



August 24, 2015

Mr. Brett Fulks
Devon Energy Corporation
6488 Seven Rivers Hwy
Artesia, NM 88210

**RE: Soil Sampling – Cotton Draw Unit 181 SWD
NE/4 S36, Township 24 South, Range 31 East Eddy County, New Mexico**

Dear Mr. Fulks:

Devon Energy Corporation retained Enviro Clean Services, LLC (ECS) to collect soil samples at the Cotton Draw Unit 181 SWD site located in NE/4, S36, T24S, R31E, Eddy County, New Mexico. The GPS coordinates are approximately N32.1768°, W103.7268°. **Figure 1** is a site map depicting the area of release and soil sample locations. The affected area is contained within the bermed, western corner of an engineered crushed limestone production pad.

The New Mexico Oil Conservation Division's (OCD) Form C-141 prepared for this site indicates that on the afternoon of February 24, 2015, a load line valve was inadvertently left open, releasing 100 barrels (bbls) of produced water, with 30 bbls recovered by vacuum truck. The net loss is 70 bbls of produced water affecting approximately 50' by 100' area, which did not reach any of the adjacent pastureland. The C-141 indicates the surface owner is Federal (Bureau of Land Management, BLM), but the New Mexico State Land Office interactive *General Land Status* internet map indicates the Surface and Subsurface Estate are owned by the New Mexico State Land Trust.

On March 25, 2015, ECS field personnel collected soil samples from five locations within the impacted area. Sample depths were from the surface and at intervals to one foot below ground surface (bgs). The samples were transported under chain-of-custody to Permian Basin Environmental Lab, LP in Midland, Texas using industry standards for care and preservation. All samples were analyzed for Chlorides (EPA method 300.0) and Total Petroleum Hydrocarbons (TPH, EPA method 8015M).

General Site Characteristics

The affected property is along a pipeline right-of-way leased from the Bureau of Land Management (BLM). The *Geologic Map of New Mexico* (NMBGMR, 2003) indicates the site's surface geology is comprised of Qep – Quaternary eolian and piedmont deposits (Holocene to middle Pleistocene). This designation is for interlayered eolian sands and piedmont-slope deposits

S:\ECS Midland\ER&R\PROJECTS\Devon\DVNRNM0021 Cotton Draw 181

along the eastern flank of the Pecos River valley, primarily between Roswell and Carlsbad. Thin eolian deposits typically cap this soil unit. The Natural Resource Conservation Service identifies the local soils as BB – Berino complex, 0 to 3 percent slopes, eroded, which consist of mixed alluvium and/or eolian sands, typically with a profile of fine sand at the surface, with sandy clay loam to about 58 inches bgs, and a loamy sand at the bottom of the profile. These descriptions are consistent with the affected native soils.

The OCD Recommended Remediation Action Levels (RRALs) are a ranking system used to evaluate regulatory requirements. RRALs are based on depth to water, wellhead protection area distance, and the distance to surface water bodies. The nearest water wells are more than a mile away, and the only reported depth to groundwater is 450 feet bgs (see attached Point of Diversion records). There is no surface water within several miles of the site.



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	Depth Water	Water Column
C 02568			ED	4	3	1	01	25S	31E	619103	3558892*	1025		
C 02569			ED	4	4	2	02	25S	31E	618699	3558891*	1016		
C 02570			ED	4	2	4	02	25S	31E	618704	3558489*	895		
C 02571			ED	4	1	2	02	25S	31E	618292	3559294*	860		
C 02572			ED	4	2	2	02	25S	31E	618695	3559294*	852		
C 02573			ED	1	4	2	02	25S	31E	618499	3559091*			
C 02574			ED	1	1	2	02	25S	31E	618092	3559494*			
C 03830 POD1		CUB	ED	4	2	4	02	25S	31E	618632	3558432	450		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 8

PLSS Search:

Section(s): 1, 2

Township: 25S

Range: 31E

Using the site-specific data, the RRALs for the site are 10 parts per million (ppm, or mg/Kg) benzene, 50 ppm BTEX, and 5,000 ppm TPH. Chloride concentrations in soil are regulated in New Mexico, however, the regulatory value is determined on a site-specific basis. For sites with

the depth to groundwater greater than 100 feet bgs, 1,000 parts per million (ppm) is a generally accepted screening value. All of the sample locations exhibited elevated levels of chlorides at varying depths when compared to this standard. **Table 1** summarizes the analytical results, and the laboratory analytical report and chain-of-custody are attached for your records.

Table 1 – Analytical Results Summary

Sample ID	Depth (feet)	Date Collected	TPH C6-C12	TPH >C12-C28	TPH >C28-C35	Total TPH	Chlorides*
RRAL			---	---	---	5,000	1,000
001@3"	0.25	3/25/2015	<27.5	344	52.4	397	12,800
001A@6"	0.5	3/25/2015	<28.4	<28.4	<28.4	<28.4	11,100
002@3"	0.25	3/25/2015	<27.5	<27.5	<27.5	<27.5	13,000
002A@6"	0.5	3/25/2015	<27.8	<27.8	<27.8	<27.8	9,810
003@3"	0.25	3/25/2015	<27.8	<27.8	<27.8	<27.8	7,700
003A@6"	0.5	3/25/2015	<26.3	<26.3	<26.3	<26.3	3,830
003B@12"	1	3/25/2015	<26.3	<26.3	<26.3	<26.3	6,170
004@3"	0.25	3/25/2015	<25.5	<25.5	<25.5	<25.5	646
004A@6"	0.5	3/25/2015	<27.2	<27.2	<27.2	<27.2	70.7
004B@12"	1	3/25/2015	<26.9	<26.9	<26.9	<26.9	70.4
005@3"	0.25	3/25/2015	<27.2	<27.2	<27.2	<27.2	6,780
005A@6"	0.5	3/25/2015	<27.8	<27.8	<27.8	<27.8	6,950
Background	0.25	3/25/2015	<25.8	<25.8	<25.8	<25.8	577

All values are in milligrams per kilogram (mg/Kg, ppm)

Analyte detections are **bolded**.

Values that exceed the Recommended Remediation Action Levels (RRAL) are shaded.

*Chloride values are site specific; 1,000 is a regionally accepted target value.

Oil Conservation Division Work Plan

Based on the analytical results, the impacted soils extend beyond the collection depths near 001, 002, 003, and 005, along the southwestern pad berm. Additional subsurface chloride vertical delineation is required for this site based on OCD guidance.

For vertical delineation ECS recommends advancing soil borings until three samples at one foot intervals are field screened below 1,000 ppm chloride, or to approximately 30 feet bgs, whichever occurs first, in the area of sample point 002, 003, and 005. Soil samples will be field screened using an electrical conductivity meter and one-to-one soil-water solution, with laboratory samples to confirm the chloride content.

The release site is covered with an engineered carbonate surface, and the affected area does not support any vegetation. As a good stewardship measure, a one-foot bgs excavation of the caliche surface is proposed. A 30 mil polyethylene liner will be installed to prevent further percolation of

chlorides, and the excavated area will be backfilled with material similar to that removed, matching the surface grade and esthetically restoring the site.

All excavated impacted soil will be transported to an approved NMOCD facility for disposal. With Devon's concurrence, ECS will prepare a cost estimate to return to the site and collect vertical delineation confirmation samples.

ECS appreciates the opportunity to be of service to Devon. If you have any questions about the information presented in this report, please contact me at bgreen@envirocleanps.com or at 432.301.0209.

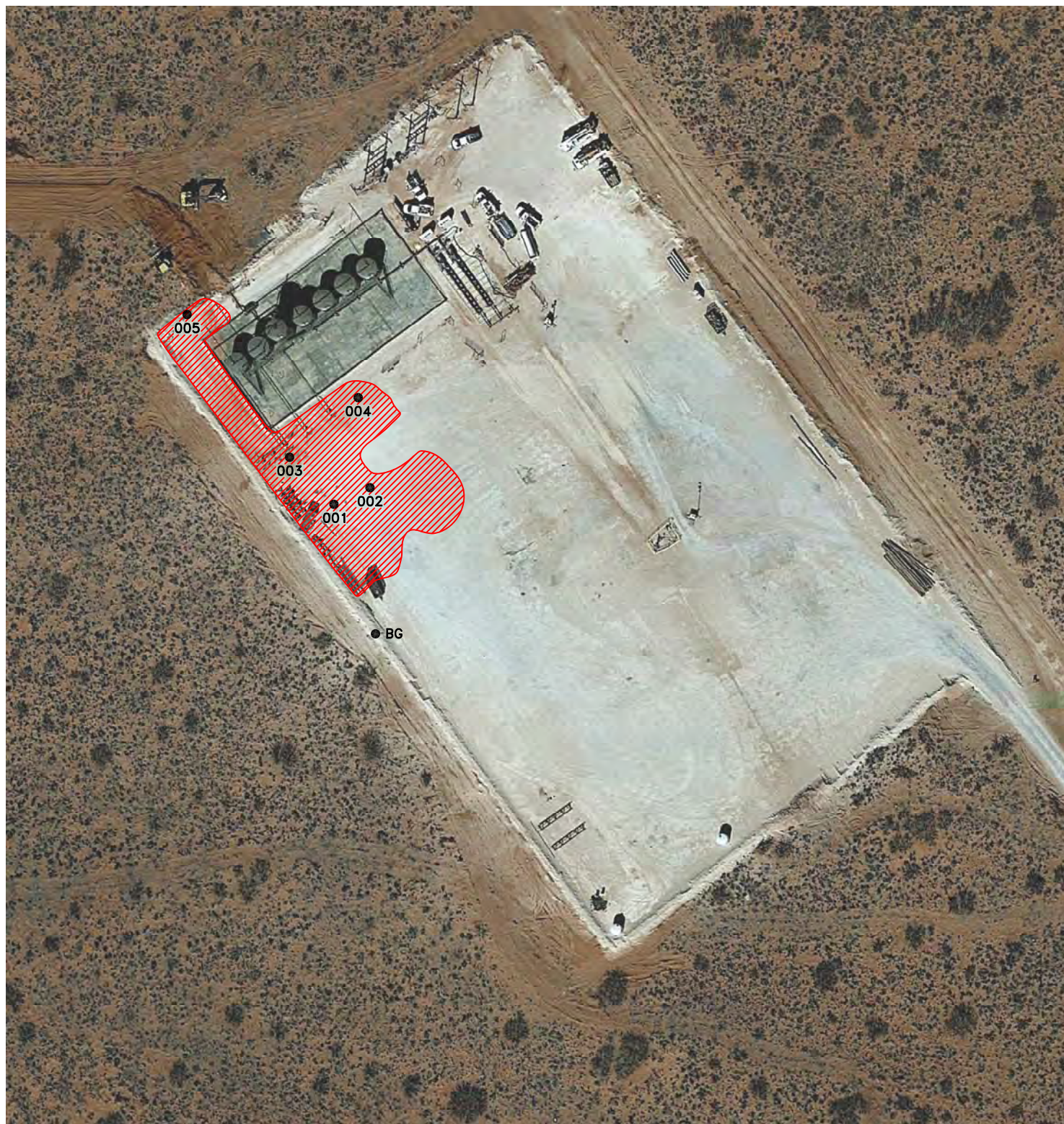
Sincerely,

Enviro Clean Services, LLC



William D. Green, PG
Geologist, Texas No. 136

Attachments: Figure 1: Area of Release and Soil Sample Locations
Initial C-141
State Land Office Point of Diversion Records
Laboratory Analytical Report and Chain of Custody Documentation
Photographic Documentation



SAMPLE NAME	LATITUDE	LONGITUDE
001	32.17687	-103.72757
002	32.17690	-103.72748
003	32.17696	-103.72748
004	32.17708	-103.72751
005	32.17725	-103.72791
BG	32.17662	-103.72746

0 50' 100' 200'

SCALE IN FEET



AREA OF RELEASE AND SOIL SAMPLE LOCATIONS
DEVON ENERGY CORPORATION
COTTON DRAW UNIT 181 SWD
 SECTION 36-24S-31E
 EDDY COUNTY, NEW MEXICO

Project Mngr: ECS

Designed By: ECS

Checked By: ECS

Approved By: ECS

File Name:



2405 E County Road 123
 Midland, Texas 79706

DVNRNM0021

Project No. DVNRNM0021

Scale: 1" = 100'

Date: 4/9/2015

Drawn By: TSL

Map No. FIG 1

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	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
----------------	---------	----------------	---------	--------	--------------

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

* Attach Additional Sheets If Necessary



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	Depth Water	Water Column
C 02568			ED	4	3	1	01	25S	31E	619103	3558892*	1025		
C 02569			ED	4	4	2	02	25S	31E	618699	3558891*	1016		
C 02570			ED	4	2	4	02	25S	31E	618704	3558489*	895		
C 02571			ED	4	1	2	02	25S	31E	618292	3559294*	860		
C 02572			ED	4	2	2	02	25S	31E	618695	3559294*	852		
C 02573			ED	1	4	2	02	25S	31E	618499	3559091*			
C 02574			ED	1	1	2	02	25S	31E	618092	3559494*			
C 03830 POD1		CUB	ED	4	2	4	02	25S	31E	618632	3558432	450		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 8

PLSS Search:

Section(s): 1, 2

Township: 25S

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.



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 30, 31

Township: 24S

Range: 32E



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 6

Township: 25S

Range: 32E



New Mexico Office of the State Engineer

Wells with Well Log Information

No wells found.

PLSS Search:

Section(s): 25, 26, 35, 36 **Township:** 24S **Range:** 31E

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
10014 SCR 1213
Midland, TX 79706**



Analytical Report

Prepared for:

DeWayne Partain
EnviroClean PS
2405 E CR 123
Midland, TEXAS 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Location: Devon Cottondraw unit 181 SWD
Lab Order Number: 5C26005



NELAP/TCEQ # T104704156-13-3

Report Date: 06/16/15

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
001 @ 3"	5C26005-01	Soil	03/25/15 11:40	03-26-2015 10:19
001A @ 6"	5C26005-02	Soil	03/25/15 11:45	03-26-2015 10:19
002 @ 3"	5C26005-03	Soil	03/25/15 11:50	03-26-2015 10:19
002A @ 6"	5C26005-04	Soil	03/25/15 11:55	03-26-2015 10:19
003 @ 3"	5C26005-05	Soil	03/25/15 12:00	03-26-2015 10:19
003A @ 6"	5C26005-06	Soil	03/25/15 12:05	03-26-2015 10:19
003B @ 12"	5C26005-07	Soil	03/25/15 12:08	03-26-2015 10:19
004 @ 3"	5C26005-08	Soil	03/25/15 12:14	03-26-2015 10:19
004A @ 6"	5C26005-09	Soil	03/25/15 12:17	03-26-2015 10:19
004B @ 12"	5C26005-10	Soil	03/25/15 12:20	03-26-2015 10:19
005 @ 3"	5C26005-11	Soil	03/25/15 12:28	03-26-2015 10:19
005A @ 3"	5C26005-12	Soil	03/25/15 12:32	03-26-2015 10:19
Background	5C26005-13	Soil	03/25/15 12:37	03-26-2015 10:19

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

001 @ 3"
5C26005-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	12800	54.9	mg/kg dry	50	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	9.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	344	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	52.4	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		101 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		125 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	397	27.5	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

001A @ 6"

5C26005-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	11100	56.8	mg/kg dry	50	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	12.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.4	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	28.4	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	28.4	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		100 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		118 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

002 @ 3"
5C26005-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	13000	54.9	mg/kg dry	50	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	9.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	27.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		109 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		127 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

002A @ 6"

5C26005-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	9610	27.8	mg/kg dry	25	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	10.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		105 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		121 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

003 @ 3"
5C26005-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	7700	27.8	mg/kg dry	25	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	10.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		104 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		120 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

003A @ 6"

5C26005-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	3830	10.5	mg/kg dry	10	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	5.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		100 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		115 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

003B @ 12"
5C26005-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6170	26.3	mg/kg dry	25	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	5.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	26.3	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		101 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		117 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

004 @ 3"
5C26005-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	646	1.02	mg/kg dry	1	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	2.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	1480	25.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	573	25.5	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		111 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		128 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	2050	25.5	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

004A @ 6"

5C26005-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	70.7	1.09	mg/kg dry	1	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	8.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		103 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		118 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

004B @ 12"
5C26005-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	70.4	1.08	mg/kg dry	1	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	7.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	26.9	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	26.9	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		107 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		124 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

005 @ 3"
5C26005-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6780	27.2	mg/kg dry	25	P5C3004	03/30/15	03/30/15	EPA 300.0
% Moisture	8.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C12-C28	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
>C28-C35	ND	27.2	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: 1-Chlorooctane		105 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Surrogate: o-Terphenyl		121 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

005A @ 3"

5C26005-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6950	27.8	mg/kg dry	25	P5C3004	03/30/15	03/30/15	EPA 300.0	
% Moisture	10.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
Surrogate: 1-Chlorooctane		115 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M	
Surrogate: o-Terphenyl		132 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc	

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

Background
5C26005-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	--------	-------

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	577	1.03	mg/kg dry	1	P5C3004	03/30/15	03/30/15	EPA 300.0	
% Moisture	3.0	0.1	%	1	P5C2702	03/26/15	03/27/15	% calculation	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P5D0104	03/27/15	03/27/15	TPH 8015M	
Surrogate: 1-Chlorooctane		113 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M	
Surrogate: o-Terphenyl		131 %	70-130		P5D0104	03/27/15	03/27/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	03/27/15	03/27/15	calc	

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5C2702 - *** DEFAULT PREP ***										
Blank (P5C2702-BLK1)				Prepared: 03/26/15 Analyzed: 03/27/15						
% Moisture	ND	0.1	%							
Duplicate (P5C2702-DUP1)				Source: 5C26002-01 Prepared: 03/26/15 Analyzed: 03/27/15						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P5C2702-DUP2)				Source: 5C26002-05 Prepared: 03/26/15 Analyzed: 03/27/15						
% Moisture	5.0	0.1	%		6.0			18.2	20	
Duplicate (P5C2702-DUP3)				Source: 5C26004-01 Prepared: 03/26/15 Analyzed: 03/27/15						
% Moisture	4.0	0.1	%		4.0			0.00	20	
Batch P5C3004 - *** DEFAULT PREP ***										
Blank (P5C3004-BLK1)				Prepared & Analyzed: 03/30/15						
Chloride	ND	1.00	mg/kg wet							
LCS (P5C3004-BS1)				Prepared & Analyzed: 03/30/15						
Chloride	106	1.00	mg/kg wet	100		106	80-120			
LCS Dup (P5C3004-BSD1)				Prepared & Analyzed: 03/30/15						
Chloride	106	1.00	mg/kg wet	100		106	80-120	0.0850	20	
Duplicate (P5C3004-DUP1)				Source: 5C26005-01 Prepared & Analyzed: 03/30/15						
Chloride	12500	54.9	mg/kg dry		12800			2.55	20	
Duplicate (P5C3004-DUP2)				Source: 5C26005-11 Prepared & Analyzed: 03/30/15						
Chloride	6810	27.2	mg/kg dry		6780			0.452	20	

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch P5C3004 - * DEFAULT PREP *****

Matrix Spike (P5C3004-MS1)

Source: 5C26005-01

Prepared & Analyzed: 03/30/15

Chloride	18200	54.9	mg/kg dry	5490	12800	99.2	80-120			
----------	-------	------	-----------	------	-------	------	--------	--	--	--

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5D0104 - TX 1005										
Blank (P5D0104-BLK1)				Prepared & Analyzed: 03/27/15						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	93.2		"	100		93.2	70-130			
Surrogate: o-Terphenyl	53.3		"	50.0		107	70-130			
LCS (P5D0104-BS1)				Prepared & Analyzed: 03/27/15						
C6-C12	879	25.0	mg/kg wet	1000		87.9	75-125			
>C12-C28	971	25.0	"	1000		97.1	75-125			
Surrogate: 1-Chlorooctane	117		"	100		117	70-130			
Surrogate: o-Terphenyl	53.7		"	50.0		107	70-130			
LCS Dup (P5D0104-BSD1)				Prepared & Analyzed: 03/27/15						
C6-C12	902	25.0	mg/kg wet	1000		90.2	75-125	2.53	20	
>C12-C28	976	25.0	"	1000		97.6	75-125	0.527	20	
Surrogate: 1-Chlorooctane	122		"	100		122	70-130			
Surrogate: o-Terphenyl	54.4		"	50.0		109	70-130			
Duplicate (P5D0104-DUP1)		Source: 5C27007-02		Prepared & Analyzed: 03/27/15						
C6-C12	ND	26.9	mg/kg dry		ND				20	
>C12-C28	ND	26.9	"		20.7				20	
Surrogate: 1-Chlorooctane	66.5		"	108		61.9	70-130			S-GC
Surrogate: o-Terphenyl	37.8		"	53.8		70.4	70-130			

EnviroClean PS
2405 E CR 123
Midland TEXAS, 79706

Project: Devon Cotton Draw Unit 181 SWD
Project Number: Devon Cottondraw unit 181 SWD
Project Manager: DeWayne Partain

Fax: (432) 301-0176

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

6/16/2015

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

Phone: 432-686-7235

[illegible]

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

2021

Project Manager: Dewayne Partain

Company Name: EnviroClean PS

Company Address: 2405 E CR 123

City/State/Zip: Midland Texas 79706

Telephone No: 432-301-0209

Fax No:

Sampler Signature: [Signature]

e-mail: sspringer@envirocleans.com

dpartain@envirocleans.com

pbeckett@envirocleans.com

heavens@envirocleans.com

dbecker@envirocleans.com

loritz@envirocleans.com

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

Project Name: Devon Cottondraw unit 181 SWD

Project #: Devon Cottondraw unit 181 SWD

Project Loc: Devon Cottondraw unit 181 SWD

PO #: Devon Cottondraw unit 181 SWD

ORDER #: 5C26005

(lab use only)

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO ₃	HCl	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	None	Other (Specify)	DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO ₄ , Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT	
11	005	3"		3/25/2015	1228		1	X								S	X														
12	005A	6"		3/25/2015	1232		1	X								S	X														
13	Background	3"		3/25/2015	1237		1	X								S	X														

Special Instructions:

Relinquished by: [Signature]

Date: 3-25-15 Time: 2000

Received by: [Signature]

Date: 3-25-15 Time: 2000

Relinquished by: [Signature]

Date: 3-26-15 Time: 10:19

Received by: [Signature]

Date: 3-26-15 Time: 10:19

Relinquished by: [Signature]

Date: 3-26-15 Time: 10:19

Received by: [Signature]

Date: 3-26-15 Time: 10:19

Laboratory Comments:

Sample Containers intact?

VOOCs Free of Headspace?

Labels on container(s)?

Custody seals on container(s)?

Sample Hand Delivered by Sampler/Client Rep?

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:

Adjusted: -12 °C Factor ACE



Viewing East – This is the apparent source of the release.



Viewing Northwest – The spill flowed northwest along this berm, which kept it out of the pasture.



Viewing Northwest – The bermed corner stopped the flow, pooling water in the west corner.



Viewing West – The west corner affected area. The site is aligned with corners in the cardinal directions.