SITE INFORMATION

Report Type: Work Plan

General Site Information:		
Site:	White Star Federal Flow line	
Company:	COG Operating LLC	
Section, Township and Range	Unit H Sec. 29 T-17S R-29E	
Lease Number:	NMNM-14840	
County:	Eddy County	
GPS:	32.80639° N	104.08904° W
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of Hwy 82 and Hagerman Cutoff (Loco Hills, NM) travel west on 82 (5.3 mi), turn left (0.2 mi), right (0.9 mi) to location on left.	

Release Data:	
Date Released:	4/6/2011
Type Release:	Produced fluid
Source of Contamination:	Steel flowline
Fluid Released:	10 bbls
Fluids Recovered:	None

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 631-0348
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		ike.tavarez@tetratech.com

Ranking Criteria

Depth to Groundwater:	*Ranking Score*	*Site Data*
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0

WellHead Protection:	*Ranking Score*	*Site Data*
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0

Surface Body of Water:	*Ranking Score*	*Site Data*
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0

Total Ranking Score:	0

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

TETRA TECH

August 13, 2012

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., White Star Flow line, Unit H, Section 29, Township 17 South, Range 29 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 White Star, Unit H, Section 29, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80639°, W 104.08904 °. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on April, 6, 2011, and released approximately ten (10) barrels of produced fluid from a steel flow line, no fluids were recovered. To alleviate the problem, COG personnel repaired the steel line. The spill initiated south of the White Star Federal Tank Battery, in the adjacent pasture area along approximately 15 aboveground steel lines and pooled underneath the steel lines. The spill area measured approximately 10' x 25'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 29. Based on the site location and NMOCD groundwater map, the average depth to groundwater in this area is approximately 175' below surface. The well data 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-

Tetra Tech
1910 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

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 April 20, 2011, Tetra Tech personnel inspected and sampled the spill area. One auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. Selected 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 C. The results of the sampling are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, the surface sample of AH-1 (0-1') exceeded the RRAL for TPH and BTEX. The remaining deeper samples of AH-1 were below the RRAL for TPH and BTEX. Elevated chloride concentrations were in the subsurface soils and showed a bottom auger hole analysis of 2,450 mg/kg at 7-7.5' below surface. The chloride impact was not vertically defined.

Work Plan

COG proposes to excavate the impacted soil as highlighted (green) in Table 1 and shown on Figure 4. Due to the proximity of the lines and structures, deeper excavation is not practical for the site. If accessible, COG proposes the removal of impacted soil exceeding the TPH and BTEX RRAL and excavating the area to a depth of approximately 2.0' to 3.0' to remove the elevated chloride concentrations. If accessible, a backhoe trench will then be installed to attempt to vertically define the chloride impact at the site. If the chlorides are not defined, Tetra Tech will oversee the installation of a single borehole, if accessible.

Once excavated, a clay cap will be installed in the excavation bottom (6" to 1.0' thick) to reduce and limit vertical penetration of both rainwater and any future surface impact. Once final excavation depths are achieved, the site will be backfilled with clean material and brought to grade. The remaining impacted material will be deferred until abandonment of the facility.

Based on the location of the spill, the proposed excavation areas or depths may not be achieved due to oil and gas equipment, structures or lines which may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. If the impacted soil is not accessible, the soil will be deferred until the abandonment of the facility.

TETRA TECH

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

Respectfully submitted,
TETRA TECH

Ike Tavarez,PG
Project Manager

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

Figures

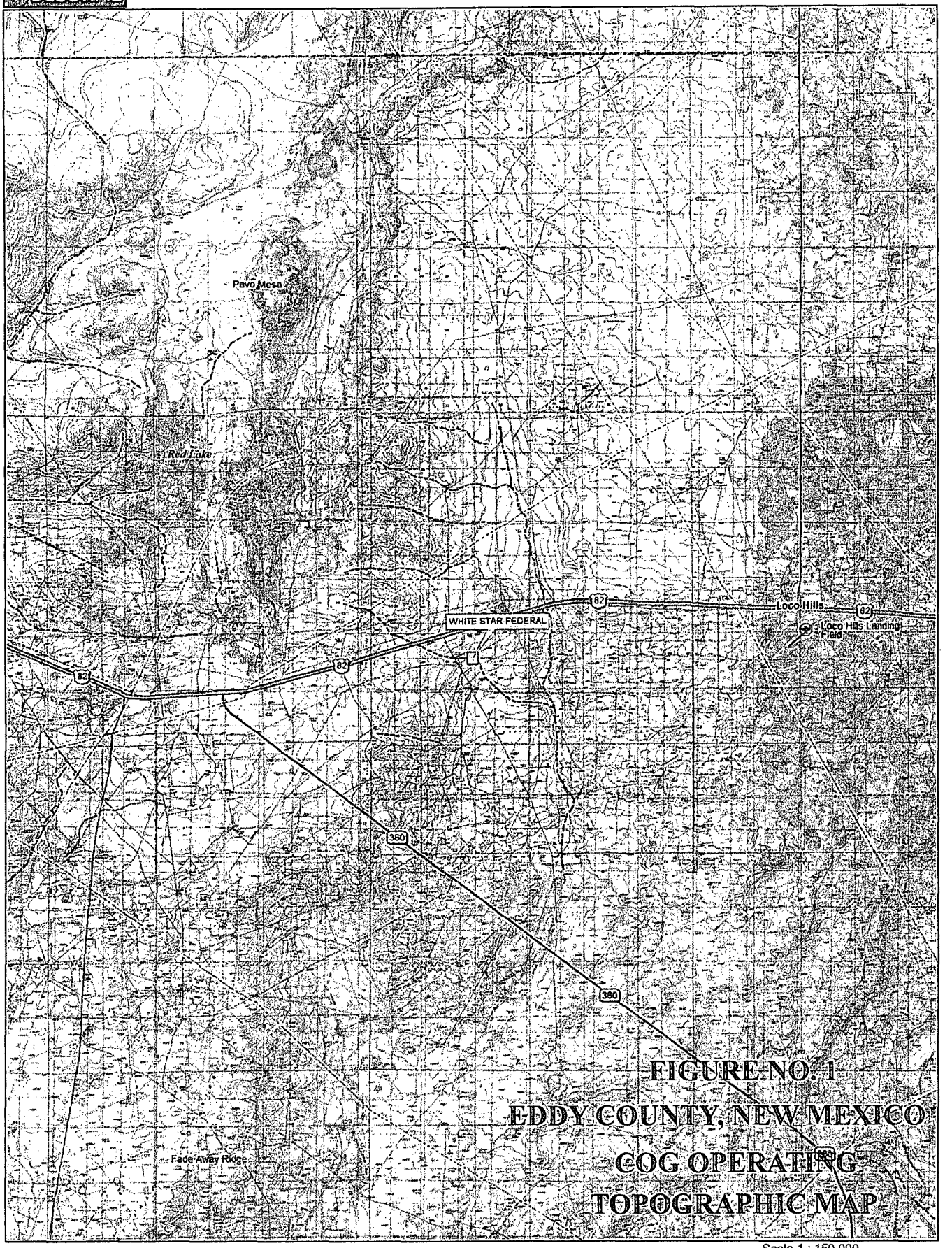


FIGURE NO. 1

EDDY COUNTY, NEW MEXICO

COG OPERATING

TOPOGRAPHIC MAP

TN

MN (7.9°E)

Scale 1 : 150,000

1" = 2.37 mi

Data Zoom 10-5

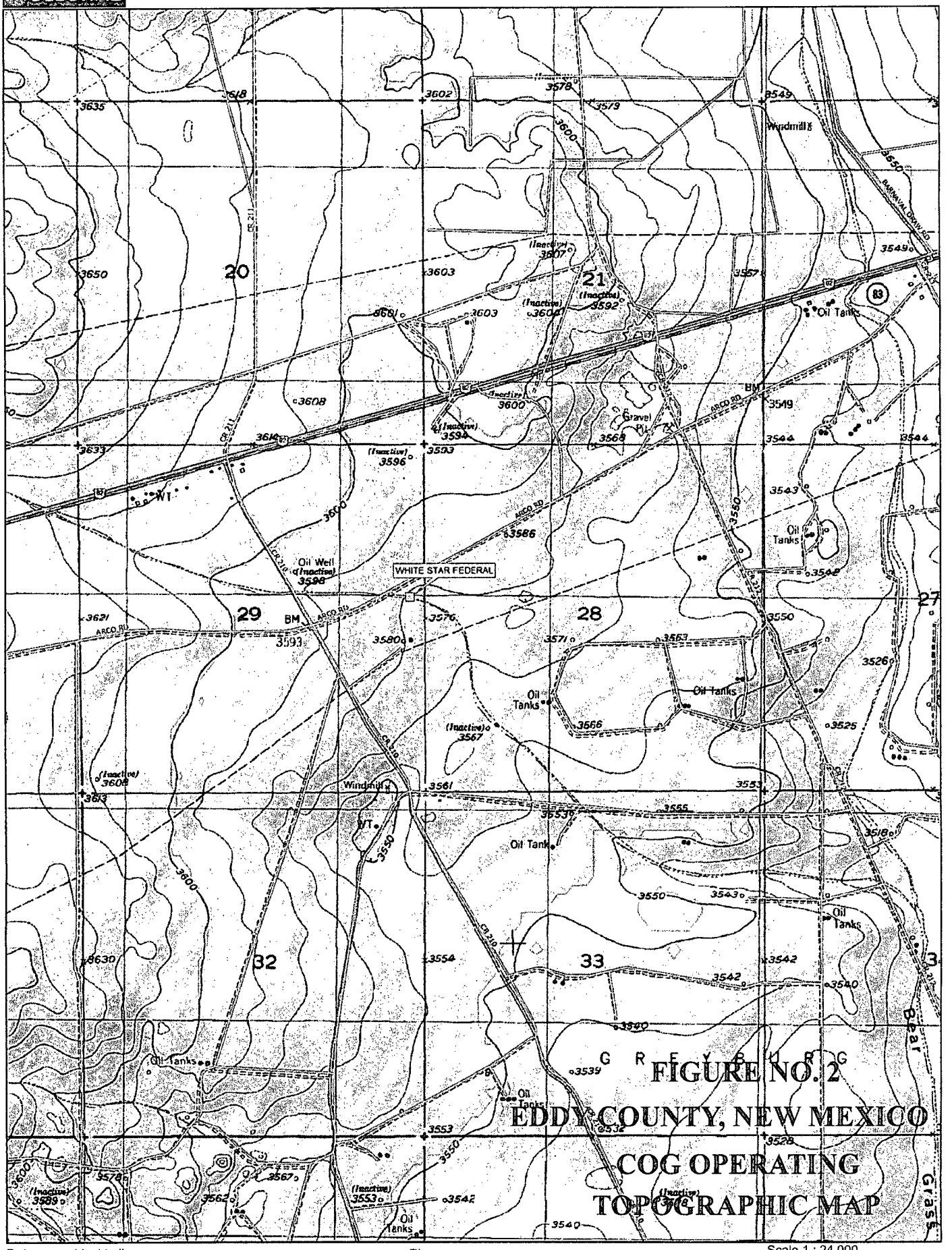


FIGURE NO. 2

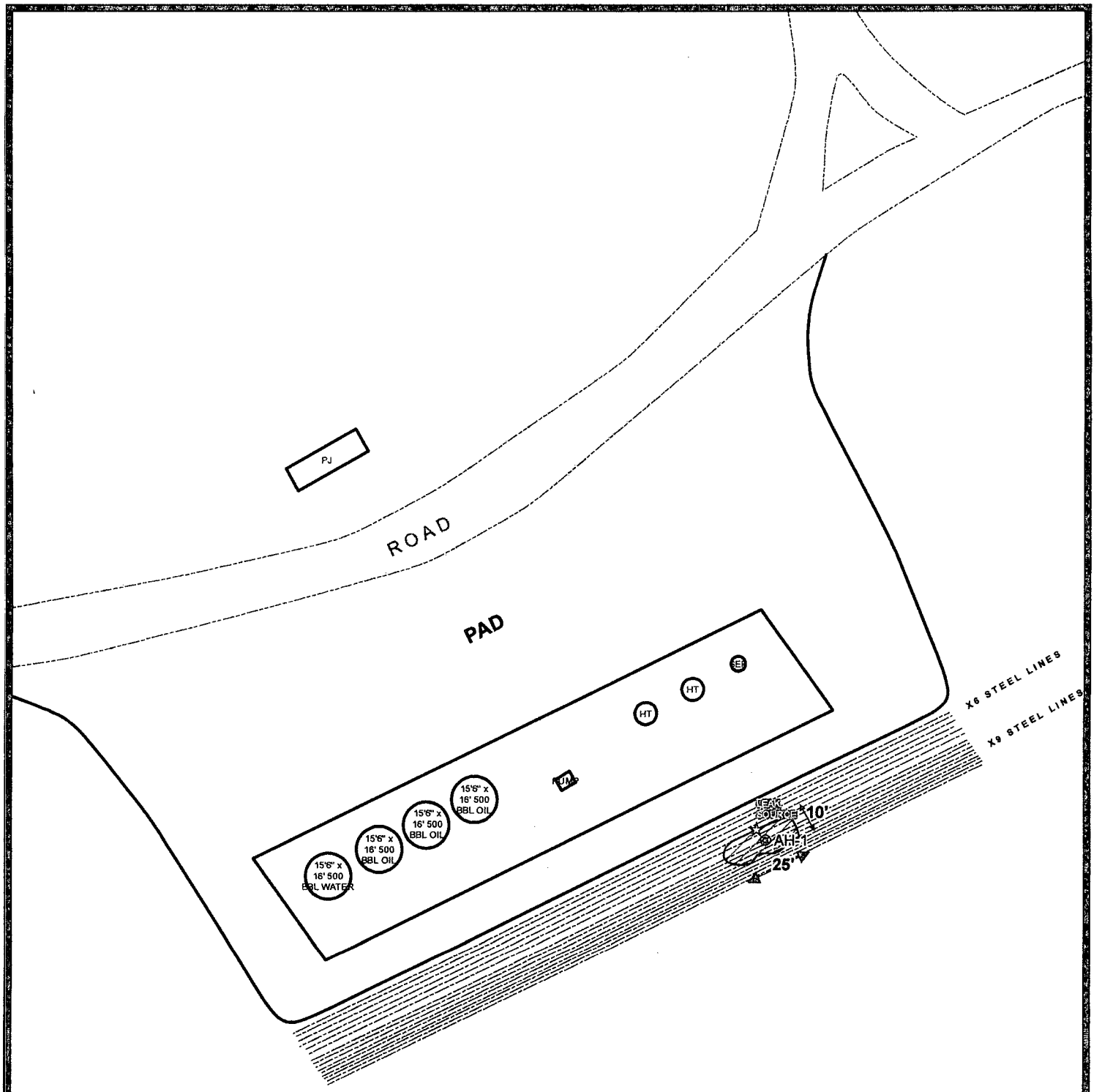
EDDY COUNTY, NEW MEXICO

COG OPERATING

TOPOGRAPHIC MAP

TN
MN (7.9°E)

Scale 1 : 24,000
1" = 2,000.0 ft
Data Zoom 13-6



EXPLANATION

- AUGER HOLE SAMPLE LOCATION
- LEAK SOURCE
- STEEL LINES
- SPILL AREA

N

SCALE: 1 IN = 55 FEET

Feet 0 20 40

CONCHO

Figure 3

White Star Federal

Spill Assessment Map

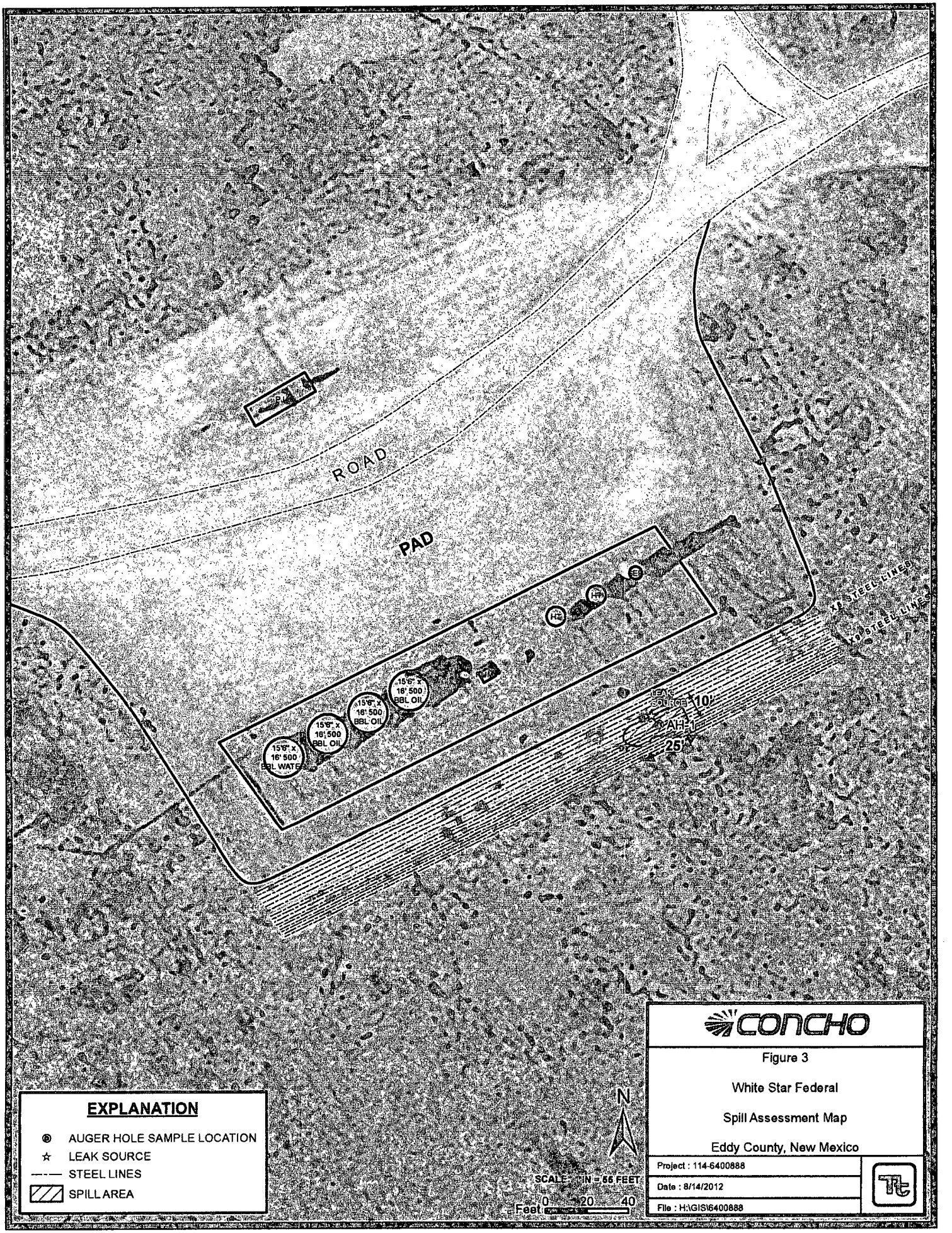
Eddy County, New Mexico

Project : 114-6400888

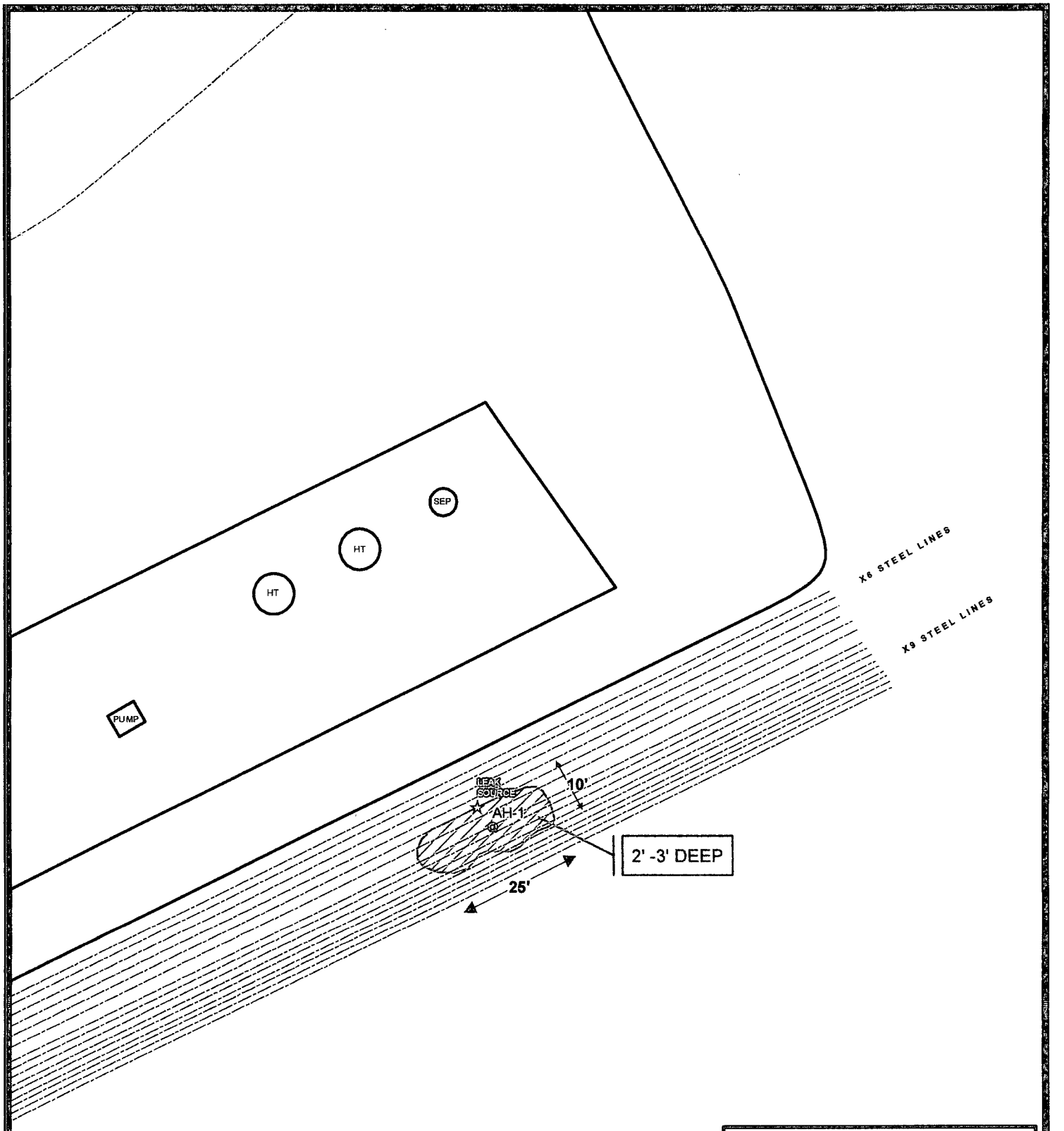
Date : 8/14/2012

File : H:\GIS\6400888

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATION
- LEAK SOURCE
- STEEL LINES
- PROPOSED EXCAVATION AREA

N

SCALE: 1 IN = 29 FEET

Feet 0 10 20

CONCHO

Figure 4

White Star Federal

Proposed Excavation Area & Depth Map

Eddy County, New Mexico

Project : 114-6400888

Date : 8/14/2012

File : H:\GIS\6400888

Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
WHITE STAR Federal
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	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					
AH-1	4/20/2011	0-1'	X		2,160	17,200	19,360	12.7	85.0	56.2	92.3	4,880
	"	1-1.5'	X		406	379	785	1.64	12.8	11.4	18.4	7,330
	"	2-2.5'	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	1,830
	"	3-3.5'	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	2,530
	"	4-4.5'	X		-	-	-	-	-	-	-	2,890
	"	5-5.5'	X		-	-	-	-	-	-	-	1,680
	"	6-6.5'	X		-	-	-	-	-	-	-	1,630
	"	7-7.5'	X		-	-	-	-	-	-	-	2,450

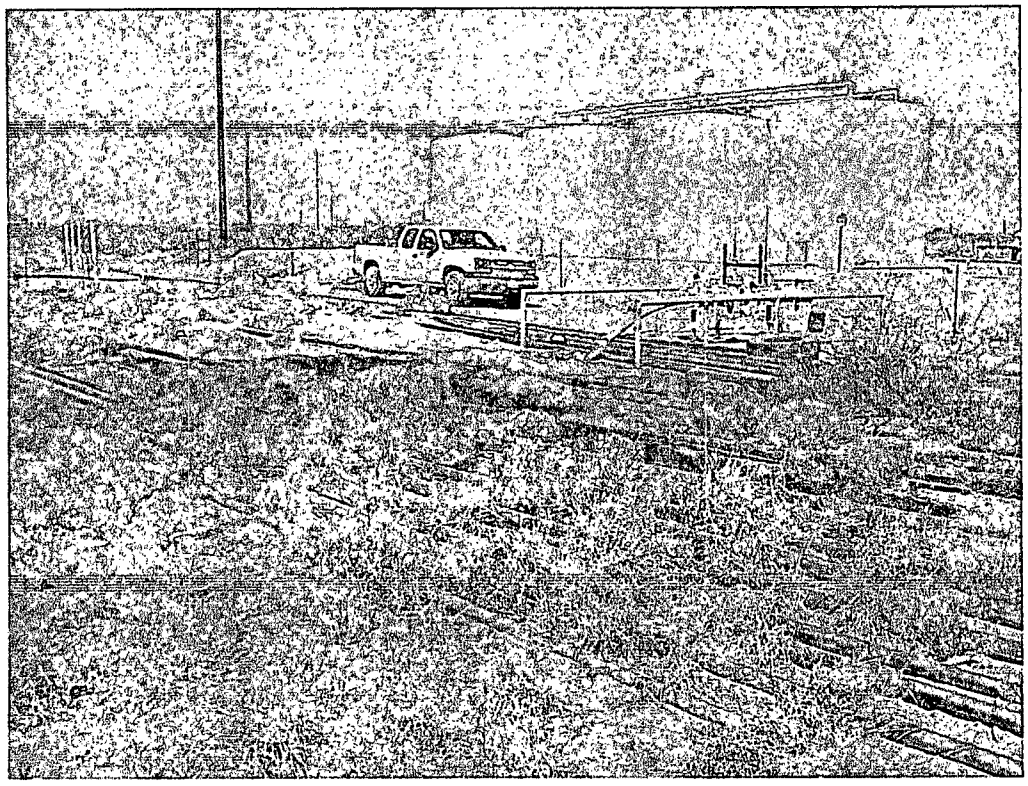
(--) Not Analyzed

[ ] Proposed Excavation Depths

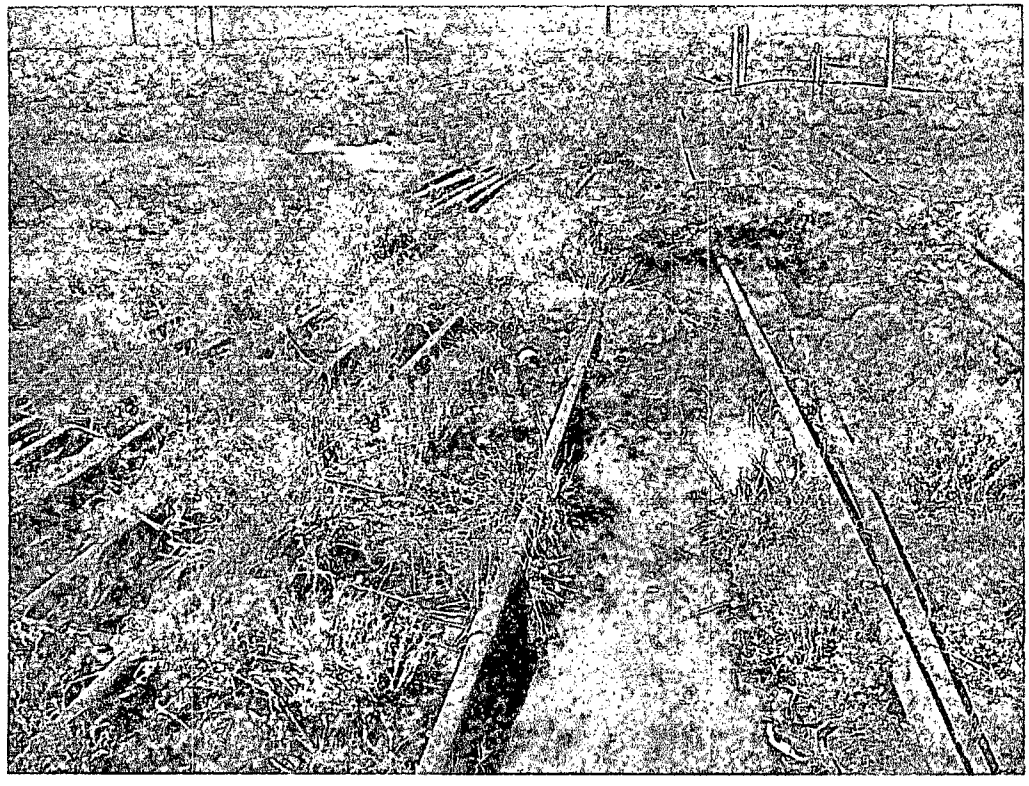
Photos

COG Operating LLC
White Star Federal
Eddy County, New Mexico

TETRA TECH



View north of spill (April 20, 2011)



Limited access due to steel lines (April 20, 2011)

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	White Star Federal	Facility Type	Flowline

Surface Owner Federal	Mineral Owner	Lease No. NMNM-14840

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	29	17S	29E					Eddy

Latitude 32 48.392 **Longitude** 104 05.366

NATURE OF RELEASE

Type of Release Produced fluid	Volume of Release 10bbls	Volume Recovered None
Source of Release Steel flowline	Date and Hour of Occurrence 04/06/2011	Date and Hour of Discovery 04/06/2011 9:00 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

A steel flowline ruptured causing the release. The steel flowline was clamped and is being replaced with poly line.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced fluid was released from the flowline and we were unable to recover any fluid. The spill area measures 12' x 20' in the pasture off to the south of the White Star Federal Tank Battery. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD / BLM 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 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: Josh Russo	Approved by District Supervisor:	
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached ☐
Date: 04/15/2011 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - White Star Federal
Eddy County, New Mexico

16 South 28 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 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 **110**	20	21	22	23	24
30	29	28	27	26	25
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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **79**	23	24
30	29	28	27	26	25
31	32	33	34 **53**	35	36

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 **SITE**	28	27	26	25
31	32	33	34	35	36

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

18 South 28 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 **65**	36

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

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

Appendix C

Summary Report

Kim Dorey
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: April 28, 2011

Work Order: 11042203

Project Location: Eddy Co., NM
Project Name: COG/White Star
Project Number: 114-6400888

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
264380	AH-1 0-1'	soil	2011-04-20	00:00	2011-04-21
264381	AH-1 1-1.5'	soil	2011-04-20	00:00	2011-04-21
264382	AH-1 2-2.5'	soil	2011-04-20	00:00	2011-04-21
264383	AH-1 3-3.5'	soil	2011-04-20	00:00	2011-04-21
264384	AH-1 4-4.5'	soil	2011-04-20	00:00	2011-04-21
264385	AH-1 5-5.5'	soil	2011-04-20	00:00	2011-04-21
264386	AH-1 6-6.5'	soil	2011-04-20	00:00	2011-04-21
264387	AH-1 7-7.5'	soil	2011-04-20	00:00	2011-04-21

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
264380 - AH-1 0-1'	**12.7**	**85.0**	**56.2**	**92.3**	**17200**	**2160**
264381 - AH-1 1-1.5'	**1.64**	**12.8**	**11.4**	**18.4**	**379**	**406**
264382 - AH-1 2-2.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
264383 - AH-1 3-3.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 264380 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4880**	mg/Kg	4.00

Sample: 264381 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**7330**	mg/Kg	4.00

Sample: 264382 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1830**	mg/Kg	4.00

Sample: 264383 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**2530**	mg/Kg	4.00

Sample: 264384 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**2890**	mg/Kg	4.00

Sample: 264385 - AH-1 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**1680**	mg/Kg	4.00

Sample: 264386 - AH-1 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**1630**	mg/Kg	4.00

Sample: 264387 - AH-1 7-7.5'

Param	Flag	Result	Units	RL
Chloride		**2450**	mg/Kg	4.00