

## SITE INFORMATION

### Report Type: Work Plan

<b>General Site Information:</b>			
<b>Site:</b>	Woolley Federal #7		
<b>Company:</b>	COG Operating LLC		
<b>Section, Township and Range</b>	Unit K	Sec 21	T17S R30E
<b>Lease Number:</b>	API-30-015-31258		
<b>County:</b>	Eddy County		
<b>GPS:</b>	32.81272° N		103.98012° W
<b>Surface Owner:</b>	Federal		
<b>Mineral Owner:</b>			
<b>Directions:</b>	In Loco Hills, from the intersection of Haggerman Cutoff and 82, travel south on CR 217 for 0.3m, turn left and travel 0.3m to leak on side of lease road.		

<b>Release Data:</b>	
<b>Date Released:</b>	11/26/2010
<b>Type Release:</b>	Produced Fluid
<b>Source of Contamination:</b>	2 1/2 nipple at road crossing
<b>Fluid Released:</b>	70 bbls
<b>Fluids Recovered:</b>	50 bbls

<b>Official Communication:</b>			
<b>Name:</b>	Pat Ellis		Ike Tavarez
<b>Company:</b>	COG Operating, LLC		Tetra Tech
<b>Address:</b>	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
<b>P.O. Box</b>			
<b>City:</b>	Midland Texas, 79701		Midland, Texas
<b>Phone number:</b>	(432) 686-3023		(432) 425-3878
<b>Fax:</b>	(432) 684-7137		
<b>Email:</b>	pellis@conchoresources.com		ike.tavarez@tetrattech.com

<b>Ranking Criteria</b>		
<b>Depth to Groundwater:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
<b>WellHead Protection:</b>	<b>Ranking Score</b>	<b>Site Data</b>
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
<b>Surface Body of Water:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
<b>Total Ranking Score:</b>	<b>0</b>	

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH

February 8, 2011

Mr. Mike Bratcher  
Environmental Engineer Specialist  
Oil Conservation Division, District 2  
1301 West Grand Avenue  
Artesia, New Mexico 88210

**Re: Work Plan for the COG Operating LLC, Woolley Federal #7 Flow line, Unit K, Section 21, Township 17 South, Range 30 East, Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Woolley Federal #7 Flow line located in Unit K, Section 21, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81272°, W 103.98012°. The site location is shown on Figures 1 and 2.

### **Background**

On November 26, 2010, the leak was discovered on a flow line nipple and released approximately seventy (70) barrels of produced fluids. To alleviate the problem, COG personnel repaired the flow line. Fifty (50) barrels of standing fluids were recovered. The spill initiated south of a lease road in the pasture where several active flow lines are present. The spill area affected an area around several flow lines measuring approximately 20' x 90' and migrated east on the lease road for approximately 430', at a width of 15' to 25'. The initial C-141 form is enclosed in Appendix C.

### **Groundwater**

No water wells were listed within Section 21. According to the *Geology and Groundwater Resources of Eddy County, New Mexico* (Report 3), one well is located in Section 34, Township 17 South, Range 31 East, with reported depth to water of 271' below surface. According to the

Tetra Tech

1910 North Og Spring, Midland, TX 79706

Tel: 432.652.4559 Fax: 432.682.1746 [www.tetra-tech.com](http://www.tetra-tech.com)



NMOCD groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The average depth to groundwater map is shown in Appendix B.

### **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

### **Soil Assessment and Analytical Results**

On December 30, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The spill and auger hole locations are shown on Figure 3.

Referring to Table 1, all of the selected samples were below the RRAL for TPH and BTEX. In the pasture, the areas of AH-1 and AH-2 appear to have a shallow impact (0-1') to the soils, with chloride concentrations of 1,770 mg/kg and 5,780 mg/kg, respectively. The chloride concentrations declined with depth at 1-1.5' to 202 mg/kg (AH-1) and 1,060 mg/kg (AH-2). Deeper samples could not be obtained due to the dense caliche formation.

The remaining auger holes (AH-3, AH-4 and AH-6) on the lease road showed a chloride impact to the soils ranging from 430 mg/kg (AH-3) at 0-1' to 5,600 mg/kg (AH-4). Auger holes (AH-5 and AH-7) did not show a significant impact to the soils.



TETRA TECH

### Work Plan

For surface growth, COG proposes to remove the chloride impacted soils exceeding 1,000 mg/kg in the area of AH-1 and AH-2 to a approximate depth of 1.0' to 2.0' below surface, if accessible. The proposed depths are highlighted in the attached Table 1. Once the impacted area is excavated to the appropriate depths, the excavation will be backfilled with clean soil. The excavated soil will be disposed of properly at an approved facility.

If the deeper impact is encountered and excavation depths cannot be reached due to wall cave ins, safety concerns for lines, equipment and onsite personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

As discussed with the BLM, spills on the lease road would be handled on a case-by-case basis. The depth to groundwater in the area is reported to be greater than 300' below surface. The lease road is a well traveled road used daily by oil field related activities. Concerns were also discussed on possible historical impacts on the lease road. Due to the limited impact, COG proposes not to excavate the soil on the lease road.

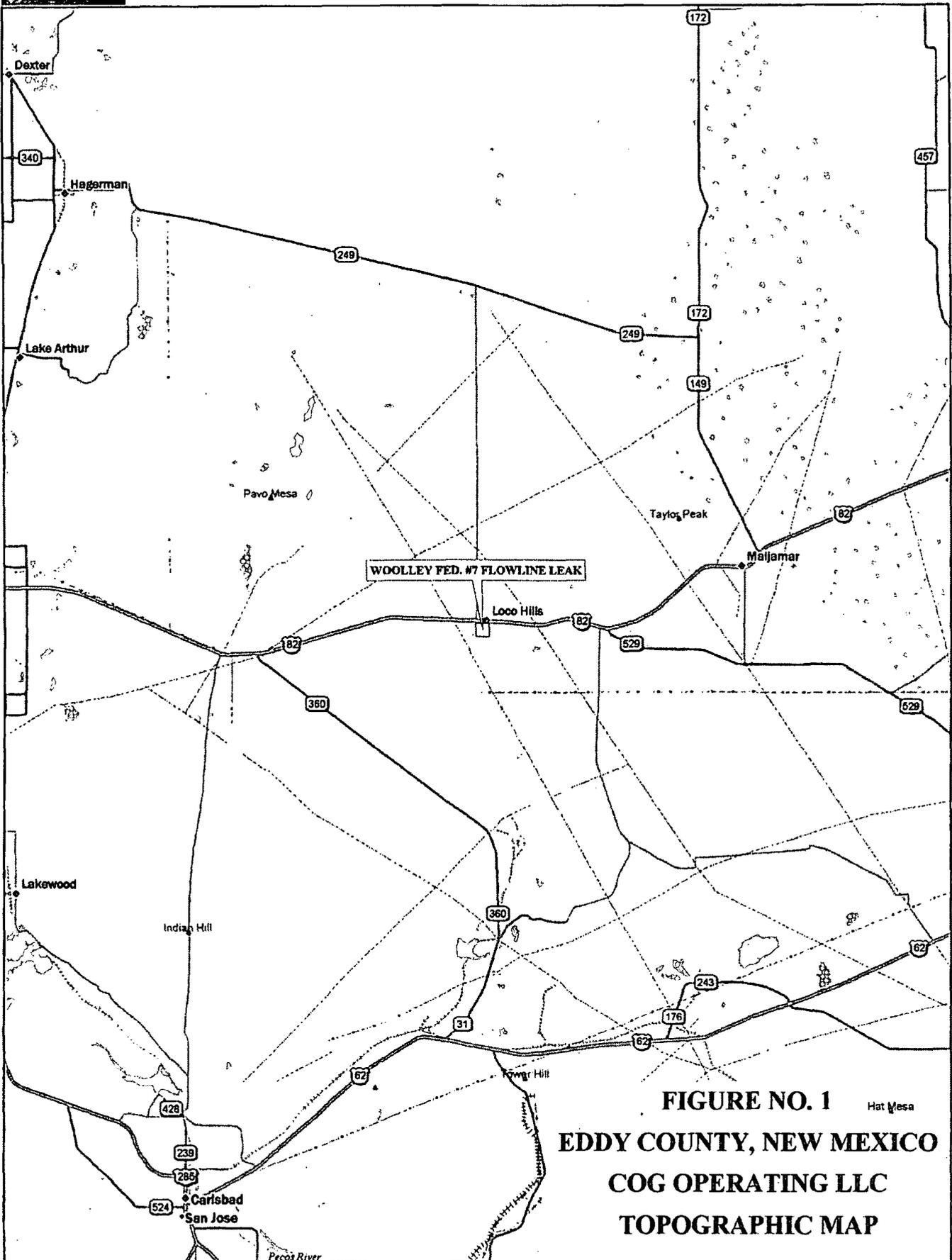
Upon completion a final closure report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment, please call me at (432) 682-4559.

Respectfully submitted,  
TETRA TECH

Ike Tavaréz  
Project Manager

cc: Pat Ellis - COG  
cc: Terry Gregston - BLM

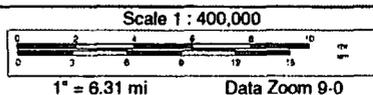
## Figures



WOOLLEY FED. #7 FLOWLINE LEAK

**FIGURE NO. 1** Hat Mesa  
**EDDY COUNTY, NEW MEXICO**  
**COG OPERATING LLC**  
**TOPOGRAPHIC MAP**

Data use subject to license.  
 © DeLorme. Topo USA® 8.  
 www.delorme.com





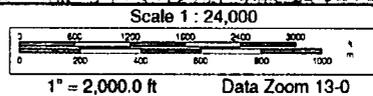
WOOLLEY FED. #7 FLOWLINE LEAK

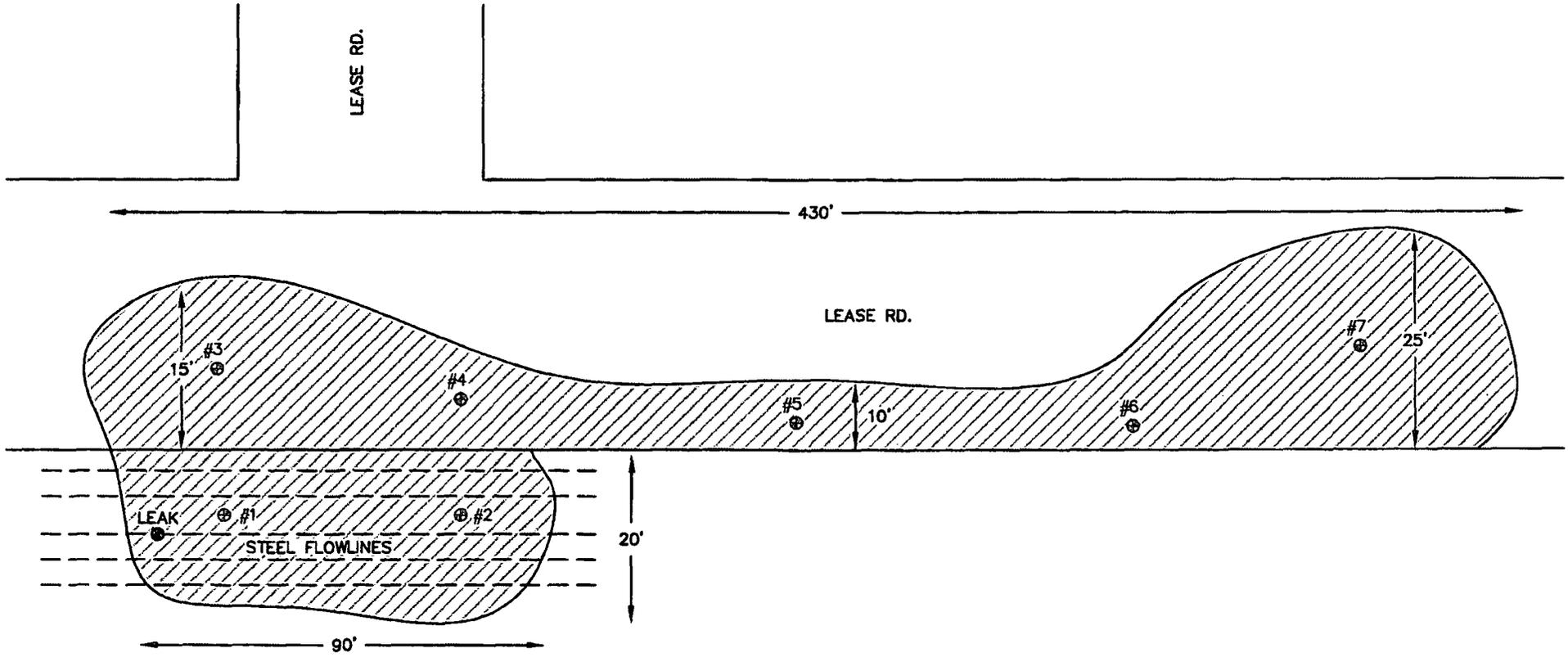
FIGURE NO. 2  
EDDY COUNTY, NEW MEXICO  
COG OPERATING, LLC  
TOPOGRAPHIC MAP

Data use subject to license.

© DeLorme, Topo USA® 8.

www.delorme.com





SPILL AREA  
SAMPLE LOCATIONS

NOT TO SCALE

DATE:  
12/30/10  
DRN. BY:  
JJ  
FILE:  
WVCDP/MSD/04  
WOOLLEY FED #7

FIGURE NO. 3
EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
WOOLLEY FED. #7 FLOWLINE LEAK
TETRA TECH, INC. MIDLAND, TEXAS

Tables

**Table 1**  
**COG Operating LLC.**  
**Woolley Federal #7 (Flow line)**  
**EDDY COUNTY, NEW MEXICO**

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
<b>Flow lines Area</b>													
AH-1	12/30/2010	0-1'		X		78.3	333.0	411.3	<0.100	<0.100	0.404	0.515	1,770
		1-1.5'		X		-	-	-	-	-	-	-	202
		2-2.5'		X		-	-	-	-	-	-	-	356
		3-3.5'		X		-	-	-	-	-	-	-	489
AH-2	12/30/2010	0-1'		X		16	367	383	<0.0200	0.0834	0.145	0.279	5,780
		1-1.5'		X					-	-	-	-	1,060
<b>Lease Road</b>													
AH-3	12/30/2010	0-1'		X		<2.00	<50.0	<50.0	-	-	-	-	430
		1-1.5'		X		-	-	-	-	-	-	-	1,160
AH-4	12/30/2010	0-1'		X		<10.0	<50.0	<50.0	-	-	-	-	5,690
		1-1.5'		X		-	-	-	-	-	-	-	2,160
AH-5	12/30/2010	0-1'		X		<2.00	59.3	59.3	<0.0200	<0.0200	<0.0200	<0.0200	617
AH-6	12/30/2010	0-1'		X		<2.00	149	149	<0.0200	<0.0200	<0.0200	<0.0200	3,500
AH-7	12/30/2010	0-1'	1.5	X		<10.0	<50.0	<50.0	-	-	-	-	<200
		1-1.5'	1.5	X		-	-	-	-	-	-	-	<200
		2-2.5'	1.5	X		-	-	-	-	-	-	-	<200
		3-3.5'	1.5	X		-	-	-	-	-	-	-	<200

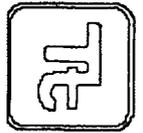
BEB Below Excavation Bottom

(-) Not Analyzed

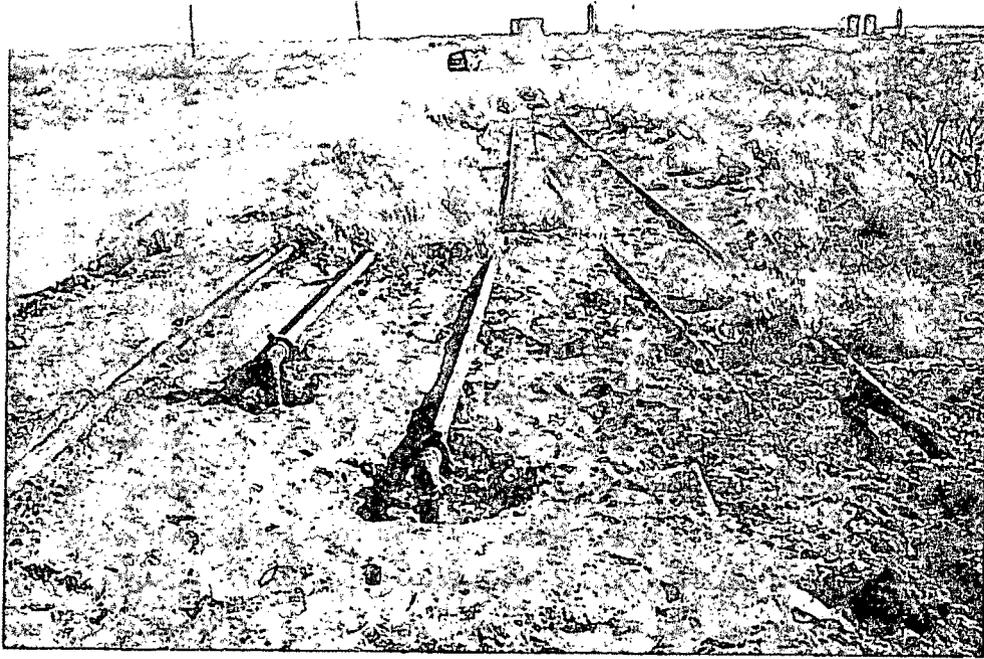
Proposed Excavation Depth

Photos

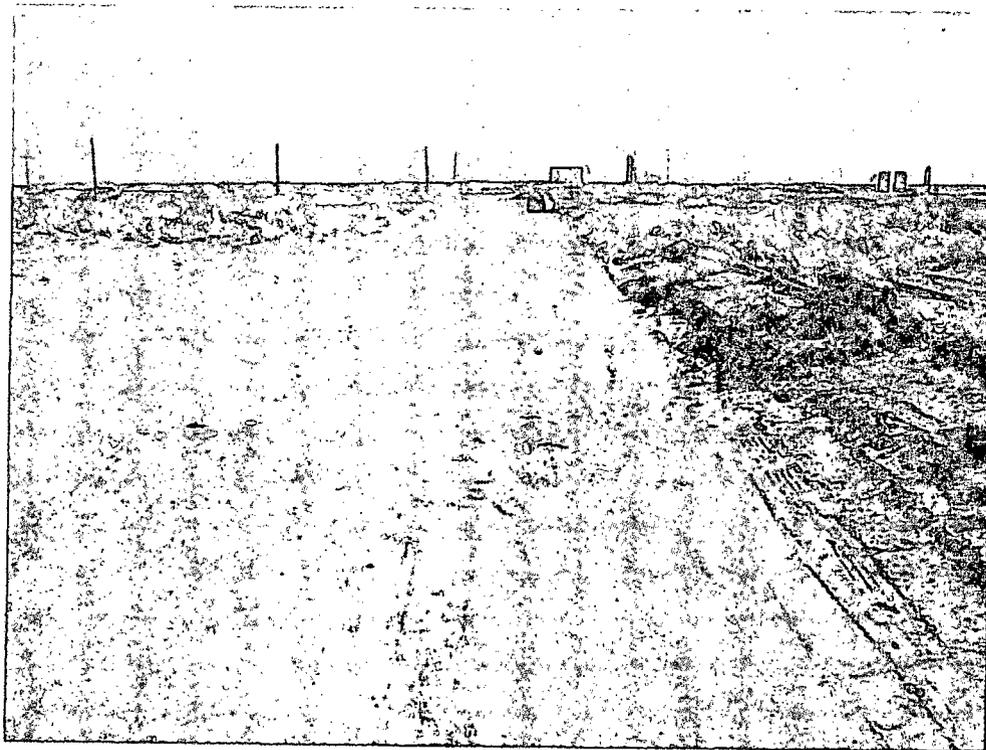
COG Operating LLC  
Woolley Federal #7  
Eddy County, New Mexico



TETRA TECH

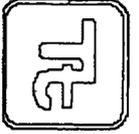


View East - AH-1, AH-2

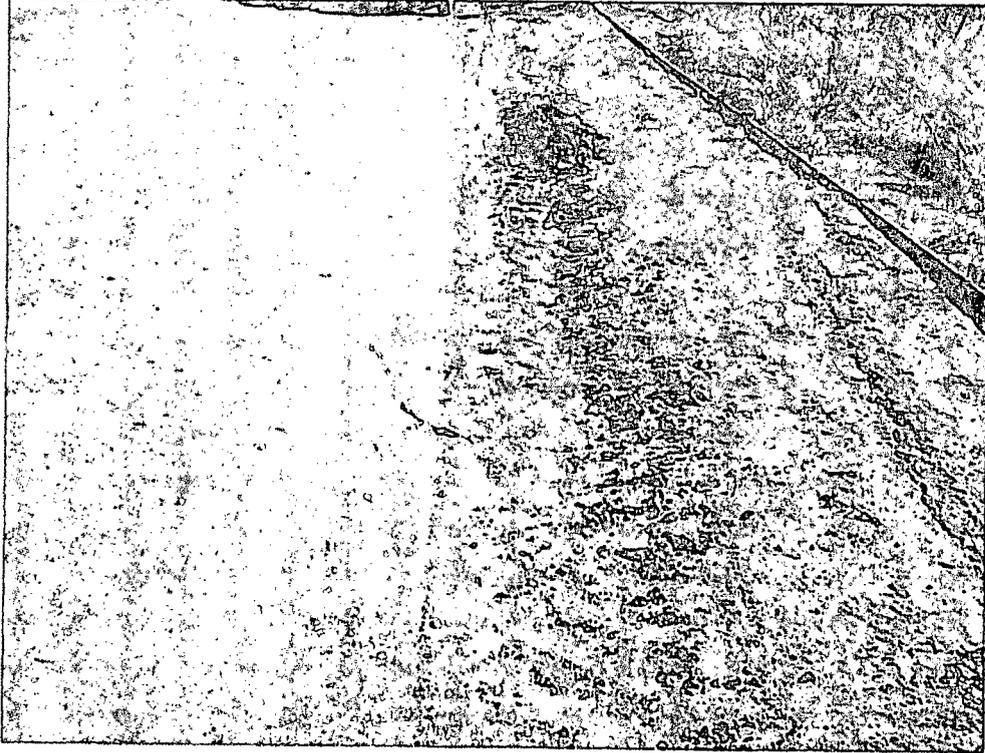


View East - AH-3 through AH-7

COG Operating LLC  
Woolley Federal #7  
Eddy County, New Mexico



TETRA  
TECH



View East – AH-6, AH-7

## Appendix A

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, 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 October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

**Release Notification and Corrective Action**

**OPERATOR**  Initial Report  Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Woolley Federal #7	Facility Type	Flowline
Surface Owner	Federal	Mineral Owner	
		Lease No. NMLC-028936-A (API#) 30-015-31258	

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	21	17S	30E					Eddy

Latitude 32 48.862 Longitude 103 59.078

**NATURE OF RELEASE**

Type of Release	Produced fluid	Volume of Release	70bbbls	Volume Recovered	50bbbls
Source of Release	2 1/2 inch nipple at road crossing	Date and Hour of Occurrence	11/26/2010	Date and Hour of Discovery	11/26/2010 2:00 p.m.
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Mike Bratcher—OCD Terry Gregston—BLM		
By Whom?	Josh Russo	Date and Hour	11/27/2010 2:54 p.m.		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted. Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

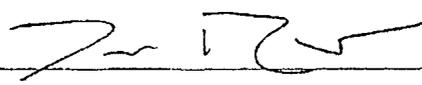
2 1/2 inch nipple failed at the road crossing; the nipple has been replaced and the line has been returned back into service.

Describe Area Affected and Cleanup Action Taken.\*

Initially 70bbbls of produced fluid was released and we were able to recover 50bbbls with a vacuum truck. The spill area measured 10' x 420' east of the GPS coordinates on the lease road and 10' x 20' southeast of the origin in the pasture. The lease road has had been scraped, back-dragged, and returned to its previous condition. (The closest location to the release is the Woolley Federal Tank Battery, Unit C, Sec.28-T17S-R30E, Eddy County NM). Tetra Tech will sample the spill site area in the pasture to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCDBLM for approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCDBLM 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 NMOCDBLM 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, NMOCDBLM 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.

**OIL CONSERVATION DIVISION**

Signature:		Approved by District Supervisor:	
Printed Name:	Josh Russo	Approval Date:	Expiration Date:
Title:	HSE Coordinator	Conditions of Approval:	
E-mail Address:	jrusso@conchoresources.com	Attached <input type="checkbox"/>	
Date:	12/06/2010	Phone:	432-212-2399

\* Attach Additional Sheets If Necessary

## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - Woolley Federal #7**  
**Eddy County, New Mexico**

**16 South      29 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
110	30	29	28	27	26
31	32	33	34	35	36

**16 South      30 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**16 South      31 East**

6	5	4	3	2
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31	32	33	34	35
280				

**17 South      29 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	210	28	27	26
31	32	33	34	35	36
		208'		153	

**17 South      30 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**17 South      31 East**

6	5	4	3	2
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31	32	33	34	35
			271	

**18 South      29 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**18 South      30 East**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**18 South      31 East**

6	5	4	3	2
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31	32	33	34	35
				261

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data

## Appendix C

## Summary Report

Ike Tavarez  
 Tetra Tech  
 1910 N. Big Spring Street  
 Midland, TX 79705

Report Date: January 13, 2011

Work Order: 11010508



Project Location: Eddy County, NM  
 Project Name: COG/Wooley Fed. #7  
 Project Number: 114-6400744

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
254686	AH-1 0-1'	soil	2010-12-30	00:00	2011-01-05
254687	AH-1 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254688	AH-1 2-2.5'	soil	2010-12-30	00:00	2011-01-05
254689	AH-1 3-3.5'	soil	2010-12-30	00:00	2011-01-05
254693	AH-2 0-1'	soil	2010-12-30	00:00	2011-01-05
254694	AH-2 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254695	AH-3 0-1'	soil	2010-12-30	00:00	2011-01-05
254696	AH-3 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254697	AH-4 0-1'	soil	2010-12-30	00:00	2011-01-05
254698	AH-4 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254699	AH-5 0-1'	soil	2010-12-30	00:00	2011-01-05
254700	AH-6 0-1'	soil	2010-12-30	00:00	2011-01-05
254701	AH-7 0-1' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254702	AH-7 1-1.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254703	AH-7 2-2.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254704	AH-7 3-3.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
254686 - AH-1 0-1'	<0.100	<0.100	0.404	0.515	333	78.3
254693 - AH-2 0-1'	<0.0200	0.0834	0.145	0.279	387	16.0
254695 - AH-3 0-1'					<50.0	<2.00
254697 - AH-4 0-1'					<50.0	<10.0
254699 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	59.3	<2.00
254700 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	149	<2.00
254701 - AH-7 0-1' 1.5 BEB					<50.0	<10.0

Sample: 254686 - AH-1 0-1'

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296  
 This is only a summary. Please, refer to the complete report package for quality control data.

---

Param	Flag	Result	Units	RL
Chloride		1770	mg/Kg	4.00

---

**Sample: 254687 - AH-1 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		202	mg/Kg	4.00

---

**Sample: 254688 - AH-1 2-2.5'**

Param	Flag	Result	Units	RL
Chloride		356	mg/Kg	4.00

---

**Sample: 254689 - AH-1 3-3.5'**

Param	Flag	Result	Units	RL
Chloride		489	mg/Kg	4.00

---

**Sample: 254693 - AH-2 0-1'**

Param	Flag	Result	Units	RL
Chloride		5780	mg/Kg	4.00

---

**Sample: 254694 - AH-2 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		1060	mg/Kg	4.00

---

**Sample: 254695 - AH-3 0-1'**

Param	Flag	Result	Units	RL
Chloride		430	mg/Kg	4.00

---

**Sample: 254696 - AH-3 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		1160	mg/Kg	4.00

---

**Sample: 254697 - AH-4 0-1'**

Param	Flag	Result	Units	RL
Chloride		5690	mg/Kg	4.00

**Sample: 254698 - AH-4 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		2160	mg/Kg	4.00

**Sample: 254699 - AH-5 0-1'**

Param	Flag	Result	Units	RL
Chloride		617	mg/Kg	4.00

**Sample: 254700 - AH-6 0-1'**

Param	Flag	Result	Units	RL
Chloride		3500	mg/Kg	4.00

**Sample: 254701 - AH-7 0-1' 1.5 BEB**

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

**Sample: 254702 - AH-7 1-1.5' 1.5 BEB**

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

**Sample: 254703 - AH-7 2-2.5' 1.5 BEB**

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

**Sample: 254704 - AH-7 3-3.5' 1.5 BEB**

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00