

Devon Energy Production Co LP

Cotton Draw Unit SWD 181

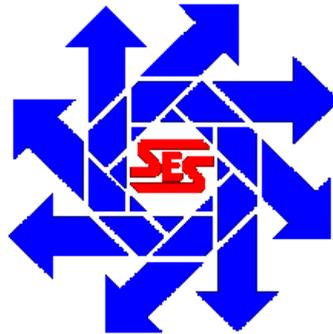
Delineation Report and Work Plan

(Revised)

**Unit Letter H, Section 36, T24S, R31E
Eddy County, New Mexico**

30-015-41649

December 9, 2015



Prepared for:

**Devon Energy Production Co., LP
PO Box 250
Artesia, New Mexico 88211**

By:

**Safety & Environmental Solutions, Inc.
703 East Clinton Street
Hobbs, New Mexico 88240
(575) 397-0510**

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I. Company Contacts

Representative	Company	Telephone	E-mail
Brett Fulks	Devon Energy Prod.	575-748-1844	Brett.Fulks@dvn.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc., hereinafter referred to as (SESI) was engaged by Devon Energy to perform site assessment and delineation on the Cotton Draw Unit SWD 181, concerning a one hundred barrel (100 bbl) release comprising of produced water. This site is situated in Eddy County, Section 36, Township 24S, and Range 31E.

According to the C-141, a load line valve was inadvertently left open. This resulted in a 100 bbl. Release of produced water onto the pad area. The valve was shut in as soon as possible. This created an area of impact measuring approximately 50' X 100'. A vacuum truck was utilized to recover approximately Fifty (50 bbl.) of fluid in order to minimize impact to ground surface (Appendix A). Check valves have since been installed on the load lines in an effort to prevent this type of spill from reoccurrence.

III. Surface and Ground Water

There is no record of groundwater in the immediate vicinity of the site location. Further research of the New Mexico Office of the State Engineer website reveals records for Eddy County, Section 36, Township 24S, and Range 31E which indicate the average depth to groundwater for the area to be 182' bgs. (Appendix B).

IV. Characterization

The target cleanup levels are determined using the *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). Based on the ranking criteria presented below, the applicable Recommended Remediation Action Levels (RRAL) are 10 parts per million (ppm) Benzene, 50 ppm combined benzene, toluene, ethyl benzene, and total xylenes (BTEX), and 5,000 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 250 mg/kg (PPM) is also required.

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	
	>100 feet	0 points	X
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	X
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	X
RANKING SCORE (TOTAL POINTS)			0

V. Work Performed

On October 12, 2015, SESI was onsite to photograph, assess and map the spill area.

SESI personnel visited the site to conduct a vertical and horizontal delineation of the impacted area. It was determined that two (2) sample point positions would be sufficient given the dynamics and outlay of the area. The two bore holes were advanced to depths of 4' bgs., where vertical extent was reached in each bore hole. Representative soil samples were properly packaged, preserved and transported to Cardinal Laboratories, Hobbs New Mexico and analyzed for Chloride (Cl⁻) (Method SM 4500Cl-B). The results of the analysis are presented in the table below (Appendix D):

Sample Date 10/12/2015	Chloride (mg/kg)
Depth	
BH-1 Surf-1'	64.0
BH-1 2'	32.0
BH-1 3'	272
BH-1 4'	16.0
BH-2 Surf-1'	128
BH-2 2'	48.0
BH-2 3'	32.0
BH-2 4'	64.0

On October 23, 2015, Bob Allen from SESI met on-site with representative, Brett Fulks and Gary Michaels from Devon Energy. The site is a Salt Water Disposal Facility with a significant amount of trucking and disposal activity. The location of the spill area is immediately under the load line stations for trucks. The spill traversed west into the bermed area south of the battery. The area under the load lines has a significant number of water, as well as electrical lines that crisscross the area making excavation in this area unfeasible. Excavation in this area will necessitate the costly shutdown of the facility for an undetermined amount of time. Saving the removal of the lines, excavation in this area would not achieve reasonable remediation of the spill. (Appendix C).

On December 01, 2015, SESI personnel together with personnel of Custom Welding revisited the site per the request of the NMOCD (Artesia District). Test Trenches were excavated and simultaneous field testing of representative soil samples conducted in order to confirm vertical extent of Chloride constituencies in the same locations as were previously reported by Enviro Clean Services, L.L.C. The representative soil samples were properly packaged, preserved and transport to Cardinal Laboratories, Hobbs New Mexico and analyzed for Chloride (Cl⁻) (Method SM 4500C:-B). The results of the analysis are presented in the table below (Appendix D):

Sample Date 12/01/2015	Chloride (mg/kg)
Depth	
TT-1 Surface	224
TT-1 1'	32.0
TT-2 Surface	13000
TT-2 1'	448
TT-2 2'	704
TT-2 3'	80.0
TT-3 Surface	6040
TT-3 1'	<16.0
TT-4 Surface	1630
TT-4 1'	48.0

On January 08, 2016 SESI personnel returned to the site together with personnel and equipment from Custom Welding in order to further delineate the pad area. Test Trenches were then advanced to depths of 6' and 7' bgs., respectively. Representative soil samples were retrieved at 1' intervals in depth. The representative soil samples were properly packaged, preserved and transported to Cardinal Laboratories, Hobbs New Mexico and analyzed for Chloride (Cl⁻) (Method SM 4500C:-B). The results of the analysis are presented in the table below (Appendix D):

Sample Date 01/08/2016	Chloride (mg/kg)
Depth	
TT-1 Surface	816
TT-1 4'	208
TT-1 6'	48
TT-1 7'	32
TT-2 Surface	192
TT-2 2'	32
TT-2 4'	<16.0
TT-2 5'	64
TT-2- 7'	<16.0
TT-3 Surface	48
TT-3 2'	528
TT-3 4'	64.0
TT-3 5'	48
TT-3 7'	64
TT-4 Surface	<16.0
TT-4 2'	48
TT-4 4'	64
TT-4 5'	32
TT-4 7'	64

VI. Action Plan

Due to the results listed above and the dynamics of this site; the following action plan is proposed:

Excavate 2' of contaminated soils from the south and west side of the tank battery, as indicated in (Figure 2). The excavated material will be transported to an approved NMOCD facility for disposal. The pad area is to be excavated to 6" bgs.' and representative soil samples taken from the bottom, and field tested. NMOCD is to be apprised of the chloride levels at that depth. If the chloride levels are not within NMOCD guidelines, an additional 6" is to be removed for a maximum total of a 1' bgs removal, and bottom samples retrieved for confirmation of acceptable levels. In all areas; composite samples will be taken from the sides and bottom of the excavated areas. The samples will be taken to a commercial laboratory for final analysis and confirmation. The excavated area will be backfilled with material similar to that removed, returning to grade and esthetically restore the area. All closure documentation will be submitted to Devon representative, NMOCD and BLM upon completion of site remediation.

VII. Figures & Appendices

Figure 1 – Vicinity Map

Figure 2 – Site Plan

Appendix A – C-141

Appendix B – Groundwater

Appendix C – Photo Documentation

Appendix D - Analytical

Figure 1
Vicinity Map

Turn left onto NM-128 E Turn left onto NM-128 E

SP3 Bottom SP10 East wall



128

Turn left

Cotton Draw Unit SWD 181

Cotton Draw 10 Federal Com 3H
Devon Cotton Draw 11

© 2015 Google

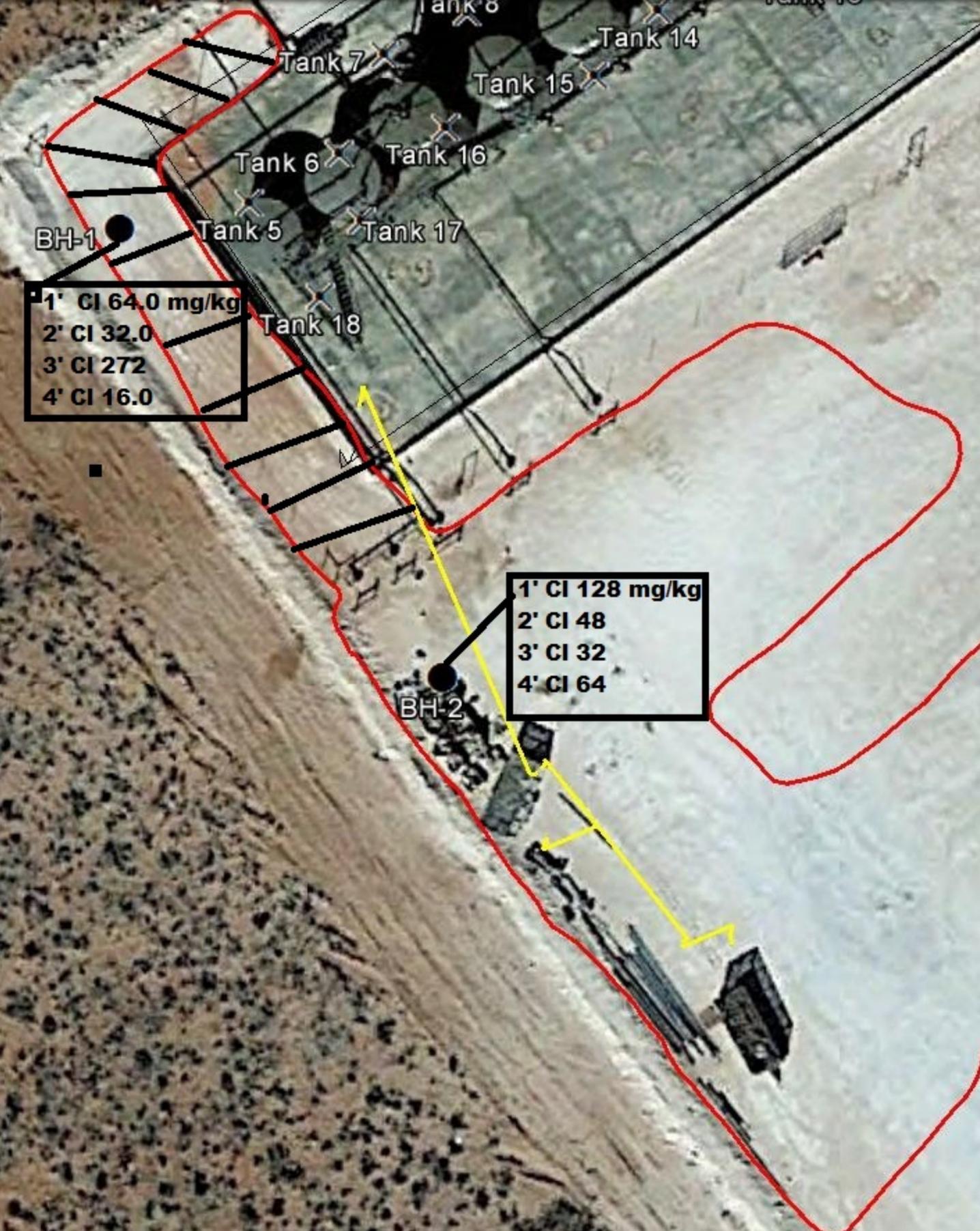
Google earth

Figure 2
Site Plan

BH-1
1' CI 64.0 mg/kg
2' CI 32.0
3' CI 272
4' CI 16.0

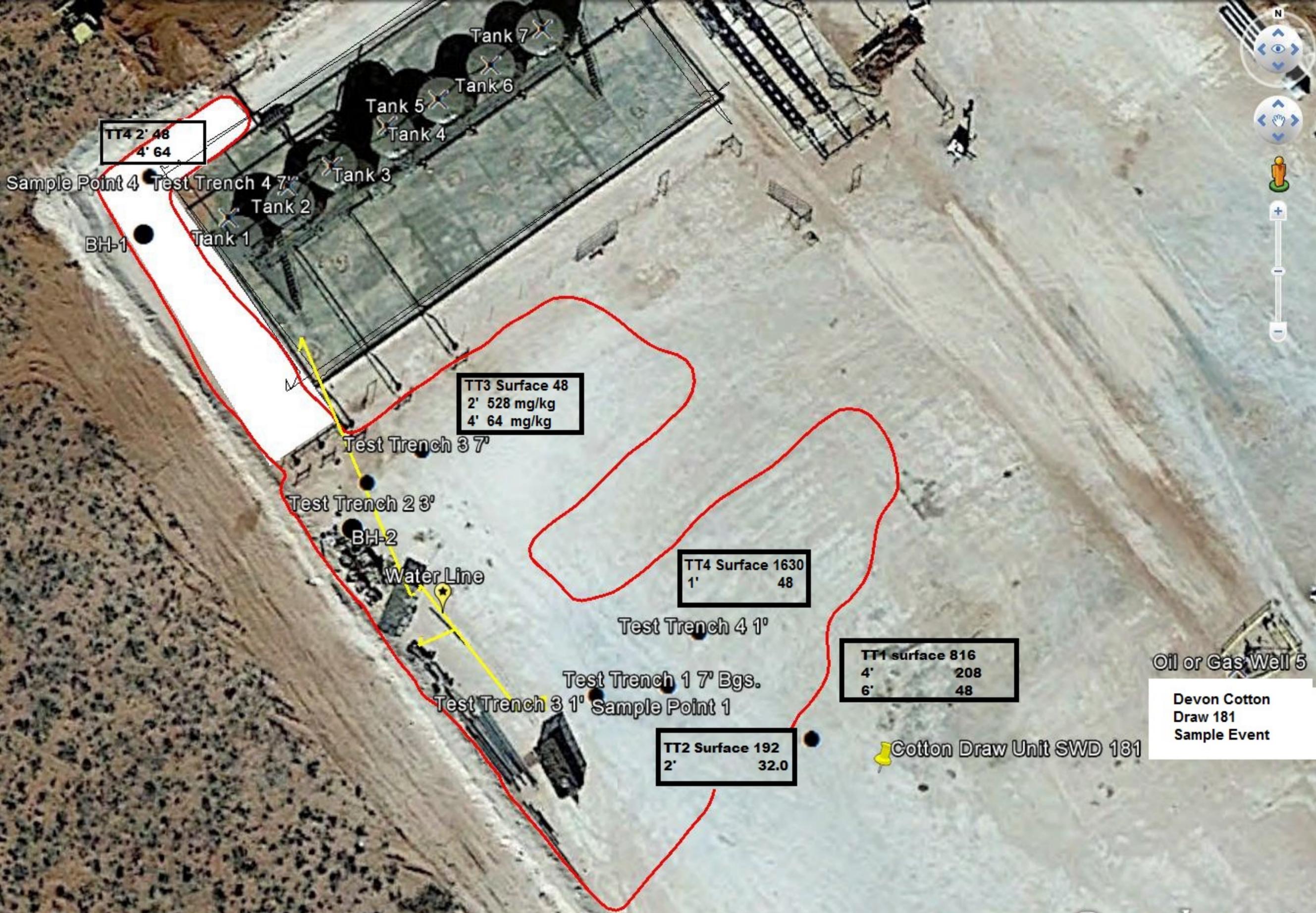
BH-2
1' CI 128 mg/kg
2' CI 48
3' CI 32
4' CI 64

Cotton Draw Unit SWD 181



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Google earth



Survey

© 2016 Google

Google earth

Appendix A

C-141

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

State of New Mexico
Energy Minerals and Natural Resources

Form C-141
Revised August 8, 2011

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

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

Release Notification and Corrective Action

OPERATOR Initial Report Final Report

Name of Company Devon Energy Production Company	Contact Joah Weidemann; Production Foreman
Address 6488 Seven Rivers Hwy Artesia, NM 88210	Telephone No. 575-513-1528
Facility Name Cotton Draw Unit SWD 181	Facility Type Salt Water Disposal

Surface Owner: Federal	Mineral Owner: Federal	API No 30-015-41649
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	36	24S	31E	1568	North	1189	East	Eddy

Latitude: N 32.1767786

Longitude: W 103.7268063

NATURE OF RELEASE

Type of Release produced water spill	Volume of Release 100BBLS	Volume Recovered 30BBLS
Source of Release Load line valve left open	Date and Hour of Occurrence February 24, 2015 3:00 PM	Date and Hour of Discovery February 24, 2015 3:00 PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Jeff Robertson; BLM & Mike Bratcher; OCD	
By Whom? Assistant Production Foreman; Kevin Phillips	Date and Hour February 24, 2015 @6:45PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse N/A	

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

Describe Cause of Problem and Remedial Action Taken.*
A load line valve was left open resulting in 100BBLS of produced water being released onto the location. The valve was shut as soon as the release was noticed.

Describe Area Affected and Cleanup Action Taken.*
The 100BBLS of released produced water affected an area approximately 50' x 100' on the southwest side of the location. A vacuum truck recovered 30BBLS of the released fluid. The produced water did not leave the pad and did not reach the pasture.

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

Signature: <i>Sandy Farley</i>	OIL CONSERVATION DIVISION	
Printed Name: Sandra Farley	Approved by Environmental Specialist:	
Title: Field Admin Support	Approval Date:	Expiration Date:
E-mail Address: sandy.farley@dvnp.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 2.26.15 Phone: 575.746.5587		

* Attach Additional Sheets If Necessary

Appendix B

Groundwater



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	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	DepthWater Column
C 02405	C	ED		4	1	02	24S	31E		617690	3568631*	275	160 115
C 02440	C	ED		2	3	10	24S	31E		616103	3566599*	350	
C 02460	C	ED			3	02	24S	31E		617496	3568022*	320	
C 02460 POD2	C	ED			3	02	24S	31E		617496	3568022*	320	
C 02464	C	ED		3	4	1	02	24S	31E	617589	3568530*	320	205 115
C 02661		ED		3	3	1	04	24S	31E	613969	3568485*	708	
C 02783	C	CUB ED		3	3	1	04	24S	31E	613911	3568461	708	
C 02783 POD2	C	ED		3	3	1	04	24S	31E	613911	3568461	672	
C 02784	C	ED		4	2	4	04	24S	31E	613911	3568461	584	
C 02785		ED		3	3	1	04	24S	31E	613969	3568485*	692	

Average Depth to Water: **182 feet**
 Minimum Depth: **160 feet**
 Maximum Depth: **205 feet**

Record Count: 10

Basin/County Search:

County: Eddy

PLSS Search:

Township: 24S **Range:** 31E

*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.

Appendix C

Photo Documentation

**Devon Energy
Cotton Draw Unit SWD 181
API 30-015-41649**



Site at Fill Lines



Looking Northeast



Impact at rear of tanks



Impacted area north side of site



Appendix D

Analytical



October 20, 2015

Bob Allen
Safety & Environmental Solutions
703 East Clinton
Hobbs, NM 88240

RE: COTTON DRAW #181 SWD

Enclosed are the results of analyses for samples received by the laboratory on 10/16/15 15:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 accredited through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	10/16/2015	Sampling Date:	10/16/2015
Reported:	10/20/2015	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: BH-1 SURF - 1' (H502714-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	10/20/2015	ND	448	112	400	7.41	

Sample ID: BH-1 2' (H502714-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/20/2015	ND	352	88.0	400	12.8	

Sample ID: BH-1 3' (H502714-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	10/20/2015	ND	352	88.0	400	12.8	

Sample ID: BH-1 4' (H502714-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	10/20/2015	ND	352	88.0	400	12.8	

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	10/16/2015	Sampling Date:	10/16/2015
Reported:	10/20/2015	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	LEA COUNTY, NM		

Sample ID: BH-2 SURF - 1' (H502714-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	10/20/2015	ND	352	88.0	400	12.8	

Sample ID: BH-2 2' (H502714-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	10/20/2015	ND	352	88.0	400	12.8	

Sample ID: BH-2 3' (H502714-07)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/20/2015	ND	352	88.0	400	12.8	

Sample ID: BH-2 4' (H502714-08)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	10/20/2015	ND	352	88.0	400	12.8	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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



ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240

(505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page _____ of _____

ANALYSIS REQUEST

Company Name: Safety & Environmental Solutions, Inc.

Project Manager: Rob Allen

Address: 703 East Clinton

City: Hobbs State: NM Zip: 88240

Phone #: 575-397-0510 Fax #: 575-393-4388

Project #: DEL-15-003 Project Owner: DENVER

Project Name: Central Draw (81 SWD)

Project Location: Le2 Quarry

Sampler Name: Sara Jerry

FOR USE ONLY

Lab I.D. Sample I.D.

Lab I.D.	Sample I.D.	Depth	Date	Time	Analysis	PRESERV		SAMPLING	
						DATE	TIME	DATE	TIME
1	BH-1	5m-1ft	10/16	1000	Chlorides				
2	BH-1	2ft	10/16	1010					
3	BH-1	3ft	10/16	1015					
4	BH-1	4ft	10/16	1030					
5	BH-2	5m-1ft	10/16	1100					
6	BH-2	2ft	10/16	1105					
7	BH-2	3ft	10/16	1130					
8	BH-2	4ft	10/16	1145					

PLEASE NOTE: Laboratory and field safety and health regulations apply to any chain of custody whether based in contact or not, 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 void and null and void 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 associates arising out of or related to the performance of services rendered by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Sampler Relinquished By: Sara Jerry Date: 10/16/15 Time: 1530

Relinquished By: Sara Jerry Date: 10/16/15 Time: 1530

Received By: Heidi Henderson

Delivered By: (Circle One) UPS - Bus - Other: 14.80c

Temp. Sample Condition: Cool Intact Yes No No

#54



December 08, 2015

Bob Allen
Safety & Environmental Solutions
703 East Clinton
Hobbs, NM 88240

RE: COTTON DRAW #181 SWD

Enclosed are the results of analyses for samples received by the laboratory on 12/02/15 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 accredited through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	12/02/2015	Sampling Date:	12/01/2015
Reported:	12/08/2015	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-1 SURFACE (H503146-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-1 1' (H503146-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-2 SURFACE (H503146-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13000	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-2 1' (H503146-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	448	16.0	12/04/2015	ND	464	116	400	3.51	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	12/02/2015	Sampling Date:	12/01/2015
Reported:	12/08/2015	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-2 2' (H503146-05)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	704	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-2 3' (H503146-06)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-3 SURFACE (H503146-07)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6040	16.0	12/04/2015	ND	464	116	400	3.51	

Sample ID: TT-3 1' (H503146-08)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	12/04/2015	ND	400	100	400	3.92	

Sample ID: TT-4 SURFACE (H503146-09)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1630	16.0	12/04/2015	ND	400	100	400	3.92	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	12/02/2015	Sampling Date:	12/01/2015
Reported:	12/08/2015	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-4 1' (H503146-10)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	12/04/2015	ND	400	100	400	3.92	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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

101 East Marland, Hobbs, NM 88240
(505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

ANALYSIS REQUEST

BILL TO

Company Name: Safety & Environmental Solutions, Inc.
 Project Manager: Bob Allen
 Address: 703 East Clinton
 City: Hobbs State: NM zip: 88240
 Phone #: 575-397-0510 Fax #: 575-393-4388
 Project #: DE-15-003 Project Owner: Debra
 Project Name: Cottonwood 181
 Project Location: Eddy Co.
 Sampler Name: Son Jerry
 Lab I.D.: Sample I.D.

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	REMARKS	ANALYSIS REQUEST	
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:					ICE / COOL
H503146	TI-1	Surface	9									12/01	1030		
	TI-1	1ft	9									12/01	1035		
	TI-2	Surface	9									12/01	1100		
	TI-2	1ft	9									12/01	1115		
	TI-2	2ft	9									12/01	1130		
	TI-2	3ft	9									12/01	1150		
	TI-3	Surface	9									12/01	1205		
	TI-3	1ft	9									12/01	1215		
	TI-4	Surface	9									12/01	1230		
	TI-4	1ft	9									12/01	1245		

PLEASE NOTE: Laboratory and District's liability and efforts to recover for any claims arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other causes 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 subcontractors 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 theories or otherwise.

Delivered By: (Circle One) UPS Bus Other: 8492

Temp. Cool Intact Yes No

Sample Condition Yes No

Checked By: [Signature]

Received By: [Signature]

Remarks: Chlorides

Phone Result: Yes No Add'l Phone #: _____
 Fax Result: Yes No Add'l Fax #: _____



January 12, 2016

Bob Allen
Safety & Environmental Solutions
703 East Clinton
Hobbs, NM 88240

RE: COTTON DRAW #181 SWD

Enclosed are the results of analyses for samples received by the laboratory on 01/11/16 9:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 accredited through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	01/11/2016	Sampling Date:	01/07/2016
Reported:	01/12/2016	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-1 SURFACE (H600045-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	816	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-1 4' (H600045-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-1 6' (H600045-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-1 7' (H600045-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	01/11/2016	ND	432	108	400	3.77	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	01/11/2016	Sampling Date:	01/07/2016
Reported:	01/12/2016	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-2 SURFACE (H600045-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-2 2' (H600045-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-2 4' (H600045-07)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-2 5' (H600045-08)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-2 7' (H600045-09)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	01/11/2016	ND	432	108	400	3.77	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	01/11/2016	Sampling Date:	01/07/2016
Reported:	01/12/2016	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-3 SURFACE (H600045-10)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-3 2' (H600045-11)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-3 4' (H600045-12)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-3 5' (H600045-13)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-3 7' (H600045-14)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	01/11/2016	ND	432	108	400	3.77	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Safety & Environmental Solutions
 Bob Allen
 703 East Clinton
 Hobbs NM, 88240
 Fax To: (575) 393-4388

Received:	01/11/2016	Sampling Date:	01/07/2016
Reported:	01/12/2016	Sampling Type:	Soil
Project Name:	COTTON DRAW #181 SWD	Sampling Condition:	** (See Notes)
Project Number:	DEV-15-003	Sample Received By:	Jodi Henson
Project Location:	EDDY CO.		

Sample ID: TT-4 SURFACE (H600045-15)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-4 2' (H600045-16)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-4 4' (H600045-17)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	01/11/2016	ND	432	108	400	3.77	

Sample ID: TT-4 5' (H600045-18)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	01/11/2016	ND	448	112	400	3.64	

Sample ID: TT-4 7' (H600045-19)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	01/11/2016	ND	448	112	400	3.64	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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, INC.
 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 1 of 2

ANALYSIS REQUEST

Company Name: SEEST		PO #:	
Project Manager:		Company: SAME	
Address: 703 E. CLINTON, #103		City:	
City: HOBBS		State: NM Zip: 88240	
Phone #: (505) 397-0510		Address:	
Fax #: (505) 393-4388		City:	
Project #: Del-15-003		State:	
Project Owner: Denver		Zip:	
Project Name: Cotton Detu 181		Phone #:	
Project Location: Boss Jerry		Fax #:	
FOR LAB USE ONLY		PRES.	
LAB I.D. Sample I.D.		SAMPLING	
H000045		DATE TIME	
1 TT-1 Surface		01/07 1030	
2 TT-1 4 FT		01/07 1045	
3 TT-1 6 FT		01/07 1115	
4 TT-1 7 FT		01/07 1200	
5 TT-2 Surface		01/07 1215	
6 TT-2 2 FT		01/07 1220	
7 TT-2 4 FT		01/07 1230	
8 TT-2 5 FT		01/07 1245	
9 TT-2 7 FT		01/07 1250	
10 TT-3 Surface		01/07 1300	
(G)RAB OR (C)OMP.		DATE	
# CONTAINERS		TIME	
GROUNDWATER		DATE	
WASTEWATER		TIME	
SOIL		DATE	
OIL		TIME	
SLUDGE		DATE	
OTHER:		TIME	
ACID:		DATE	
ICE / COOL		TIME	
OTHER:		DATE	
DATE		TIME	
01/07		1030	
01/07		1045	
01/07		1115	
01/07		1200	
01/07		1215	
01/07		1220	
01/07		1230	
01/07		1245	
01/07		1250	
01/07		1300	
REMARKS:		D. Clarke	

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Terms and Conditions: Invoices will be charged on all accounts more than 30 days past due at the rate of 2 1/2% per annum from the original date of invoice, and all cost of collection, including attorney's fees.

Delivered By: (Circle One)
 Sampler - UPS - Bus - Other: 12.60

Relinquished By: [Signature]
 Date: 01/11/06
 Time: 0800

Received By: [Signature]
 Date: [Blank]
 Time: [Blank]

Sample Condition: Cool Intact
 Checked By: [Signature]



CARDINAL LABORATORIES, INC.
 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ANALYSIS REQUEST

Company Name: SEST
 Project Manager:
 Address: 703 E. CLINTON, #103
 City: HOBBS State: NM Zip: 88240
 Phone #: (505) 397-0510
 Fax #: (505) 393-4388
 Project #: Dev-15-003 Project Owner: Devon
 Project Name: Cotton Draw 181
 Project Location: Soss Jerry
 FOR Lab Use Only
 Company: SAME
 Address:
 City:
 State: Zip:
 Phone #: Zip:
 Fax #:

LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRES.	SAMPLING	DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:					
<u>AL00045</u>														
11	TI-3	20T	1									1310		Chloride
12	TI-3	40T	1									1320		
13	TI-3	50T	1									1330		
14	TI-3	70T	1									1345		
15	TI-4	Surf	1									1400		
16	TI-4	20T	1									1400		
17	TI-4	40T	1									1420		
18	TI-4	50T	1									1430		
19	TI-4	70T	1									1445		

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Sampler Relinquished By: Soss Jerry Date: 01/11/16
 Received By: Walt Johnson
 Time: 0900
 Date: 12.10.12

Relinquished By: Soss Jerry Date: 01/11/16
 Received By: Walt Johnson
 Time: 0900
 Date: 12.10.12

Delivered By: (Circle One)
 Sampler - UPS - Bus - Other:
 Sample Condition: Cool Intact
 Checked By: [Signature]
 Remarks:

† Cardinal cannot accept verbal changes. Please fax written changes to 915.673.7020.