50         125         2.00           <0.050	<0.050         0.050         02/05/2018         ND         2.50         125         2.00         11.7           <0.050

Surrogate: 4-Bromofluorobenzene (PID 113 % 72-148

mg/kg

Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1880	16.0	02/02/2018	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyzed By: MS						1 I.,
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10,0	10.0	02/05/2018	ND	206	103	200	0.428	
DRO >C10-C28*	<10.0	10.0	02/05/2018	ND	198	98.8	200	0.684	
EXT DRO >C28-C36	<10.0	10.0	02/05/2018	ND					

Surrogate: 1-Chlorooctane 87.8 % 41-142

Surrogate: 1-Chlorooctadecane 84.9 % 37.6-147

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Chloride, SM4500CI-B

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 50 (H800348-10)

BTEX 8021B	mg/kg		Analyze	Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/05/2018	ND	2.50	125	2.00	11.7	
Toluene*	<0.050	0.050	02/05/2018	ND	2.55	128	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/05/2018	ND	2.57	129	2.00	13.3	
Total Xylenes*	<0.150	0.150	02/05/2018	ND	7.54	126	6.00	13.5	
Total BTEX	<0.300	0.300	02/05/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 112 % 72-148

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC		- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10			×
Analyte	Result	Reporting Umit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	912	16.0	02/02/2018	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/05/2018	ND	206	103	200	0.428	
DRO >C10-C28*	<10.0	10.0	02/05/2018	ND	198	98.8	200	0.684	
EXT DRO >C28-C36	<10.0	10.0	02/05/2018	ND					
Surrogate: 1-Chlorooctane	90.4	% 41-142	1						
Surrogate: 1-Chlorooctadecane	86.8	96 37.5-14	7						

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### \*=Accredited Analyte

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# **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:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 55 (H800348-11)

BTEX 8021B Analyzed By: MS mg/kg Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier 02/05/2018 125 Benzene\* <0.050 0.050 ND 2,50 2.00 11,7 02/05/2018 Toluene\* < 0.050 0.050 ND 2.55 128 2.00 12,8 02/05/2018 Ethylbenzene\* < 0.050 0.050 ND 2.57 129 2.00 13,3 Total Xylenes\* 02/05/2018 <0.150 0.150 ND 7.54 126 6.00 13.5 Total BTEX 02/05/2018 <0.300 0.300 ND

Surrogate: 4-Bromofluorobenzene (PID 72-148 116 %

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	496	16.0	02/02/2018	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS		_			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10,0	02/05/2018	ND	206	103	200	0.428	
DRO >C10-C28*	<10.0	10.0	02/05/2018	ND	198	98.8	200	0.684	
EXT DRO >C28-C36	<10.0	10.0	02/05/2018	ND					
Surrogate: 1-Chlorooctane	89.4	96 41-142							

Surrogate: 1-Chlorooctane

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Surrogate: 1-Chlorooctadecane 83.9 % 37.6-147

### \*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018	Sampling Date:	01/31/2018
Reported:	02/05/2018	Sampling Type:	Soil
Project Name:	EILLIAMS	Sampling Condition:	Cool & Intact
Project Number:	BATTERY	Sample Received By:	Tamara Oldaker
Project Location:	NOBLE		

### Sample ID: EW - 60 (H800348-12)

BTEX 8021B	mg/	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/05/2018	ND	2.50	125	2.00	11.7	
Toluene*	<0.050	0.050	02/05/2018	ND	2.55	128	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/05/2018	ND	2.57	129	2.00	13.3	
Total Xylenes*	<0.150	0.150	02/05/2018	ND	7.54	126	6.00	13.5	
Total BTEX	<0.300	0.300	02/05/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	112 9	72-148		7. A.					
Chloride, SM4500CI-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	02/02/2018	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS	. C.,				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/05/2018	ND	206	103	200	0.428	
DRO >C10-C28*	<10.0	10.0	02/05/2018	ND	198	98.8	200	0.684	
EXT DRO >C28-C36	<10.0	10.0	02/05/2018	ND					

Surrogate: 1-Chlorooctadecane 82.9 %

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Celey D. Keene, Lab Director/Quality Manager

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### Analytical Results For:

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

Received:	02/02/2018			
Reported:	02/05/2018			
Project Name:	EILLIAMS			
Project Number:	BATTERY			
Project Location:	NOBLE			

Sampling Date: Sampling Type: Sampling Condition: Sample Received By: 01/31/2018 Soil Cool & Intact Tamara Oldaker

### Sample ID: EW - 65 (H800348-13)

BTEX 8021B	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit.	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/05/2018	ND	2.50	125	2.00	11.7	
Toluene*	<0.050	0.050	02/05/2018	ND	2.55	128	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/05/2018	ND	2.57	129	2.00	13.3	
Total Xylenes*	<0.150	0.150	02/05/2018	ND	7,54	126	6,00	13,5	
Total BTEX	<0.300	0.300	02/05/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID 113 % 72-148

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC				-	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	02/02/2018	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS	24			10.18	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/05/2018	ND	206	103	200	0.428	
DRO >C10-C28*	<10.0	10.0	02/05/2018	ND	198	96.8	200	0.684	
EXT DRO >C28-C36	<10.0	10.0	02/05/2018	ND					

Survegule. 1-Chiorocelune	2412 10			
Surrogate: 1-Chlorooctadecane	86.5 %	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.
QR-04	The RPD for the BS/BSD was outside of historical limits.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BSI	Blank spike recovery above laboratory acceptance criteria. Results for analyte potentially biased high.
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 SM4500CI-8 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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