

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 Great Western Drilling Co.	Contact Cullan Keller
Address 115W. Aztec Blvd. #203. Aztec N.M. 87401	Telephone No. 505-320-8504
Facility Name Callow Fed. 1-G	Facility Type Tank Battery

Surface Owner Bolack Ranch	Mineral Owner Fee	API No. 30-045-32164
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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
O	33	29-N	13-W	835	South	1915	East	San Juan, NM

Latitude 36.678089 Longitude 108.205245

NATURE OF RELEASE

Type of Release Pipeline Leak	Volume of Release 1BBLoil, 1BBL water	Volume Recovered 0
Source of Release Pipeline	Date and Hour of Occurrence 9-21-2013	Date and Hour of Discovery 9-21-2013 3:00pm
Was Immediate Notice Given? Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not	If YES, To Whom? Jonathan Kelly-OCD, Mark Kelly-BLM, Tommy Bolack-land owner	
By Whom? Cullan Keller	Date and Hour 9-23-2013, 8:00am	
Was a Watercourse Reached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, Volume Impacting the Watercourse: Less than 1/2 BBL	

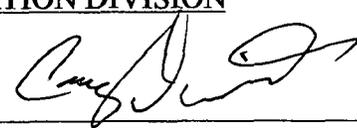
If a Watercourse was Impacted, Describe Fully.*
The oil and water ran about 40 ft. down a dry wash next to the leak, sand stone was 8 inches or less below surface.

RCVD JAN 7 '14
OIL CONS. DIV.
DIST. 3

Describe Cause of Problem and Remedial Action Taken.*
The flow line running from the well head to the separator, which is about half a mile long, sprung a leak. The well head and separator were shut in and blown down.

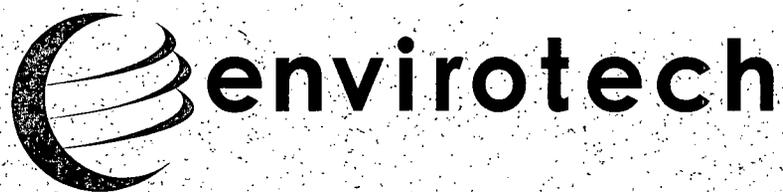
Describe Area Affected and Cleanup Action Taken.*
The area in the wash was 40 ft. long by 3ft. wide 8 inches deep. The area around the pipeline was 25ft. by 10ft. by 4ft. deep. We dug up and hauled off to EIE landfarm about 48 yards of contaminated soil, down to sand stone. We raked the sand stone with the backhoe and let air for a week, then tested area. The section of pipe was replaced, potassium permanganate was sprayed on sand stone and left for three days, retested, back filled and cleaned up.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Cullan Keller	Approved by Environmental Specialist: 	
Title: Switcher	Approval Date: 9/4/14	Expiration Date:
E-mail Address: cullank2002@gmail.com	Conditions of Approval:	Attached <input type="checkbox"/>

NCS 142 41728933

69



**SPILL ASSESSMENT
AND
CLEANUP REPORT**

RCVD JAN 7 '14
OIL CONS. DIV.
DIST. 3

**LOCATED AT:
PIPELINE ADJACENT TO THE CALLOW #1F WELL SITE
SAN JUAN COUNTY, NEW MEXICO**

**PREPARED FOR:
GREAT WESTERN DRILLING
MR. CULLEN KELLER
115 WEST AZTEC BOULEVARD, SUITE 203
AZTEC, NEW MEXICO 87410**

PROJECT NUMBER: 99010-0016

NOVEMBER 2013



RCVD JAN 7 '14
OIL CONS. DIV.
DIST. 3

November 20, 2013

Project Number: 99010-0016

Mr. Cullen Keller
Great Western Drilling
115 West Aztec Boulevard, Suite 203
Aztec, New Mexico 87410

Phone: (505) 334-7550
Fax: (505) 320-8504

**RE: SPILL ASSESSMENT AND CLEANUP REPORT FOR A PIPELINE ADJACENT TO THE
CALLOW #1F WELL SITE, SAN JUAN COUNTY, NEW MEXICO**

Dear Mr. Keller,

Enclosed please find the *Spill Assessment and Cleanup Report* detailing cleanup activities for a pipeline adjacent to the Callow #1F well site in Section 33, Township 29 North, Range 13 West, San Juan County, New Mexico.

We appreciate the opportunity to be of service. If you have any questions or require additional information, please contact our office at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

A handwritten signature in cursive script, appearing to read 'Tiffany McIntosh'.

Tiffany McIntosh
Staff Scientist
tmcintosh@envirotech-inc.com

Enclosures: Spill Assessment and Cleanup Report

Cc: Client File No. 99010

**GREAT WESTERN DRILLING
SPILL ASSESSMENT AND CLEANUP REPORT
PIPELINE ADJACENT TO THE CALLOW #1F WELL SITE
36.682024°N, 108.211595°W
SAN JUAN COUNTY, NEW MEXICO**

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INTRODUCTION

Envirotech, Inc. of Farmington, New Mexico, was contracted by Great Western Drilling to provide spill assessment and cleanup activities for a release of crude oil and produced water from a broken pipeline adjacent to the Callow #1F well site in Section 33, Township 29 North, Range 13 West, San Juan County, New Mexico; see enclosed *Figure 1, Vicinity Map*. The broken pipeline ran perpendicular to a culvert, which connected to a wash. Visual contamination was observed along the area of the broken pipeline, directly on the road, and extended approximately 100 feet north, down into a wash; see enclosed *Figure 2, Site Map*. Activities included excavation, sample collection and analysis, contaminated soil disposal, potassium permanganate spraying, documentation and reporting.

Upon Envirotech, Inc. personnel's arrival on September 23, 2013, a brief site assessment was conducted. Because depth to groundwater was greater than 100 feet, nearest surface water was less than 100 feet, and the well site was not located within a well head protection area, the regulatory standards for the site were determined to be 100 parts per million (ppm) total petroleum hydrocarbons (TPH) and 100 ppm organic vapors, pursuant to New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills, and Releases.

ACTIVITIES PERFORMED

Envirotech, Inc. was contacted on September 23, 2013, with a request to respond to a release of crude oil and produced water from a broken pipeline that occurred at the above referenced location. Upon Envirotech personnel's arrival, the visually contaminated wash was divided into three (3) sections; North, Middle and South. One (1) five (5)-point surface composite soil sample was collected from each of the three (3) sections; see enclosed *Figure 2, Site Map* and *Appendix B, Field Notes* for sample locations. All three (3) samples were analyzed in the field for TPH using USEPA Method 418.1 and for organic vapors using a photoionization detector (PID). The North and Middle composite samples returned results below the regulatory standard for all constituents analyzed; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. The South composite sample returned a result above the regulatory standard for TPH, but below the regulatory standard for organic vapor; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*.

The North and Middle composite samples were placed into four (4)-ounce glass jars, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for chlorides using USEPA Method 4500. The North composite sample returned a result of 10.6 ppm for chlorides and the Middle composite sample returned a result of 12.0 ppm for chlorides; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. The South composite sample was placed into a four (4)-ounce glass jar, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for TPH using USEPA Method 8015 and for chlorides using USEPA Method 4500. The sample returned a result above the regulatory standard for TPH; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*.

The chloride concentration for the South composite was 12.3 ppm; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. Envirotech made the recommendation to excavate the area surrounding the pipeline release area and the southern wash, followed by re-sampling for closure.

Great Western Drilling notified Envirotech that they had completed excavation activities and requested that Envirotech return to the above referenced location for re-sampling activities. Upon Envirotech personnel's arrival on October 2, 2013, a portion of the road and the southern wash had been excavated. Four (4) five (5)-point composite soil samples were collected from the following excavated areas; South Wash, North Wall, South Wall and Bottom; see enclosed *Figure 2, Site Map* and *Appendix B, Field Notes* for sample locations. All four (4) samples were analyzed in the field for TPH using USEPA Method 418.1 and for organic vapors using a PID. All four (4) samples returned results above the regulatory standard for all constituents analyzed; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. Envirotech made the recommendation to further excavate all four (4) areas that were sampled and to have them re-sampled for closure.

On October 3, 2013, Great Western Drilling notified Envirotech that they had finished conducting further excavation activities and requested that Envirotech return to the above referenced location for re-sampling activities. Four (4) five (5)-point composite soil samples were collected from the following excavated areas; South Wash, North Wall, South Wall and Bottom; see enclosed *Figure 2, Site Map* and *Appendix B, Field Notes* for sample locations. All four (4) samples were analyzed in the field for TPH using USEPA Method 418.1 and for organic vapors using a PID. The South Wash and Bottom composite samples returned results above the regulatory standard for all constituents analyzed; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. The North Wall composite returned results below the regulatory standard for all constituents analyzed. However, the South Wall composite sample returned a result above the regulatory standard for TPH, but below the regulatory standard for organic vapor; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*.

The South Wash and Bottom composite samples were placed into four (4)-ounce glass jars, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for TPH using USEPA Method 8015, benzene and total BTEX using USEPA Method 8021, and chlorides using USEPA Method 4500. The South Wash composite sample returned a result of non-detect for chlorides and below the regulatory standards for TPH and total BTEX. The Bottom composite sample returned a result of non-detect for chlorides and below the regulatory standards for total BTEX, but above the regulatory standard for TPH; see enclosed *Appendix A, Analytical Results* and *Table 1, Summary of Analytical Results*. The South Wall composite sample was placed into a four (4)-ounce glass jar, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for TPH using USEPA Method 8015 and chlorides using USEPA Method 4500. The South Wall composite sample returned a result above the regulatory standard for TPH and was non-detect for chlorides; see enclosed *Appendix A, Analytical Results*

and **Table 1, Summary of Analytical Results**. The North Wall composite sample was placed into a four (4)-ounce glass jar, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for chlorides using USEPA Method 4500. The North Wall composite sample returned a result of 31.1 ppm for chlorides; see enclosed **Appendix A, Analytical Results** and **Table 1, Summary of Analytical Results**. The final excavation near the broken pipeline on the road, measured approximately 25 feet by 10 feet by six (6) feet below ground surface (BGS). The South Wash area measured approximately 10 feet by 10 feet. Because the bottom of the excavation had reached maximum extents due to sandstone, Envirotech recommended spraying the excavation and the southern wash area with potassium permanganate, and then re-sample the area for closure.

On October 4, 2013, Envirotech personnel returned to the above reference location to conduct further remediation activities. The excavation on the road and the southern wash area were sprayed with potassium permanganate; see enclosed **Figure 2, Site Map**.

On October 8, 2013, Envirotech personnel returned to the above referenced location to re-sample the impacted areas. Three (3) five (5)-point composite soil samples were re-collected from the following excavated areas; Bottom, South Wall and South Wash; see enclosed **Figure 2, Site Map** and **Appendix B, Field Notes** for sample locations. All three (3) samples were analyzed in the field for TPH using USEPA Method 418.1 and for organic vapors using a PID. All three (3) samples returned results above the regulatory standard for TPH. The only sample that returned a result above the regulatory standard for organic vapor was the Bottom composite sample; see enclosed **Appendix A, Analytical Results** and **Table 1, Summary of Analytical Results**.

All three (3) composite samples were placed into four (4)-ounce glass jars, capped head space free, and transported on ice, under chain of custody, to Envirotech's Analytical Laboratory to be analyzed for TPH using USEPA Method 8015, benzene and total BTEX using USEPA Method 8021, and chlorides using USEPA Method 4500. The Bottom composite sample returned a result of non-detect for chlorides, above the regulatory standards for TPH, but below the regulatory standard for total BTEX. The South Wall composite sample returned a result of 78.4 ppm for chlorides and below the regulatory standards for TPH and total BTEX. The South Wash composite sample returned a result of 35.3 ppm for chlorides, above the regulatory standards for TPH, but below the regulatory standard for total BTEX; see enclosed **Appendix A, Analytical Results** and **Table 1, Summary of Analytical Results**.

SUMMARY AND CONCLUSIONS

Spill assessment and cleanup activities were performed for a release of crude oil and produced water from a broken pipeline adjacent to the Callow #1F well site located in Section 33, Township 29 North, Range 13 West, San Juan County, New Mexico. Despite the extensive remediation activities conducted at the above mentioned location, the Bottom and South Wash areas remain above the regulatory standards for TPH. However, due to the maximum reasonable extent of remediation being reached, Envirotech, Inc. recommends reassessing the impacted area upon final abandonment of the pipeline, to ensure the effectiveness of natural attenuation.

STATEMENT OF LIMITATIONS

Envirotech, Inc. has completed spill assessment and cleanup activities for a crude oil and produced water release from a broken pipeline adjacent to the Callow #1F well site located in Section 33, Township 29 North, Range 13 West, San Juan County, New Mexico. The work and services provided by Envirotech, Inc. were in accordance with the NMOCD standards. All observations and conclusions provided here are based on the information and current site conditions found at the site of the incident. The undersigned has conducted this service at the above referenced site. This work has been conducted and reported in accordance with generally accepted professional practices in geology, engineering, environmental chemistry, and hydrogeology.

We appreciate the opportunity to be of service. If you have any questions or require additional information, please contact our office at (505) 632-0615.

Respectfully submitted,

ENVIROTECH, INC.



Tiffany McIntosh
Staff Scientist

tmcintosh@envirotech-inc.com

Reviewed by:

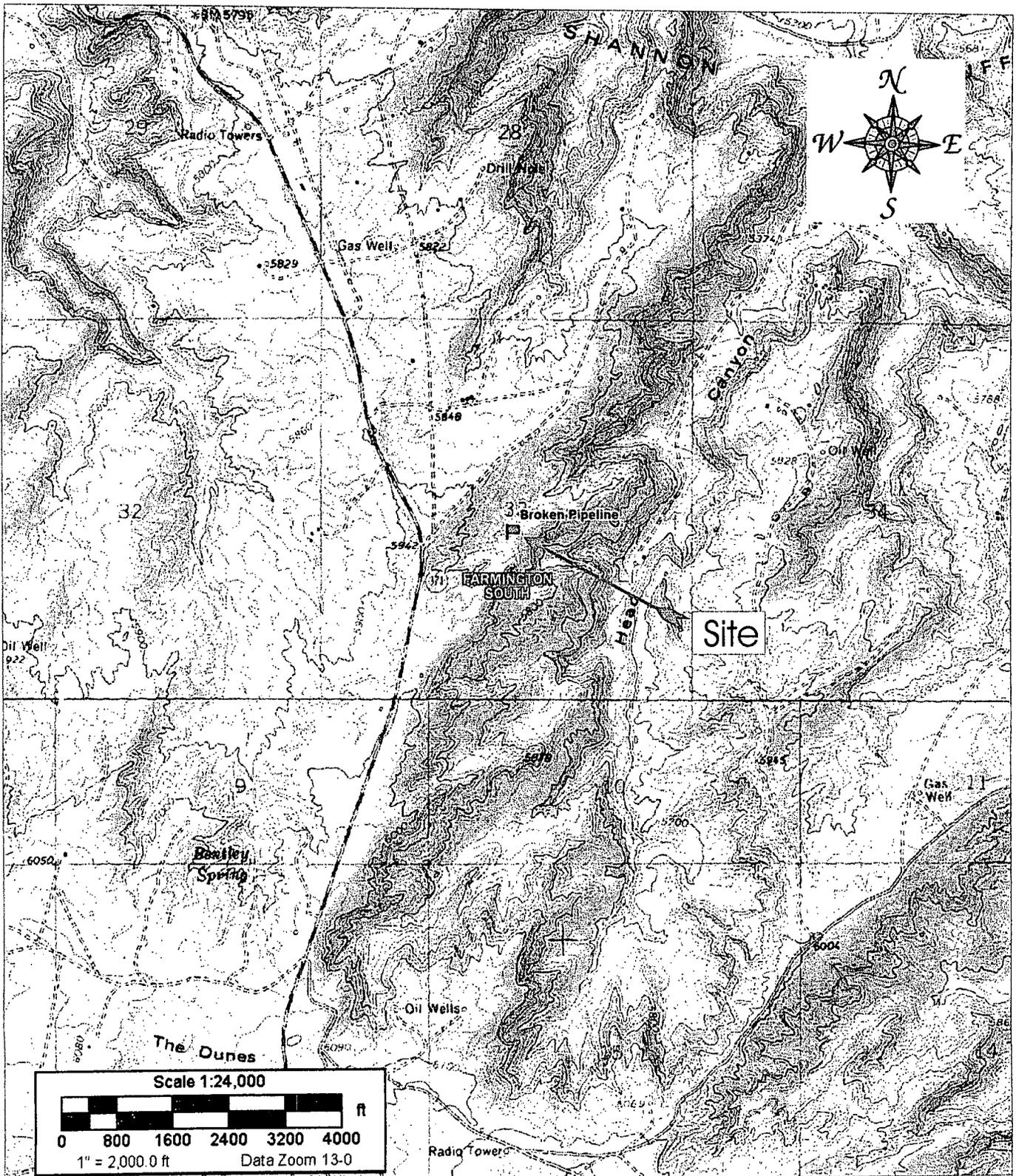


Toni McKnight, EIT
Environmental Project Manager
tmcknight@envirotech-inc.com

FIGURES

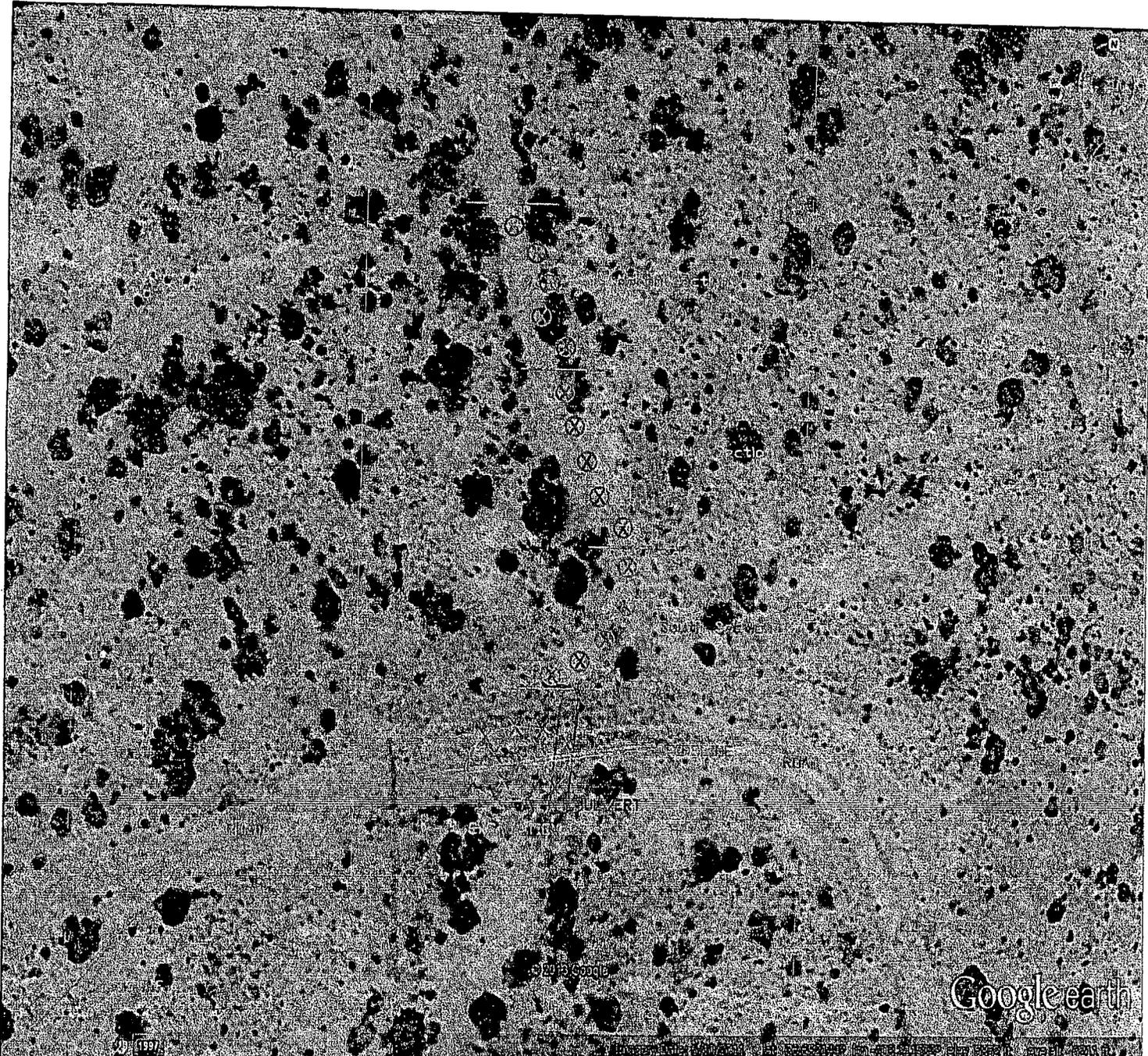
Figure 1, Vicinity Map

Figure 2, Site Map



Source: 7.5 Minute, Farmington South, New Mexico U.S.G.S. Topographic Quadrangle Map
 Scale: 1:24,000 1" = 2000'

Great Western Drilling Pipeline Adjacent to Callow #1F Section 33, Township 29N, Range 13W San Juan County, New Mexico	 ENVIRONMENTAL SCIENTISTS & ENGINEERS 5796 U.S. HIGHWAY 64 Farmington, New Mexico 87401 505.632.0615	Vicinity Map	
		Figure #1	
PROJECT Number: 99010-0016	Date Drawn: 11/18/13	DRAWN BY: Tiffany McIntosh	PROJECT MANAGER: Greg Crabtree



Google earth

LEGEND

- ⊗ NORTH COMPOSITE SAMPLE
(9/23/13)
- ⊗ MIDDLE COMPOSITE SAMPLE
(9/23/13)
- ⊗ SOUTH COMPOSITE SAMPLE
(9/23, 10/2, 10/3, & 10/8/13)
- X EXCAVATION COMPOSITE
SAMPLES
(10/2, 10/3, & 10/8/13)

SITE MAP
Great Western Drilling
 Pipeline Adjacent to Callow #1F
 SECTION 33, TWP 29 NORTH, RANGE 13 WEST
 SAN JUAN COUNTY, NEW MEXICO

SCALE: NTS	FIGURE NO. 2	REV
PROJECT N099010-0016		

REVISIONS			

NO.	DATE	BY	DESCRIPTION
MAP DRWN	TLM	11/18/13	BASE DRWN TLM 2/25/13



5796 U.S. HIGHWAY 64, FARMINGTON, NM 87401 505-632-0615

TABLES

Table 1, Summary of Analytical Results

Table 1, Summary of Analytical Results
 Great Western Drilling
 Pipeline Adjacent to the Callow #1F
 Spill Assessment and Cleanup Report
 San Juan County, New Mexico
 Project Number 99010-0016

Sample Description	Sample Number	Date	TPH 418.1 (ppm)	TPH USEPA Method 8015 (ppm)	Benzene USEPA Method 8021 (ppm)	BTEX USEPA Method 8021 (ppm)	Chloride USEPA Method 4500 (ppm)	OMV (ppm)
NMOC/RCRA Standards:	NA	NA	100	100	10	50	N/A	100
South Composite	1	9/23/2013	1760	160	NS	NS	12.3	4.7
North Composite	2	9/23/2013	84	NS	NS	NS	10.6	48.4
Middle Composite	3	9/23/2013	92	NS	NS	NS	12.0	4.2
South Wash Composite	1	10/2/2013	660	NS	NS	NS	NS	335
North Wall Composite	2	10/2/2013	1320	NS	NS	NS	NS	775
South Wall Composite	3	10/2/2013	424	NS	NS	NS	NS	305
Bottom Composite	4	10/2/2013	5430	NS	NS	NS	NS	1777
South Wash Composite	1	10/3/2013	2220	7.95	ND	0.88	ND	398
North Wall Composite	2	10/3/2013	60	NS	NS	NS	31.1	10.8
South Wall Composite	3	10/3/2013	228	848	NS	NS	ND	13.4
Bottom Composite	4	10/3/2013	1460	13300	ND	9.78	ND	1447
Bottom Composite	1	10/8/2013	852	650	ND	1.14	ND	183
South Wall Composite	2	10/8/2013	152	46.2	ND	ND	78.4	1.9
South Wash Composite	3	10/8/2013	996	426	ND	0.62	35.3	59.9

NS = Not Sampled
 ND = Non-Detect at Stated Method's Detection Limit
 * Values in **BOLD** above regulatory standards

APPENDIX A

Analytical Results

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	1	Date Reported:	11/11/2013
Sample ID:	South Composite	Date Sampled:	9/23/2013
Sample Matrix:	Soil	Date Analyzed:	9/23/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

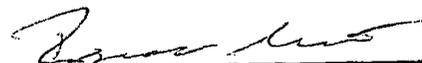
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	1,760	5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Isaac Garcia

Printed



Review

Toni McKnight, EIT

Printed



EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client: Great Western Drilling Project #: 99010-0016
Sample No.: 2 Date Reported: 11/11/2013
Sample ID: North Composite Date Sampled: 9/23/2013
Sample Matrix: Soil Date Analyzed: 9/23/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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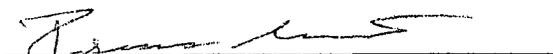
Total Petroleum Hydrocarbons 84 5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

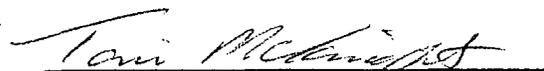
Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Isaac Garcia

Printed



Review

Toni McKnight, EIT

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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client: Great Western Drilling Project #: 99010-0016
Sample No.: 3 Date Reported: 11/11/2013
Sample ID: Middle Composite Date Sampled: 9/23/2013
Sample Matrix: Soil Date Analyzed: 9/23/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----------	--------------------------	--------------------------

Total Petroleum Hydrocarbons 92 5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

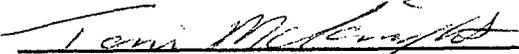
Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Isaac Garcia

Printed



Review

Toni McKnight, EIT

Printed



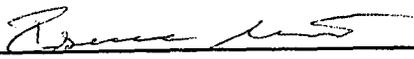


CONTINUOUS CALIBRATION
EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Cal. Date: 23-Sep-13

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	211
	200	
	500	
	1000	

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.



Analyst

11/11/2013

Date

Isaac Garcia

Print Name



Review

11/11/2013

Date

Toni McKnight, EIT

Print Name





Analytical Report

Report Summary

Client: Great Western Drilling

Chain Of Custody Number: 16134

Samples Received: 9/23/2013 3:06:00PM

Job Number: 99010-0016

Work Order: P309109

Project Name/Location: Pipeline Off Bisti Hgwy

Entire Report Reviewed By:

A handwritten signature in black ink, appearing to read 'Tim Cain', is written over a horizontal line.

Date: 9/26/13

Tim Cain, Laboratory Manager

The results in this report apply to the samples submitted to Envirotech's Analytical Laboratory and were analyzed in accordance with the chain of custody document supplied by you, the client, and as such are for your exclusive use only. The results in this report are based on the sample as received unless otherwise noted. Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc. If you have any questions regarding this analytical report, please don't hesitate to contact Envirotech's Laboratory Staff.



Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

Analytical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Middle Comp.	P309109-01A	Soil	09/23/13	09/23/13	Glass Jar, 4 oz.
South Comp.	P309109-02A	Soil	09/23/13	09/23/13	Glass Jar, 4 oz.
North Comp.	P309109-03A	Soil	09/23/13	09/23/13	Glass Jar, 4 oz.

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

**Middle Comp.
P309109-01 (Solid)**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Cation/Anion Analysis										
Chloride	12.0	9.88		mg/kg	1	1339009	09/24/13	09/24/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

**South Comp.
P309109-02 (Solid)**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Nonhalogenated Organics by 8015										
Gasoline Range Organics (C6-C10)	6.36	4.99		mg/kg	1	1338046	09/24/13	09/25/13	EPA 8015D	
Diesel Range Organics (C10-C28)	153	4.99		mg/kg	1	1338046	09/24/13	09/25/13	EPA 8015D	
GRO and DRO Combined Fractions	160	4.99		mg/kg	1	1338046	09/24/13	09/25/13	EPA 8015D	
Cation/Anion Analysis										
Chloride	12.3	9.77		mg/kg	1	1339009	09/24/13	09/24/13	EPA 300.0	

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5796 US Highway 64, Farmington, NM 87401
Three Springs - 65 Mercado Street, Suite 115, Durango, CO 81301

Ph (505) 632-0615 Fx (505) 632-1865
Ph (970) 259-0615 Fr (800) 362-1879





Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

**North Comp.
P309109-03 (Solid)**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Cation/Anion Analysis										
Chloride	10.6	9.82		mg/kg	1	1339009	09/24/13	09/24/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1338046 - GRO/DRO Extraction EPA 3550C

Blank (1338046-BLK1) Prepared: 23-Sep-13 Analyzed: 24-Sep-13

Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg							
Diesel Range Organics (C10-C28)	ND	5.00	"							
GRO and DRO Combined Fractions	ND	5.00	"							

Duplicate (1338046-DUP1) Source: P309099-01 Prepared: 23-Sep-13 Analyzed: 24-Sep-13

Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg		ND				30	
Diesel Range Organics (C10-C28)	ND	4.99	"		ND				30	

Matrix Spike (1338046-MS1) Source: P309099-01 Prepared: 23-Sep-13 Analyzed: 24-Sep-13

Gasoline Range Organics (C6-C10)	255	5.26	mg/kg	263	ND	97.0	75-125			
Diesel Range Organics (C10-C28)	275	5.26	"	263	ND	105	75-125			

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Hgwy Project Number: 99010-0016 Project Manager: Felipe Aragon	Reported: 26-Sep-13 12:05
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	------------------------------

Cation/Anion Analysis - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1339009 - Anion Extraction EPA 300.0

Blank (1339009-BLK1)				Prepared & Analyzed: 24-Sep-13						
Chloride	ND	9.94	mg/kg							
LCS (1339009-BS1)				Prepared & Analyzed: 24-Sep-13						
Chloride	507	9.95	mg/kg	498		102	90-110			
Matrix Spike (1339009-MS1)				Source: P309108-01		Prepared & Analyzed: 24-Sep-13				
Chloride	505	9.86	mg/kg	493	11.1	100	80-120			
Matrix Spike Dup (1339009-MSD1)				Source: P309108-01		Prepared & Analyzed: 24-Sep-13				
Chloride	503	9.78	mg/kg	489	11.1	101	80-120	0.314	20	

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Great Western Drilling
7415 E. Main St.
Farmington NM, 87401

Project Name: Pipeline Off Bisti Hgwy
Project Number: 99010-0016
Project Manager: Felipe Aragon

Reported:
26-Sep-13 12:05

Notes and Definitions

- 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

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CHAIN OF CUSTODY RECORD

16134

Page 9 of 9

Client: <i>Great Western</i>	Project Name / Location: <i>Pipeline off Bisti Hwy</i>	ANALYSIS / PARAMETERS	
Email results to: <i>Isaac / Felipe</i>	Sampler Name: <i>Isaac G.</i>	TPH (Method 8015)	BTEX (Method 8021)
Client Phone No.:	Client No.:		
		Cation / Anion	RCI
		TCLP with H/P	CO Table 910-1
		TPH (418.1)	CHLORIDE
		Sample Cool	Sample Intact

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative			TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	Sample Cool	Sample Intact
					HNO ₃	HCl	Cool												
<i>Middle Comp.</i>	<i>9/23</i>	<i>14:01</i>	<i>P309109-01</i>	<i>1-4oz</i>			<i>X</i>											<i>X</i>	<i>X</i>
<i>South Comp.</i>	<i>9/23</i>	<i>14:04</i>	<i>P309109-02</i>	<i>1-4oz</i>			<i>X</i>	<i>X</i>										<i>X</i>	<i>X</i>
<i>North Comp.</i>	<i>9/23</i>	<i>14:08</i>	<i>P309109-03</i>	<i>1-4oz</i>			<i>X</i>											<i>X</i>	<i>X</i>

Relinquished by: (Signature) <i>[Signature]</i>	Date <i>9/23</i>	Time <i>3:06</i>	Received by: (Signature) <i>[Signature]</i>	Date <i>9/23</i>	Time <i>15:06</i>
Relinquished by: (Signature)			Received by: (Signature)		

Sample Matrix
 Soil Solid Sludge Aqueous Other

Sample(s) dropped off after hours to secure drop off area.



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EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	1	Date Reported:	11/11/2013
Sample ID:	South Wash Composite	Date Sampled:	10/2/2013
Sample Matrix:	Soil	Date Analyzed:	10/2/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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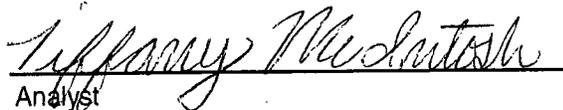
Total Petroleum Hydrocarbons	660	5.0
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ND = Parameter not detected at the stated detection limit.

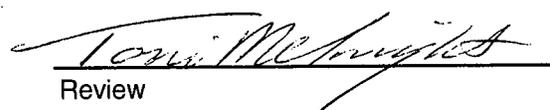
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.


 Analyst

Tiffany McIntosh
 Printed


 Review

Toni McKnight, EIT
 Printed





EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client: Great Western Drilling Project #: 99010-0016
Sample No.: 2 Date Reported: 11/11/2013
Sample ID: North Wall Composite Date Sampled: 10/2/2013
Sample Matrix: Soil Date Analyzed: 10/2/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

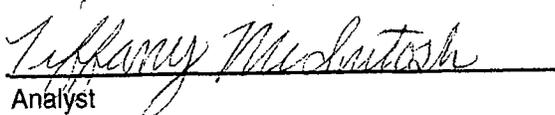
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	1,320	5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: Pipeline Adjacent to Callow #1F

Instrument calibrated to 200 ppm standard and zeroed before each sample.


Analyst

Tiffany McIntosh
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Toni McKnight, EIT
Printed



Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	3	Date Reported:	11/11/2013
Sample ID:	South Wall Composite	Date Sampled:	10/2/2013
Sample Matrix:	Soil	Date Analyzed:	10/2/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

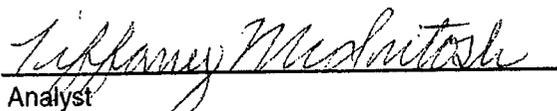
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	424	5.0

ND = Parameter not detected at the stated detection limit.

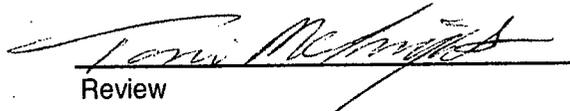
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.


Analyst

Tiffany McIntosh
Printed


Review

Toni McKnight, EIT
Printed

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	4	Date Reported:	11/11/2013
Sample ID:	Bottom Composite	Date Sampled:	10/2/2013
Sample Matrix:	Soil	Date Analyzed:	10/2/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	5,430	5.0

ND = Parameter not detected at the stated detection limit.

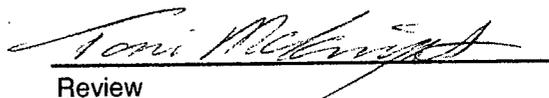
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.


Analyst

Tiffany McIntosh
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Toni McKnight, EIT
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CONTINUOUS CALIBRATION
EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Cal. Date: 2-Oct-13

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	
	200	
	500	
	1000	993

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.

Tiffany McIntosh
Analyst

11/11/2013
Date

Tiffany McIntosh
Print Name

Toni McKnight
Review

11/11/2013
Date

Toni McKnight, EIT
Print Name



Client: Great Western Drilling Project #: 99010-0016
Sample No.: 1 Date Reported: 11/11/2013
Sample ID: South Wash Composite Date Sampled: 10/3/2013
Sample Matrix: Soil Date Analyzed: 10/3/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	2,220	5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Tiffany McIntosh

Printed



Review

Toni McKnight, EIT

Printed

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	2	Date Reported:	11/11/2013
Sample ID:	North Wall Composite	Date Sampled:	10/3/2013
Sample Matrix:	Soil	Date Analyzed:	10/3/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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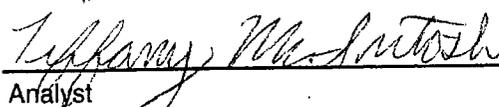
Total Petroleum Hydrocarbons	60	5.0
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ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Tiffany McIntosh

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Review

Toni McKnight, EIT

Printed



EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client: Great Western Drilling Project #: 99010-0016
Sample No.: 3 Date Reported: 11/11/2013
Sample ID: South Wall Composite Date Sampled: 10/3/2013
Sample Matrix: Soil Date Analyzed: 10/3/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----------	--------------------------	--------------------------

Total Petroleum Hydrocarbons 228 5.0

ND = Parameter not detected at the stated detection limit.

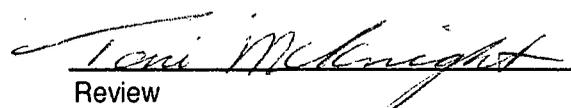
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: Pipeline Adjacent to Callow #1F

Instrument calibrated to 200 ppm standard and zeroed before each sample.


Analyst

Tiffany McIntosh
Printed


Review

Toni McKnight, EIT
Printed



Client: Great Western Drilling Project #: 99010-0016
Sample No.: 4 Date Reported: 11/11/2013
Sample ID: Bottom Composite Date Sampled: 10/3/2013
Sample Matrix: Soil Date Analyzed: 10/3/2013
Preservative: Cool Analysis Needed: TPH-418.1
Condition: Cool and Intact

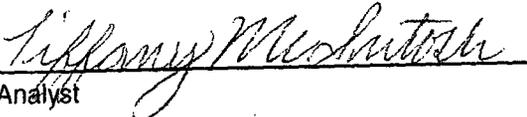
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	1,460	5.0

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.


Analyst

Tiffany McIntosh
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Review

Toni McKnight, EIT
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CONTINUOUS CALIBRATION
EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Cal. Date: 3-Oct-13

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	
	200	196
	500	
	1000	

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.

Tiffany McIntosh
Analyst

11/11/2013
Date

Tiffany McIntosh
Print Name

Toni McKnight
Review

11/11/2013
Date

Toni McKnight, EIT
Print Name





Analytical Report

Report Summary

Client: Great Western Drilling

Chain Of Custody Number: 16007

Samples Received: 10/3/2013 10:50:00AM

Job Number: 99010-0016

Work Order: P310014

Project Name/Location: Pipeline Off Bisti Highway

Entire Report Reviewed By:

A handwritten signature in black ink, appearing to read 'Tim Cain', is written over a horizontal line.

Date: 10/10/13

Tim Cain, Laboratory Manager

The results in this report apply to the samples submitted to Envirotech's Analytical Laboratory and were analyzed in accordance with the chain of custody document supplied by you, the client, and as such are for your exclusive use only. The results in this report are based on the sample as received unless otherwise noted. Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc. If you have any questions regarding this analytical report, please don't hesitate to contact Envirotech's Laboratory Staff.

Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------

Analytical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
South Wash	P310014-01A	Soil	10/03/13	10/03/13	Glass Jar, 4 oz.
North Wall	P310014-02A	Soil	10/03/13	10/03/13	Glass Jar, 4 oz.
South Wall	P310014-03A	Soil	10/03/13	10/03/13	Glass Jar, 4 oz.
Bottom	P310014-04A	Soil	10/03/13	10/03/13	Glass Jar, 4 oz.

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------

**South Wash
P310014-01 (Solid)**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Volatile Organics by EPA 8021										
Benzene	ND	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Toluene	ND	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Ethylbenzene	0.07	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
p,m-Xylene	0.62	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
o-Xylene	0.20	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Total Xylenes	0.82	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Total BTEX	0.88	0.05		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Surrogate: Bromochlorobenzene		108 %		80-120		1341008	10/07/13	10/08/13	EPA 8021B	
Surrogate: 1,3-Dichlorobenzene		104 %		80-120		1341008	10/07/13	10/08/13	EPA 8021B	
Nonhalogenated Organics by 8015										
Gasoline Range Organics (C6-C10)	7.95	5.00		mg/kg	1	1341008	10/07/13	10/08/13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	30.0		mg/kg	1	1341002	10/07/13	10/07/13	EPA 8015D	
GRO and DRO Combined Fractions	7.95	5.00		mg/kg		[CALC]	10/07/13	10/08/13	EPA 8015D	
Cation/Anion Analysis										
Chloride	ND	9.94		mg/kg	1	1341021	10/09/13	10/09/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	-------------------------------------

North Wall
P310014-02 (Solid)

Analyte	Result	Reporting			Batch	Prepared	Analyzed	Method	Notes
		Limit	Units	Dilution					
Cation/Anion Analysis									
Chloride	31.1	9.90	mg/kg	1	1341021	10/09/13	10/09/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------

South Wall
P310014-03 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8015D	
Diesel Range Organics (C10-C28)	848	29.9	mg/kg	1	1341002	10/07/13	10/07/13	EPA 8015D	
GRO and DRO Combined Fractions	848	4.99	mg/kg		[CALC]	10/07/13	10/08/13	EPA 8015D	
Cation/Anion Analysis									
Chloride	ND	9.95	mg/kg	1	1341021	10/09/13	10/09/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------

**Bottom
P310014-04 (Solid)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Toluene	0.57	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Ethylbenzene	1.01	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
p,m-Xylene	6.15	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
o-Xylene	2.04	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Total Xylenes	8.19	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Total BTEX	9.78	0.05	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8021B	
Surrogate: Bromochlorobenzene		112 %		80-120	1341008	10/07/13	10/08/13	EPA 8021B	
Surrogate: 1,3-Dichlorobenzene		112 %		80-120	1341008	10/07/13	10/08/13	EPA 8021B	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	47.8	4.99	mg/kg	1	1341008	10/07/13	10/08/13	EPA 8015D	
Diesel Range Organics (C10-C28)	13300	30.0	mg/kg	1	1341002	10/07/13	10/07/13	EPA 8015D	
GRO and DRO Combined Fractions	13300	4.99	mg/kg		[CALC]	10/07/13	10/08/13	EPA 8015D	
Cation/Anion Analysis									
Chloride	ND	9.82	mg/kg	1	1341021	10/09/13	10/09/13	EPA 300.0	

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Great Western Drilling
7415 E. Main St.
Farmington NM, 87401

Project Name: Pipeline Off Bisti Highway
Project Number: 99010-0016
Project Manager: Tiffany McIntosh

Reported:
10-Oct-13 09:29

Volatile Organics by EPA 8021 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1341008 - Purge and Trap EPA 5030A

Blank (1341008-BLK1)

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Benzene	ND	0.05	mg/kg							
Toluene	ND	0.05	"							
Ethylbenzene	ND	0.05	"							
p,m-Xylene	ND	0.05	"							
o-Xylene	ND	0.05	"							
Total Xylenes	ND	0.05	"							
Total BTEX	ND	0.05	"							
Surrogate: 1,3-Dichlorobenzene	46.0		ug/L	50.0		92.1	80-120			
Surrogate: Bromochlorobenzene	47.3		"	50.0		94.7	80-120			

Duplicate (1341008-DUP1)

Source: P310010-01

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Benzene	ND	0.05	mg/kg		ND				30	
Toluene	ND	0.05	"		ND				30	
Ethylbenzene	ND	0.05	"		ND				30	
p,m-Xylene	ND	0.05	"		ND				30	
o-Xylene	ND	0.05	"		ND				30	
Surrogate: 1,3-Dichlorobenzene	48.5		ug/L	50.0		97.0	80-120			
Surrogate: Bromochlorobenzene	50.0		"	50.0		100	80-120			

Matrix Spike (1341008-MS1)

Source: P310010-01

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Benzene	52.4		ug/L	50.0	0.32	104	39-150			
Toluene	51.3		"	50.0	0.50	102	46-148			
Ethylbenzene	51.7		"	50.0	0.10	103	32-160			
p,m-Xylene	103		"	100	0.33	103	46-148			
o-Xylene	52.1		"	50.0	0.14	104	46-148			
Surrogate: 1,3-Dichlorobenzene	50.3		"	50.0		101	80-120			
Surrogate: Bromochlorobenzene	51.7		"	50.0		103	80-120			

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
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Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1341002 - DRO Extraction EPA 3550C

Blank (1341002-BLK1)		Prepared & Analyzed: 07-Oct-13								
Diesel Range Organics (C10-C28)	ND	30.0	mg/kg							
Duplicate (1341002-DUP1)		Source: P310020-01 Prepared & Analyzed: 07-Oct-13								
Diesel Range Organics (C10-C28)	ND	30.0	mg/kg		ND				30	
Matrix Spike (1341002-MS1)		Source: P310020-01 Prepared & Analyzed: 07-Oct-13								
Diesel Range Organics (C10-C28)	193	31.6	mg/kg	263	ND	73.4	75-125			SPK1

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Great Western Drilling
7415 E. Main St.
Farmington NM, 87401

Project Name: Pipeline Off Bisti Highway
Project Number: 99010-0016
Project Manager: Tiffany McIntosh

Reported:
10-Oct-13 09:29

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1341008 - Purge and Trap EPA 5030A

Blank (1341008-BLK1)

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Gasoline Range Organics (C6-C10) ND 4.99 mg/kg

Duplicate (1341008-DUP1)

Source: P310010-01

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Gasoline Range Organics (C6-C10) ND 5.00 mg/kg

ND

30

Matrix Spike (1341008-MS1)

Source: P310010-01

Prepared: 07-Oct-13 Analyzed: 08-Oct-13

Gasoline Range Organics (C6-C10) 0.60 mg/L

0.450

ND

134

75-125

SPK1

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Tiffany McIntosh	Reported: 10-Oct-13 09:29
--------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------

Cation/Anion Analysis - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1341021 - Anion Extraction EPA 300.0

Blank (1341021-BLK1)				Prepared & Analyzed: 09-Oct-13						
Chloride	ND	9.85	mg/kg							
LCS (1341021-BS1)				Prepared & Analyzed: 09-Oct-13						
Chloride	511	9.88	mg/kg	494		103	90-110			
Matrix Spike (1341021-MS1)				Prepared & Analyzed: 09-Oct-13						
		Source: P310014-01								
Chloride	518	9.86	mg/kg	493	ND	105	80-120			
Matrix Spike Dup (1341021-MSD1)				Prepared & Analyzed: 09-Oct-13						
		Source: P310014-01								
Chloride	514	9.86	mg/kg	493	ND	104	80-120	0.753	20	

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Great Western Drilling
7415 E. Main St.
Farmington NM, 87401

Project Name: Pipeline Off Bisti Highway
Project Number: 99010-0016
Project Manager: Tiffany McIntosh

Reported:
10-Oct-13 09:29

Notes and Definitions

SPK1 The spike recovery for this QC sample is outside of control limits.

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

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CHAIN OF CUSTODY RECORD

16007

Client: <i>Great Western Drilling</i>	Project Name / Location: <i>Pipeline off Bisti Highway</i>	ANALYSIS / PARAMETERS											
Email results to: <i>T. McIntosh</i>	Sampler Name: <i>T. McIntosh</i>	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	PCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	Sample Cool	Sample Intact
Client Phone No.:	Client No.:												

Sample No. / Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative			TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	PCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	Sample Cool	Sample Intact
					HNO ₃	HCl	Cool												
<i>South wash</i>	<i>10/3/13</i>	<i>9:35</i>	<i>P310014-01</i>	<i>1-4 oz jar</i>			<i>X</i>	<i>X</i>	<i>X</i>								<i>X</i>	<i>Y</i>	<i>Y</i>
<i>North wall</i>	<i>I</i>	<i>9:38</i>	<i>P310014-02</i>	<i>I</i>			<i>I</i>										<i>X</i>	<i>I</i>	<i>I</i>
<i>South wall</i>	<i>I</i>	<i>9:40</i>	<i>P310014-03</i>	<i>I</i>			<i>I</i>	<i>X</i>									<i>X</i>	<i>I</i>	<i>I</i>
<i>bottom</i>	<i>I</i>	<i>9:43</i>	<i>P310014-04</i>	<i>I</i>			<i>I</i>	<i>X</i>	<i>X</i>								<i>X</i>	<i>I</i>	<i>I</i>

Relinquished by: (Signature) <i>Terry McIntosh</i>	Date <i>10/3/13</i>	Time <i>1050</i>	Received by: (Signature) <i>Dave Zuerlein</i>	Date <i>10/3/13</i>	Time <i>1050</i>
Relinquished by: (Signature)			Received by: (Signature)		
Sample Matrix Soil <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Sludge <input type="checkbox"/> Aqueous <input type="checkbox"/> Other <input type="checkbox"/>					

Sample(s) dropped off after hours to secure drop off area.



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Analytical Laboratory

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Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	1	Date Reported:	11/11/2013
Sample ID:	Bottom Composite	Date Sampled:	10/8/2013
Sample Matrix:	Soil	Date Analyzed:	10/8/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----------	--------------------------	--------------------------

Total Petroleum Hydrocarbons	852	5.0
-------------------------------------	------------	------------

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Isaac Garcia

Printed



Review

Toni McKnight, EIT

Printed

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	2	Date Reported:	11/11/2013
Sample ID:	South Wall Composite	Date Sampled:	10/8/2013
Sample Matrix:	Soil	Date Analyzed:	10/8/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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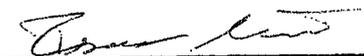
Total Petroleum Hydrocarbons	152	5.0
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ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

Instrument calibrated to 200 ppm standard and zeroed before each sample.



Analyst

Isaac Garcia

Printed



Review

Toni McKnight, EIT

Printed



EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Great Western Drilling	Project #:	99010-0016
Sample No.:	3	Date Reported:	11/11/2013
Sample ID:	South Wash Composite	Date Sampled:	10/8/2013
Sample Matrix:	Soil	Date Analyzed:	10/8/2013
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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Total Petroleum Hydrocarbons	996	5.0
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ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **Pipeline Adjacent to Callow #1F**

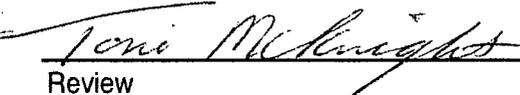
Instrument calibrated to 200 ppm standard and zeroed before each sample.



 Analyst

Isaac Garcia

 Printed



 Review

Toni McKnight, EIT

 Printed



Cal. Date: 8-Oct-13

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	195
	200	
	500	
	1000	

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.



Analyst

11/11/2013

Date

Isaac Garcia

Print Name



Review

11/11/2013

Date

Toni McKnight, EIT

Print Name



Analytical Report

Report Summary

Client: Great Western Drilling

Chain Of Custody Number: 16207

Samples Received: 10/8/2013 5:05:00PM

Job Number: 99010-0016

Work Order: P310032

Project Name/Location: Pipeline Off Bisti Highway

Entire Report Reviewed By:

A handwritten signature in black ink, appearing to read 'Tim Cain', is written over a horizontal line.

Date: 10/15/13

Tim Cain, Laboratory Manager

The results in this report apply to the samples submitted to Envirotech's Analytical Laboratory and were analyzed in accordance with the chain of custody document supplied by you, the client, and as such are for your exclusive use only. The results in this report are based on the sample as received unless otherwise noted. Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc. If you have any questions regarding this analytical report, please don't hesitate to contact Envirotech's Laboratory Staff.

Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
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Analytical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
South Wash	P310032-01A	Soil	10/08/13	10/08/13	Glass Jar, 4 oz.
Bottom	P310032-02A	Soil	10/08/13	10/08/13	Glass Jar, 4 oz.
South Wall	P310032-03A	Soil	10/08/13	10/08/13	Glass Jar, 4 oz.

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

**South Wash
P310032-01 (Solid)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Toluene	0.07	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Ethylbenzene	0.06	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
p,m-Xylene	0.36	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
o-Xylene	0.14	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Total Xylenes	0.49	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Total BTEX	0.62	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
<i>Surrogate: Bromochlorobenzene</i>		110 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B	
<i>Surrogate: 1,3-Dichlorobenzene</i>		104 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	5.30	5.00	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8015D	
Diesel Range Organics (C10-C28)	421	30.0	mg/kg	1	1341039	10/11/13	10/14/13	EPA 8015D	
GRO and DRO Combined Fractions	426	5.00	mg/kg		[CALC]	10/11/13	10/14/13	EPA 8015D	
Cation/Anion Analysis									
Chloride	35.3	9.97	mg/kg	1	1341034	10/10/13	10/10/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

Bottom
P310032-02 (Solid)

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Volatile Organics by EPA 8021									
Benzene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Toluene	0.08	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Ethylbenzene	0.11	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
p,m-Xylene	0.70	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
o-Xylene	0.25	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Total Xylenes	0.95	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Total BTEX	1.14	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B	
Surrogate: Bromochlorobenzene		106 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B	
Surrogate: 1,3-Dichlorobenzene		105 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	10.5	4.99	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8015D	
Diesel Range Organics (C10-C28)	639	30.0	mg/kg	1	1341039	10/11/13	10/14/13	EPA 8015D	
GRO and DRO Combined Fractions	650	4.99	mg/kg		[CALC]	10/11/13	10/14/13	EPA 8015D	
Cation/Anion Analysis									
Chloride	ND	9.84	mg/kg	1	1341034	10/10/13	10/10/13	EPA 300.0	

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
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South Wall
P310032-03 (Solid)

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes	
		Limit	Units							
Volatile Organics by EPA 8021										
Benzene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
Toluene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
Ethylbenzene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
p,m-Xylene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
o-Xylene	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
Total Xylenes	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
Total BTEX	ND	0.05	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8021B		
Surrogate: 1,3-Dichlorobenzene		87.7 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B		
Surrogate: Bromochlorobenzene		90.6 %		80-120	1341040	10/11/13	10/14/13	EPA 8021B		
Nonhalogenated Organics by 8015										
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg	1	1341040	10/11/13	10/14/13	EPA 8015D		
Diesel Range Organics (C10-C28)	46.2	30.0	mg/kg	1	1341039	10/11/13	10/14/13	EPA 8015D		
GRO and DRO Combined Fractions	46.2	4.99	mg/kg		[CALC]	10/11/13	10/14/13	EPA 8015D		
Cation/Anion Analysis										
Chloride	78.4	9.84	mg/kg	1	1341034	10/10/13	10/10/13	EPA 300.0		

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
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Volatile Organics by EPA 8021 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1341040 - Purge and Trap EPA 5030A

Blank (1341040-BLK1)		Prepared: 11-Oct-13 Analyzed: 14-Oct-13								
Benzene	ND	0.05	mg/kg							
Toluene	ND	0.05	"							
Ethylbenzene	ND	0.05	"							
p,m-Xylenc	ND	0.05	"							
o-Xylene	ND	0.05	"							
Total Xylenes	ND	0.05	"							
Total BTEX	ND	0.05	"							
Surrogate: 1,3-Dichlorobenzene	0.0493		"	0.0498		99.0	80-120			
Surrogate: Bromochlorobenzene	0.0501		"	0.0498		101	80-120			

Duplicate (1341040-DUP1)		Source: P310032-01		Prepared: 11-Oct-13 Analyzed: 14-Oct-13						
Benzene	ND	0.05	mg/kg	ND					30	
Toluene	0.05	0.05	"	0.07				33.6	30	D1
Ethylbenzene	ND	0.05	"	0.06					30	
p,m-Xylenc	0.24	0.05	"	0.36				39.3	30	D1
o-Xylene	0.09	0.05	"	0.14				36.6	30	D1
Surrogate: 1,3-Dichlorobenzene	0.0510		"	0.0499		102	80-120			
Surrogate: Bromochlorobenzene	0.0524		"	0.0499		105	80-120			

Matrix Spike (1341040-MS1)		Source: P310032-01		Prepared: 11-Oct-13 Analyzed: 14-Oct-13						
Benzene	56.3		ug/L	50.0	0.89	111	39-150			
Toluene	58.5		"	50.0	1.42	114	46-148			
Ethylbenzene	57.6		"	50.0	1.11	113	32-160			
p,m-Xylenc	115		"	100	7.18	108	46-148			
o-Xylene	57.3		"	50.0	2.71	109	46-148			
Surrogate: 1,3-Dichlorobenzene	2.60		mg/kg	2.50		104	80-120			
Surrogate: Bromochlorobenzene	2.65		"	2.50		106	80-120			

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1341039 - DRO Extraction EPA 3550C										
Blank (1341039-BLK1) Prepared: 11-Oct-13 Analyzed: 14-Oct-13										
Diesel Range Organics (C10-C28)	ND	29.9	mg/kg							
Duplicate (1341039-DUP1) Source: P310032-01 Prepared: 11-Oct-13 Analyzed: 14-Oct-13										
Diesel Range Organics (C10-C28)	588	29.9	mg/kg		421			33.0	30	D1
Matrix Spike (1341039-MS1) Source: P310032-01 Prepared: 11-Oct-13 Analyzed: 14-Oct-13										
Diesel Range Organics (C10-C28)	853		mg/L	50.0	422	863	75-125			SPK1

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1341040 - Purge and Trap EPA 5030A										
Blank (1341040-BLK1)					Prepared: 11-Oct-13 Analyzed: 14-Oct-13					
Gasoline Range Organics (C6-C10)	ND	4.98	mg/kg							
Duplicate (1341040-DUP1)					Source: P310032-01 Prepared: 11-Oct-13 Analyzed: 14-Oct-13					
Gasoline Range Organics (C6-C10)	6.19	4.99	mg/kg		5.30			15.5	30	
Matrix Spike (1341040-MS1)					Source: P310032-01 Prepared: 11-Oct-13 Analyzed: 14-Oct-13					
Gasoline Range Organics (C6-C10)	0.71		mg/L	0.450	0.11	134	75-125			SPK1

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Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

Cation/Anion Analysis - Quality Control
Envirotech Analytical Laboratory

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

Batch 1341034 - Anion Extraction EPA 300.0

Blank (1341034-BLK1)				Prepared & Analyzed: 10-Oct-13						
Chloride	ND	9.95	mg/kg							
LCS (1341034-BS1)				Prepared & Analyzed: 10-Oct-13						
Chloride	515	9.91	mg/kg	496		104	90-110			
Matrix Spike (1341034-MS1)				Source: P310032-01		Prepared & Analyzed: 10-Oct-13				
Chloride	570	9.96	mg/kg	498	35.3	107	80-120			
Matrix Spike Dup (1341034-MSD1)				Source: P310032-01		Prepared & Analyzed: 10-Oct-13				
Chloride	565	9.94	mg/kg	497	35.3	107	80-120	0.886	20	

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5796 US Highway 64, Farmington, NM 87401

Three Springs - 65 Mercado Street, Suite 115, Durango, CO 81301

Ph (505) 632-0615 Fx (505) 632-1865

Ph (970) 259-0615 Fr (800) 362-1879



Great Western Drilling 7415 E. Main St. Farmington NM, 87401	Project Name: Pipeline Off Bisti Highway Project Number: 99010-0016 Project Manager: Isaac Garcia	Reported: 15-Oct-13 15:02
--------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------

Notes and Definitions

- SPK1 The spike recovery for this QC sample is outside of control limits.
- D1 Duplicates or Matrix Spike Duplicates Relative Percent Difference exceeds 30%.
- 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

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CHAIN OF CUSTODY RECORD

16207

Page 1 of 1

Client: <i>Great Western</i>	Project Name / Location: <i>Pipeline off Bisti Highway</i>	ANALYSIS / PARAMETERS											
Email results to: <i>Isaac</i>	Sampler Name: <i>Isaac G.</i>	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	Sample Cool	Sample Intact
Client Phone No.:	Client No.:												

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative			TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	Sample Cool	Sample Intact
					HNO ₃	HCl	Cool												
<i>South Wash</i>	<i>10/8</i>	<i>2:50</i>	<i>P310032-01</i>	<i>1-4oz</i>			<i>X</i>	<i>X</i>	<i>X</i>							<i>X</i>	<i>Y</i>	<i>Y</i>	
<i>Bottom</i>	<i>10/8</i>	<i>3:03</i>	<i>P310032-02</i>	<i>1-4oz</i>			<i>X</i>	<i>X</i>	<i>X</i>							<i>X</i>	<i>Y</i>	<i>Y</i>	
<i>South Wall</i>	<i>10/8</i>	<i>3:11</i>	<i>P310032-03</i>	<i>1-4oz</i>			<i>X</i>	<i>X</i>	<i>X</i>							<i>X</i>	<i>Y</i>	<i>Y</i>	

Relinquished by: (Signature) <i>[Signature]</i>	Date <i>10/8</i>	Time <i>5:05 pm</i>	Received by: (Signature) <i>[Signature]</i>	Date <i>10/8/13</i>	Time <i>1:05</i>
Relinquished by: (Signature)			Received by: (Signature)		
Sample Matrix					
Soil <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Sludge <input type="checkbox"/> Aqueous <input type="checkbox"/> Other <input type="checkbox"/>					

Sample(s) dropped off after hours to secure drop off area.



envirotech
Analytical Laboratory

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APPENDIX B

Field Notes

Client: Great Western



Project No: 99010-0016
COC No:

FIELD REPORT: SPILL CLOSURE VERIFICATION

PAGE NO: 1 OF 1

LOCATION: NAME: Pipeline off Bisti Hwy WELL #: _____
QUAD/UNIT: NA SEC: 33 TWP: 29N RNG: 12W PM: NA CNTY: ST ST: DM
QTR/FOOTAGE: _____ CONTRACTOR: _____

DATE STARTED: 9/23/13
DATE FINISHED: 9/23/13
ENVIRONMENTAL SPECIALIST: J. Garcia

EXCAVATION APPROX: _____ FT. X _____ FT. X _____ FT. DEEP CUBIC YARDAGE: _____
DISPOSAL FACILITY: _____ REMEDIATION METHOD: Excavation
LAND USE: _____ LEASE: _____ LAND OWNER: _____
CAUSE OF RELEASE: Broken pipeline MATERIAL RELEASED: Crude oil and produced water

SPILL LOCATED APPROXIMATELY: _____ FT. FROM _____
DEPTH TO GROUNDWATER: 7100 NEAREST WATER SOURCE: 71000 NEAREST SURFACE WATER: < 100
NMOCD RANKING SCORE: 20 NMOCD TPH CLOSURE STD: 100 PPM

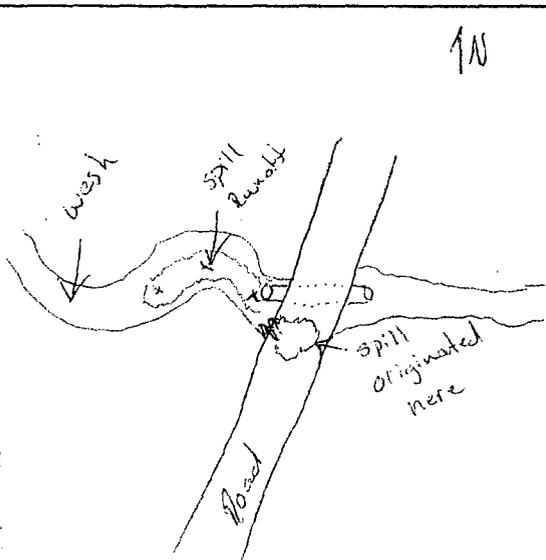
SOIL AND EXCAVATION DESCRIPTION: 36.682024° N, 108.211595° W

SAMPLE DESCRIPTION	TIME	SAMPLE I.D.	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	READING	CALC. ppm
<u>200 STD</u>	<u>1:35</u>						<u>211</u>	
<u>South Comp</u>	<u>1:47</u>	<u>SC</u>		<u>5</u>	<u>20</u>	<u>4</u>	<u>441</u>	<u>1764</u>
<u>North Comp</u>	<u>1:50</u>	<u>NC</u>		<u>5</u>	<u>20</u>	<u>4</u>	<u>21</u>	<u>84</u>
<u>Middle Comp</u>	<u>1:54</u>	<u>MC</u>		<u>5</u>	<u>20</u>	<u>4</u>	<u>23</u>	<u>92</u>

SPILL PERIMETER

OVM RESULTS

SPILL PROFILE



SAMPLE ID	FIELD HEADSPACE PID (ppm)
<u>NC</u>	<u>4.7</u>
<u>SC</u>	<u>48.4</u>
<u>MC</u>	<u>4.2</u>

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME

RAVEL NOTES: _____ CALLED OUT: _____ ONSITE: _____

Client: Great Western Drilling	 envirotech (505) 632-0615 (800) 362-1879 5796 U.S. Hwy 64, Farmington, NM 87401	Project No: 99010 - 0016 COC No: NONE
---------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------

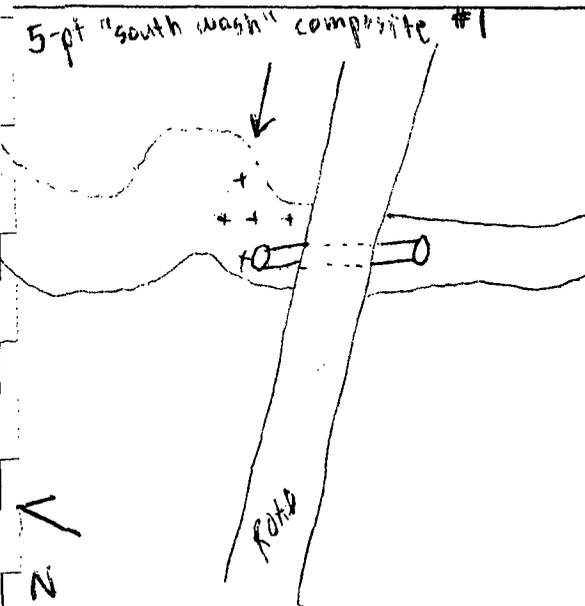
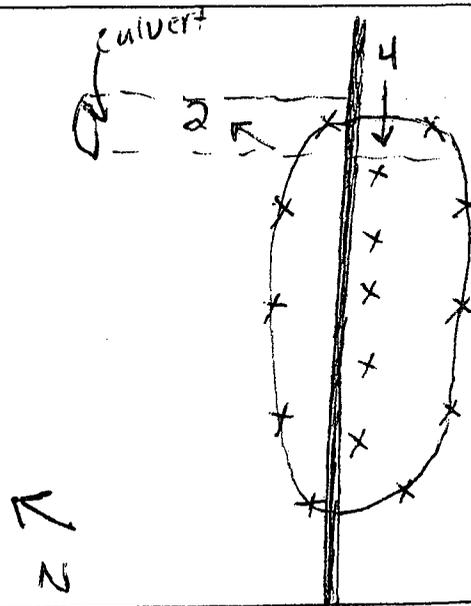
FIELD REPORT: SPILL CLOSURE VERIFICATION		PAGE NO: 1 OF 1
LOCATION: NAME: Pipeline Spill off Bisti Hwy WELL #: NA	DATE STARTED: 10/2/13	DATE FINISHED: 10/2/13
QUAD/UNIT: NA SEC: 33 TWP: 29N RNG: 13W PM: NA CNTY: SJ ST: NM	ENVIRONMENTAL SPECIALIST: T. McIntosh	
QTR/FOOTAGE: NA	CONTRACTOR: NA	

EXCAVATION APPROX: NA FT. X NA FT. X NA FT.	DEEP CUBIC YARDAGE: NA
DISPOSAL FACILITY: NA	REMEDICATION METHOD: excavation
LAND USE: NA	LEASE: NA LAND OWNER: NA
CAUSE OF RELEASE: broken pipeline	MATERIAL RELEASED: CRUDE OIL and Produced water
SPILL LOCATED APPROXIMATELY: NA FT. NA FROM NA	
DEPTH TO GROUNDWATER: >100'	NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: <100'
NMOC D RANKING SCORE: 20	NMOC D TPH CLOSURE STD: 100 PPM

SOIL AND EXCAVATION DESCRIPTION: **36.682117, -108.211675**

No lab samples submitted. They intend to further excavate and have us come back out to resample at a later date.

SAMPLE DESCRIPTION	TIME	SAMPLE I.D.	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	200, 500, 1000	
							READING	CALC. ppm
200, 500, & 1000 calibration	8:52	—	—	—	—	—	993	—
south wash	9:29	1	—	5	20	4	165	660
north wall	9:31	2	—	5	20	4	330	1320
south wall	9:33	3	—	5	20	4	106	424
bottom	9:36	4	—	5	20	4	1358	5432

SPILL PERIMETER 	OVN RESULTS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>SAMPLE ID</th> <th>FIELD HEADSPACE PID (ppm)</th> </tr> </thead> <tbody> <tr><td>1</td><td>335</td></tr> <tr><td>2</td><td>775</td></tr> <tr><td>3</td><td>305</td></tr> <tr><td>4</td><td>1777</td></tr> </tbody> </table> LAB SAMPLES <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>SAMPLE ID</th> <th>ANALYSIS</th> <th>TIME</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	SAMPLE ID	FIELD HEADSPACE PID (ppm)	1	335	2	775	3	305	4	1777	SAMPLE ID	ANALYSIS	TIME																						SPILL PROFILE 
SAMPLE ID	FIELD HEADSPACE PID (ppm)																																			
1	335																																			
2	775																																			
3	305																																			
4	1777																																			
SAMPLE ID	ANALYSIS	TIME																																		

TRAVEL NOTES: _____ CALLED OUT: _____ ONSITE: _____

Client: Great Western Drilling



Project No: 99010-0016
COC No: 16007

FIELD REPORT: SPILL CLOSURE VERIFICATION

PAGE NO: 1 OF 1

LOCATION: NAME: Pipeline Spill off ^{Highway} ~~Highway~~ WELL #: NA
QUAD/UNIT: NA SEC: 33 TWP: 29N RNG: 13W/PM: NA CNTY: SJ ST: NM
PTR/FOOTAGE: NA CONTRACTOR: NA

DATE STARTED: 10/3/13
DATE FINISHED: 10/3/13

ENVIRONMENTAL SPECIALIST: T. McIntosh

EXCAVATION APPROX: 25 FT. X 10 FT. X 6 FT. DEEP CUBIC YARDAGE:

DISPOSAL FACILITY: NA REMEDIATION METHOD: excavation

LAND USE: NA LEASE: NA LAND OWNER: NA

CAUSE OF RELEASE: broken pipeline MATERIAL RELEASED: crude oil and produced water

SPILL LOCATED APPROXIMATELY: NA FT. NA FROM NA

DEPTH TO GROUNDWATER: >100' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: <100'

NMOCD RANKING SCORE: 20 NMOCD TPH CLOSURE STD: 100 PPM

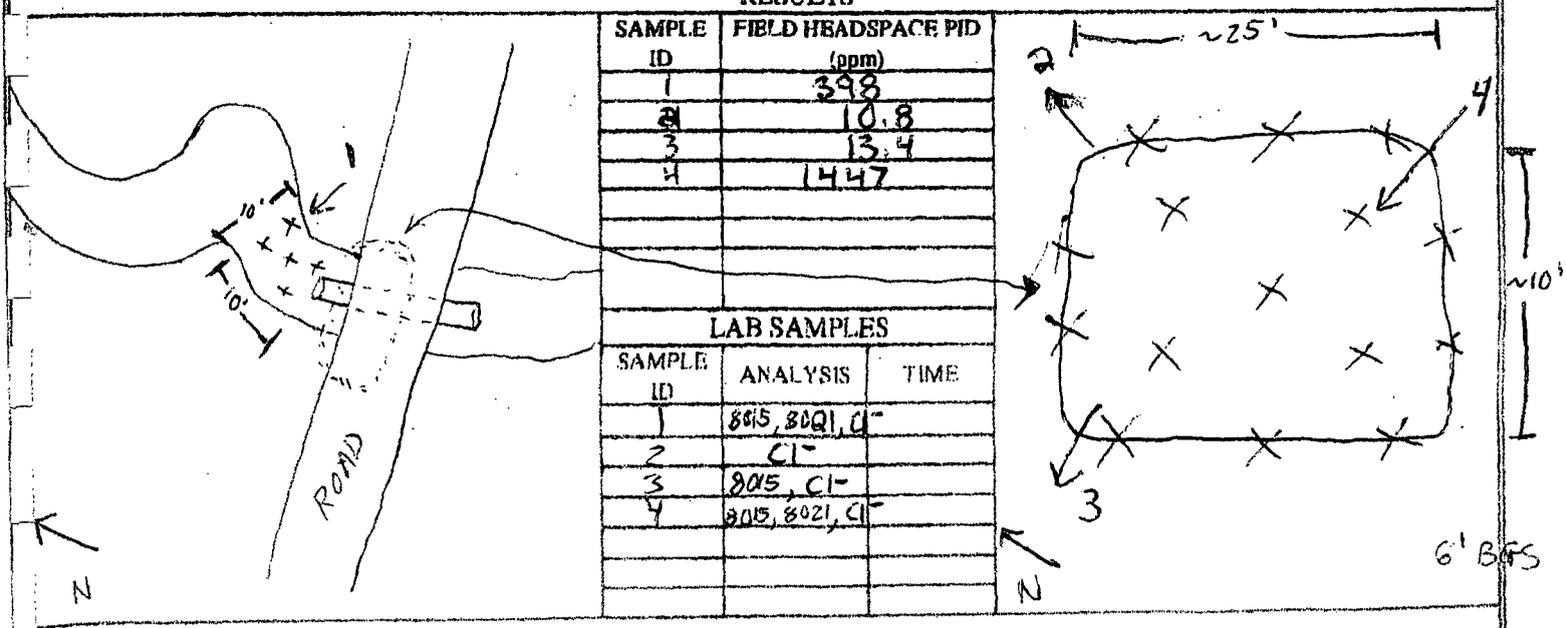
OIL AND EXCAVATION DESCRIPTION: 36.682117, 108.211675, 36.682024, -108.211595
Requested that we run samples for chlorides as well, because of produced water.
Wants us to spray potassium permanganate tomorrow. Cullen gave me a key to the gate.
Said he will come pick it up at our office at a later date.

SAMPLE DESCRIPTION	TIME	SAMPLE I.D.	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	READING	CALC. ppm
200 Std	8:45	—	—	—	—	—	196	—
South wash	9:35	1	—	5	20	4	564	2216
North wall	9:38	2	—	5	20	4	15	60
South wall	9:40	3	—	5	20	4	57	228
bottom	9:43	4	—	5	20	4	366	1464

SPILL PERIMETER

OVM RESULTS

SPILL PROFILE



TRAVEL NOTES: CALLED OUT: ONSITE:

