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

HOBBS OCD

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

AUG 13 2014

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

RECEIVED

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **COG Operating LLC**	Contact **Robert McNeil**
Address **600 West Illinois Avenue, Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name Spruce Goose Federal #1	Facility Type **Flowline**

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-025-38445

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	07	19S	32E					LEA

Latitude N 32 41.011 ° **Longitude** W 103 47.730°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 14 **bbls**	Volume Recovered **9 bbls**
Source of Release **Flowline**	Date and Hour of Occurrence 09-23-2013	Date and Hour of Discovery **09-23-2014 2:50pm**
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. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

Weld failed on polyline. Inspect welds.

Describe Area Affected and Cleanup Action Taken.*

Initially 14 bbls of produced water were released from a weld that failed on a polyline. We were able to recover 9 bbls with a vacuum truck. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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: Ike Tavarez	Approved by ~~District Supervisor~~: Environmental Specialist	
Title: Senior Project Manager, P.G.	Approval Date: 8-14-14	Expiration Date: —
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval: —	Attached ☐ IRP-3237
Date: Phone: (432) 687-8110		

* Attach Additional Sheets If Necessary

AUG 14 2014

09-14 229137
nTO 1922 629053
pTO 1922 629338

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Spruce Goose Fed #1
Lea County, New Mexico

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **400**
18	17	16	15 **98**	14 **317**	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **261**	36

19 South 31 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 **180**	27	26	25
31	32	33 **101**	34	35	36 **130**

20 South 31 East

6	5	4	3	2	1
7	8	9	10 **130**	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 **80**

18 South 32 East

6	5	4 **65**	3	2	1
7 **460** **82**	8	9	10	11	12
18	17	16 **84**	15	14	13
19	20 **164**	21	22 **429**	23	24
30	29	28	27	26	25
31	32	33	34 **117**	35	36

19 South 32 East

6	5	4	3	2	1
7 **Site**	8 **365**	9	10	11	12
18	17	16	15	14	13 135 dry
19 **102**	20 **345**	21	22	23	24
30	29	28	27	26	25
31	32	33	34 **250**	35	36

20 South 32 East

6	5	4	3	2	1 **21.8**
7	8	9	10	11	12
18 **89**	17	16	15	14	13
19	20	21	22	23	24
30 **9.9**	29	28	27 **12.3**	26	25
31	32	33	34	35	36 **46**

18 South 33 East

6	5	4	3 **60**	2	1
7	8 **100**	9	10 **62**	11 **46**	12 **143** **140**
18	17 **85**	16	15	14 **36**	13 **60**
19 **>140**	20	21	22	23	24 **195**
30 **35**	29	28	27	26	25
31	32	33 **177**	34	35	36

19 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18 **340**	17 **116**	16	15	14	13
19	20	21	22	23	24
30	29	28 130 dry	27	26 92 **85**	25
31	32 **185**	33	34	35	36

20 South 33 East

6	5 **325** **278**	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 +300
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

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: June 24, 2014

Work Order: 14062013

Project Location: Lea Co, NM
Project Name: COG/Spruce Goose
Project Number: 112MC06129

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
366354	BH-1 6-7'	soil	2014-06-19	00:00	2014-06-20
366355	BH-1 9-10'	soil	2014-06-19	00:00	2014-06-20
366356	BH-1 14-15'	soil	2014-06-19	00:00	2014-06-20
366357	BH-1 19-20'	soil	2014-06-19	00:00	2014-06-20

Sample: 366354 - BH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**8710**	mg/Kg	4

Sample: 366355 - BH-1 9-10'

Param	Flag	Result	Units	RL
Chloride		**2570**	mg/Kg	4

Sample: 366356 - BH-1 14-15'

Param	Flag	Result	Units	RL
Chloride		**286**	mg/Kg	4

Sample: 366357 - BH-1 19-20'

Param	Flag	Result	Units	RL
Chloride		**381**	mg/Kg	4

Summary Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: June 16, 2014

Work Order: 14060531

Project Location: NM
Project Name: COG/Spruce Goose
Project Number: 112MC06129

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
364845	AH-1 North Sidewall	soil	2014-05-28	00:00	2014-06-05
364846	AH-1 East Sidewall	soil	2014-05-28	00:00	2014-06-05
364847	AH-1 West Sidewall	soil	2014-05-28	00:00	2014-06-05
364848	AH-1 South Sidewall	soil	2014-05-28	00:00	2014-06-05
364849	AH-2 North Sidewall	soil	2014-05-29	00:00	2014-06-05
364850	AH-2 West Sidewall	soil	2014-05-29	00:00	2014-06-05
364851	AH-2 South Sidewall	soil	2014-05-29	00:00	2014-06-05
364852	AH-2 Bottom Hole @ 4'	soil	2014-05-29	00:00	2014-06-05
364853	AH-3 North Sidewall	soil	2014-05-29	00:00	2014-06-05
364854	AH-3 South Sidewall	soil	2014-05-29	00:00	2014-06-05
364855	AH-3 East Sidewall	soil	2014-05-29	00:00	2014-06-05
364856	AH-3 Bottom Hole @ 4'	soil	2014-05-29	00:00	2014-06-05

Sample: 364845 - AH-1 North Sidewall

Param	Flag	Result	Units	RL
Chloride		**12000**	mg/Kg	5

Sample: 364846 - AH-1 East Sidewall

Param	Flag	Result	Units	RL
Chloride		**11900**	mg/Kg	5

Sample: 364847 - AH-1 West Sidewall

Param	Flag	Result	Units	RL
Chloride		**130**	mg/Kg	5

Sample: 364848 - AH-1 South Sidewall

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	5

Sample: 364849 - AH-2 North Sidewall

Param	Flag	Result	Units	RL
Chloride		**104**	mg/Kg	5

Sample: 364850 - AH-2 West Sidewall

Param	Flag	Result	Units	RL
Chloride		**17100**	mg/Kg	5

Sample: 364851 - AH-2 South Sidewall

Param	Flag	Result	Units	RL
Chloride		**1340**	mg/Kg	5

Sample: 364852 - AH-2 Bottom Hole @ 4'

Param	Flag	Result	Units	RL
Chloride		**543**	mg/Kg	5

Sample: 364853 - AH-3 North Sidewall

Param	Flag	Result	Units	RL
Chloride		**284**	mg/Kg	5

Sample: 364854 - AH-3 South Sidewall

Param	Flag	Result	Units	RL
Chloride		**4240**	mg/Kg	5

Sample: 364855 - AH-3 East Sidewall

Param	Flag	Result	Units	RL
Chloride		**52.0**	mg/Kg	5

Sample: 364856 - AH-3 Bottom Hole @ 4'

Param	Flag	Result	Units	RL
Chloride		**2510**	mg/Kg	5

Summary Report

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

Report Date: November 11, 2013

Work Order: 13110114

Project Location: NM
Project Name: COG/Spruce Goose
Project Number: 112MC06129

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
345581	AH-1 0-1'	soil	2013-10-29	00:00	2013-11-01
345582	AH-1 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345583	AH-1 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345584	AH-1 3-3.5'	soil	2013-10-29	00:00	2013-11-01
345585	AH-1 4-4.5'	soil	2013-10-29	00:00	2013-11-01
345586	AH-1 5-5.5'	soil	2013-10-29	00:00	2013-11-01
345587	AH-1 6-6.5'	soil	2013-10-29	00:00	2013-11-01
345588	AH-1 7-7.5'	soil	2013-10-29	00:00	2013-11-01
345589	AH-1 8-8.5'	soil	2013-10-29	00:00	2013-11-01
345590	AH-1 9-9.5'	soil	2013-10-29	00:00	2013-11-01
345591	AH-2 0-1'	soil	2013-10-29	00:00	2013-11-01
345592	AH-2 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345593	AH-2 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345594	AH-2 3-3.5'	soil	2013-10-29	00:00	2013-11-01
345595	AH-2 4-4.5'	soil	2013-10-29	00:00	2013-11-01
345596	AH-2 5-5.5'	soil	2013-10-29	00:00	2013-11-01
345597	AH-2 6-6.5'	soil	2013-10-29	00:00	2013-11-01
345598	AH-3 0-1'	soil	2013-10-29	00:00	2013-11-01
345599	AH-3 1-1.5'	soil	2013-10-29	00:00	2013-11-01
345600	AH-3 2-2.5'	soil	2013-10-29	00:00	2013-11-01
345601	AH-3 3-3.5'	soil	2013-10-29	00:00	2013-11-01
345602	AH-3 4-4.5'	soil	2013-10-29	00:00	2013-11-01
345603	AH-3 5-5.5'	soil	2013-10-29	00:00	2013-11-01
345604	AH-3 6-6.5'	soil	2013-10-29	00:00	2013-11-01

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
345581 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs
345591 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs
345598 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs

Sample: 345581 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**5150**	mg/Kg	4

Sample: 345582 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1870**	mg/Kg	4

Sample: 345583 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**5240**	mg/Kg	4

Sample: 345584 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**12000**	mg/Kg	4

Sample: 345585 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**5250**	mg/Kg	4

Sample: 345586 - AH-1 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**2810**	mg/Kg	4

Sample: 345587 - AH-1 6-6.5'

continued ...

sample 345587 continued ...

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Chloride		**2000**	mg/Kg	4

Sample: 345588 - AH-1 7-7.5'

Param	Flag	Result	Units	RL
Chloride		**1670**	mg/Kg	4

Sample: 345589 - AH-1 8-8.5'

Param	Flag	Result	Units	RL
Chloride		**842**	mg/Kg	4

Sample: 345590 - AH-1 9-9.5'

Param	Flag	Result	Units	RL
Chloride		**1360**	mg/Kg	4

Sample: 345591 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**2090**	mg/Kg	4

Sample: 345592 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345593 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**735**	mg/Kg	4

Sample: 345594 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**9620**	mg/Kg	4

Sample: 345595 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345596 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345597 - AH-2 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345598 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2600**	mg/Kg	4

Sample: 345599 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**2650**	mg/Kg	4

Sample: 345600 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**9810**	mg/Kg	4

Sample: 345601 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**6070**	mg/Kg	4

Sample: 345602 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**752**	mg/Kg	4

Sample: 345603 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345604 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

SITE INFORMATION

Report Type: Closure Report

HOBBS OCD

AUG 13 2014

RECEIVED

General Site Information:					
Site:	Spruce Goose Federal #1 (Flow line)				
Company:	COG Operating LLC				
Section, Township and Range	Unit A	Section 7	T 19S	R 32E	
Lease Number:	API-30-025-38445				
County:	Lea County				
GPS:	32.68266			103.79624	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of Hwy 529 and 126A, travel south on 126A for 8.15 miles, then turn EAST and travel east 125 feet on lease road. Spill is 50 feet northwest into pasture.				

Release Data:	
Date Released:	9/23/2013
Type Release:	Produced Water
Source of Contamination:	Flowline failure
Fluid Released:	14 bbls
Fluids Recovered:	19 bbls

Official Communication:			
Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Suite 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	rmcneill@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	
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

July 17, 2014

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Spruce Goose Federal #1 Flow line, Unit A, Section 7, Township 19 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the Spruce Goose Federal #1 Flow line, Unit A, Section 7, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.68266°, W 103.79624°. 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 September 23, 2013, and released approximately fourteen (14) barrels of produced water from a flow line with nine (9) barrels of standing fluids recovered. The spill is located in the pasture east of the lease road measuring approximately 10' x 75'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 7. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 400' 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

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

(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 October 29, 2013, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1 through AH-3) were 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 locations are shown on Figure 3.

Referring to Table 1, none of the auger holes (AH-1, AH-2, and AH-3) showed any concentrations for TPH or BTEX. However, the auger holes did show elevated chloride concentrations in the subsurface soils. The area of AH-1 showed a deeper chloride impact to the soils and declined with depth. However, the bottom auger hole sample (9-9.5') showed a chloride of 1,360 mg/kg, which may be cross-contamination from the upper soils. The remaining auger holes (AH-2 and AH-3) significantly declined at 4.0' below surface and vertically defined.

Remediation Activities

On May 27, 2014, Tetra Tech supervised the removal impacted material as highlighted (green) in Table 1 and shown on Figure 4.

Prior to excavation of the soils, Tetra Tech installed a backhoe trench (T-1) in the areas of AH-1 to define extents and confirm the detected chloride concentrations in the soils. Field analysis for T-1 (AH-1) showed elevated chloride concentrations and was not vertically defined.

Based on the field data, the area of auger hole (AH-1) was excavated to a depth of approximately 6.0' below surface and auger holes (AH-2 and AH-3) were excavated to approximately 4.0' below surface and all of the excavated areas were lined with a 40 mil plastic liner to cap area and prevent further migration of chlorides left in place as shown on Figure 4.

Confirmation samples were collected at the North, East, West, and South sidewalls in the area of auger hole (AH-1) which showed chloride concentrations of 12,000 mg/kg, 11,900 mg/kg, 130 mg/kg, and 2,160 mg/kg, respectively. In the area of auger hole (AH-2) North, West, South sidewalls and a Bottom hole confirmation sample were taken which showed chloride concentrations of 104 mg/kg, 17,100 mg/kg, 1,340 mg/kg, and 543 mg/kg, respectively.

Confirmation samples were also collected in the area of auger hole (AH-3) at the North, South, and East sidewalls and a Bottom hole which showed chloride concentrations of 284 mg/kg, 4,240 mg/kg, 52.0 mg/kg, and 2,510 mg/kg, respectively. All of the sidewalls showing elevated chlorides were not excavated further due to safety concerns for the locations of the above ground, below ground lines and lease road in the area.

Once the areas were excavated to the appropriate depths, the excavations were backfilled with clean soil to grade, and approximately 200 cubic yards of excavated material was hauled to proper disposal.

On June 19, 2014, Tetra Tech installed one (1) borehole (BH-1) in order to vertically define the chloride impact in the areas of AH-1. Borehole (BH-1) showed elevated chloride concentrations of 8,710 mg/kg at 6'-7' below surface, which significantly declined with depth at 19'-20' to 381 mg/kg and the area was vertically defined.

Conclusion

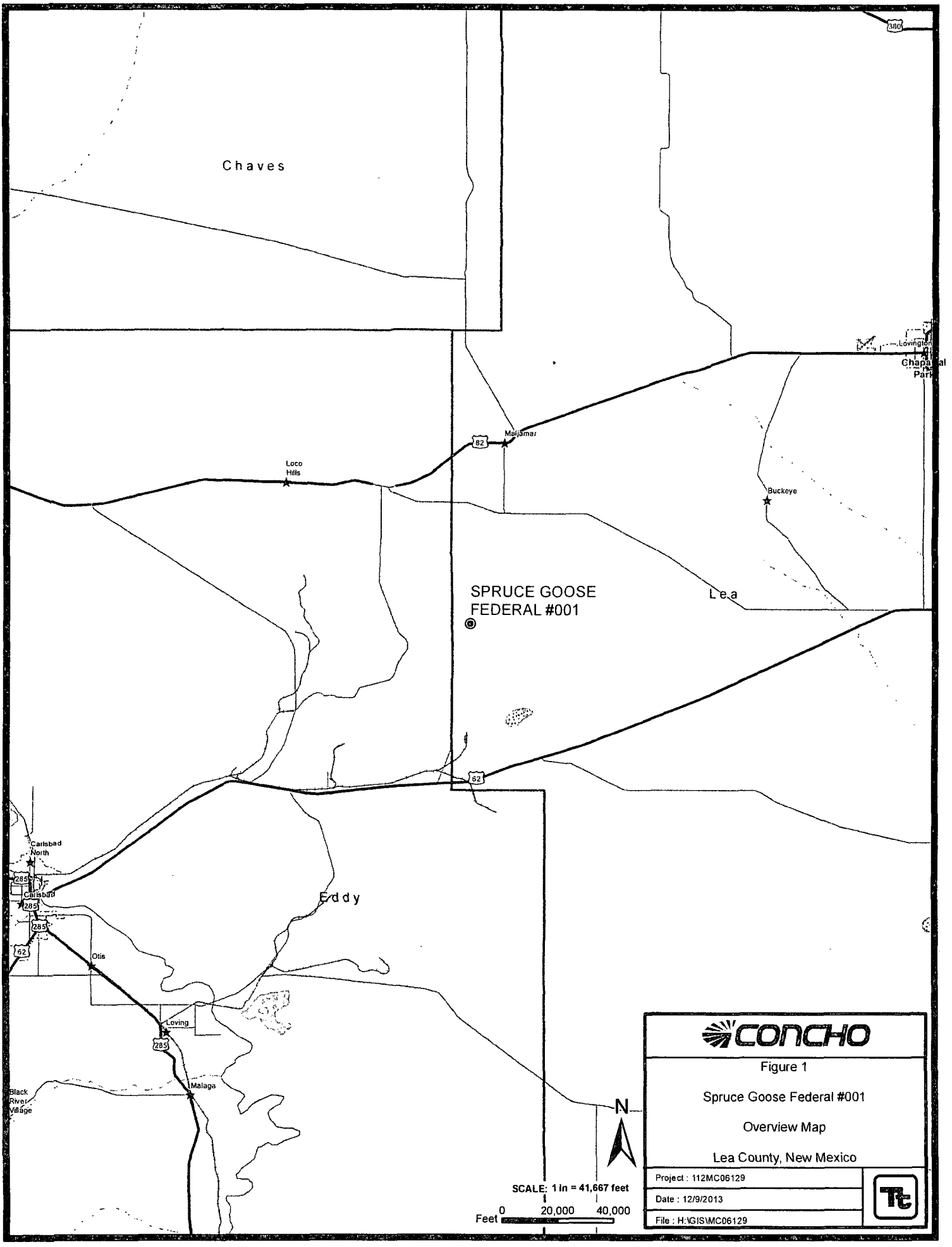
Based on the assessment and remediation work performed at this site, COG requests closure of this spill issue. A final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist

cc: Robert McNeill – COG
cc: Jeff Robertson – BLM
cc: Jim Amos - BLM

Figures



CONCHO

Figure 1

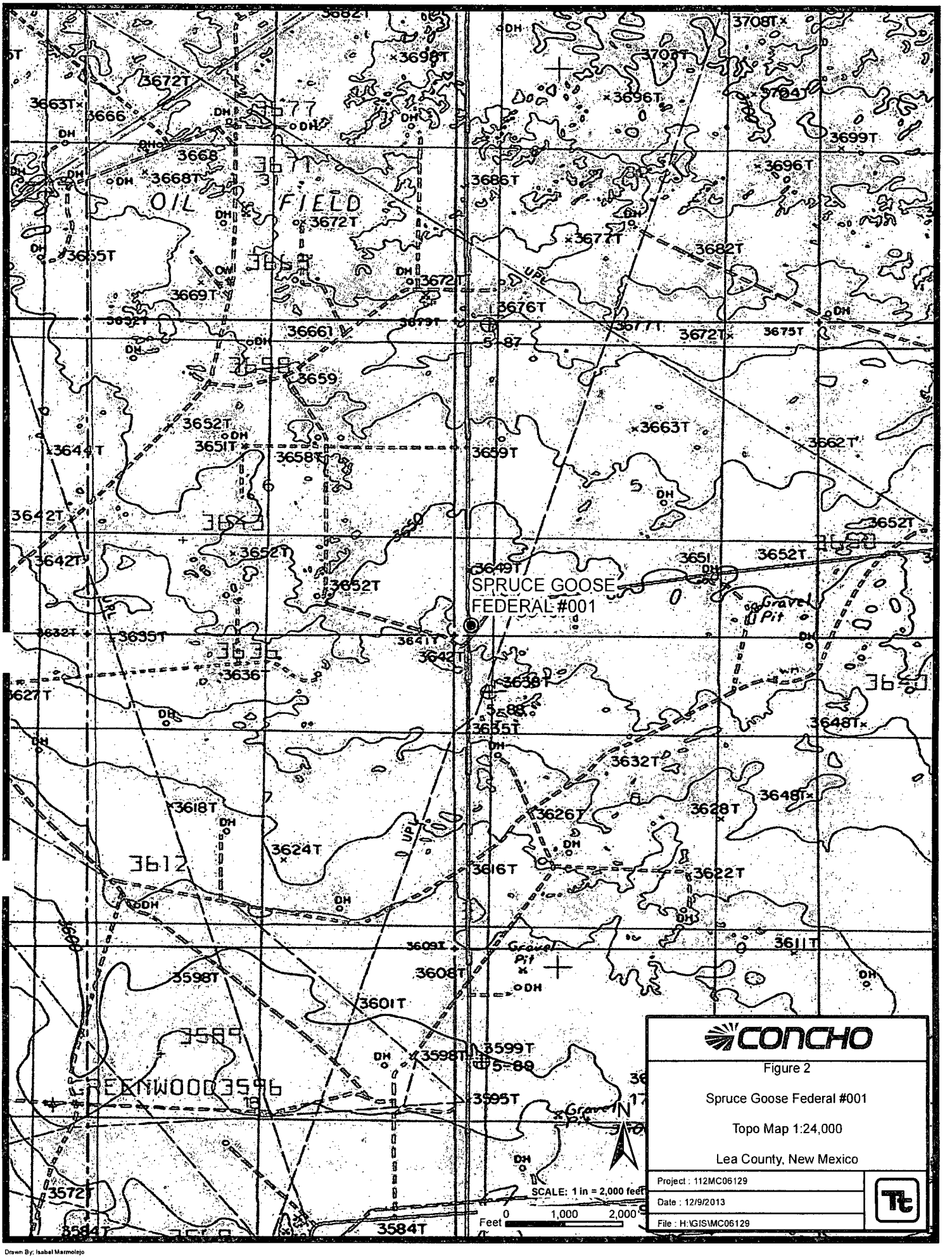
Spruce Goose Federal #001

Overview Map

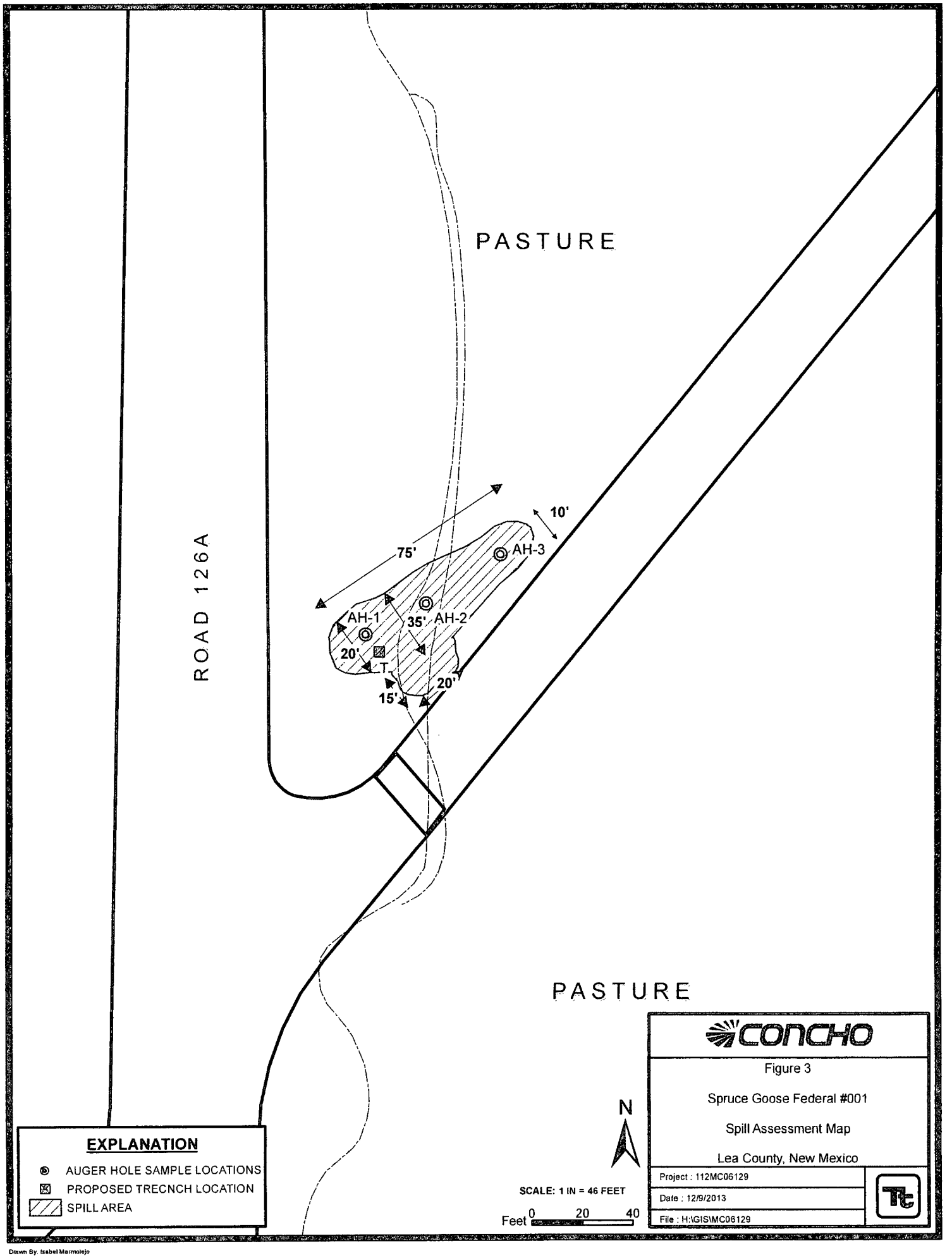
Lea County, New Mexico

Project : 112MC06129	
Date : 12/9/2013	
File : H:\GIS\MC06129	

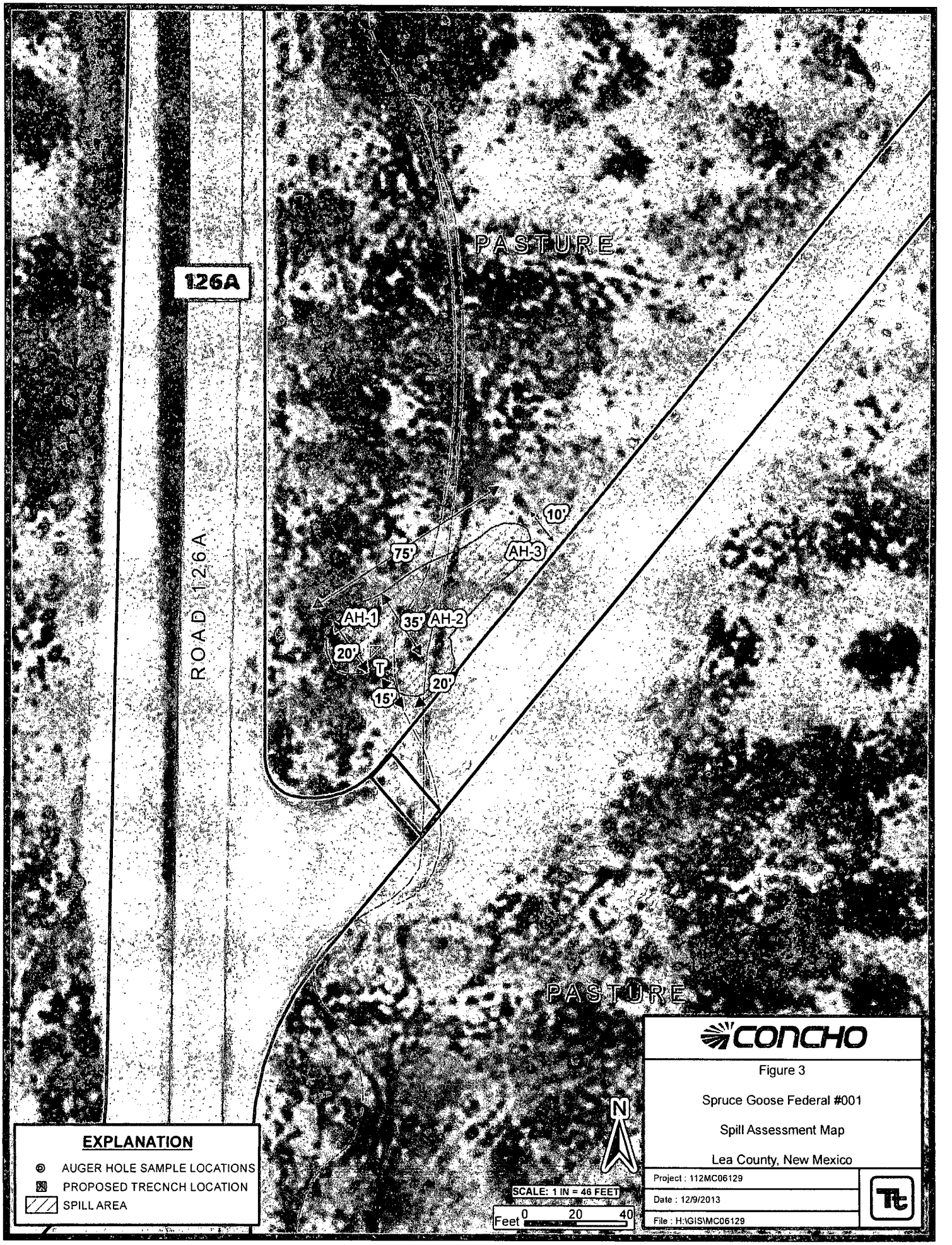
Drawn By: Isabel Marmolejo

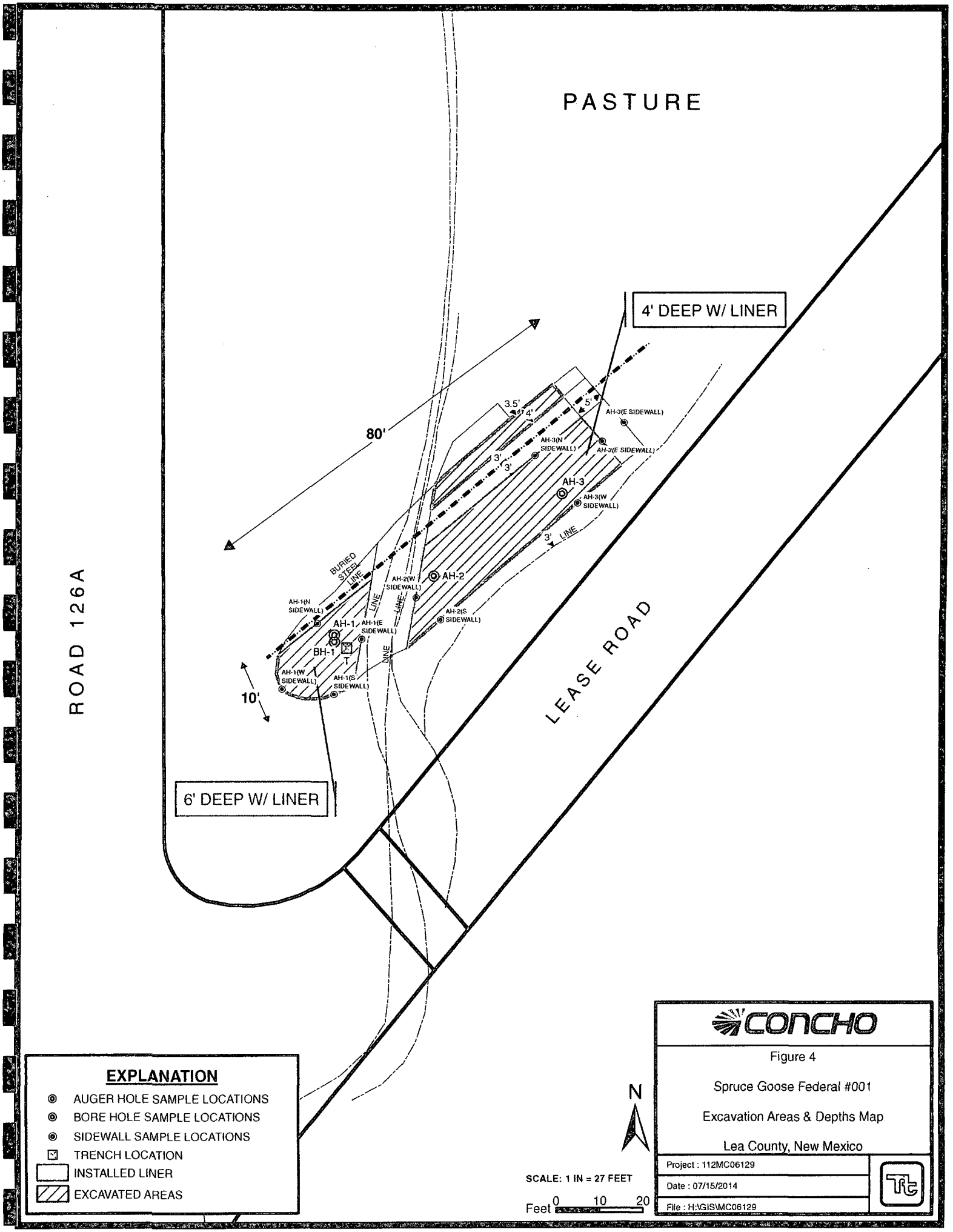


Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo


126A
ROAD 126A
PASTURE
PASTURE
10'
75'
AH-3
AH-1
35'
AH-2
20'
T
20'
15'
N
SCALE: 1 IN = 46 FEET
Feet 0 20 40
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
PROPOSED TRECNCH LOCATION
SPILL AREA
CONCHO
Figure 3
Spruce Goose Federal #001
Spill Assessment Map
Lea County, New Mexico
Project : 112MC06129
Date : 12/9/2013
File : H:\GIS\MC06129
Drawn By: Isabel Marmolejo


PASTURE
4' DEEP W/ LINER
80'
3.5'
4'
5'
AH-3(E SIDEWALL)
AH-3(N SIDEWALL)
AH-3(E SIDEWALL)
3'
3'
AH-3
AH-3(W SIDEWALL)
3' LINE
BURIED STEEL LINE
AH-2
AH-2(W SIDEWALL)
AH-1(N SIDEWALL)
AH-1
AH-1(E SIDEWALL)
LINE
LINE
AH-2(S SIDEWALL)
BH-1
T
LINE
AH-1(W SIDEWALL)
AH-1(S SIDEWALL)
10'
ROAD 126A
LEASE ROAD
6' DEEP W/ LINER
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BORE HOLE SAMPLE LOCATIONS
SIDEWALL SAMPLE LOCATIONS
TRENCH LOCATION
INSTALLED LINER
EXCAVATED AREAS
N
SCALE: 1 IN = 27 FEET
Feet 0 10 20
CONCHO
Figure 4
Spruce Goose Federal #001
Excavation Areas & Depths Map
Lea County, New Mexico
Project : 112MC06129
Date : 07/15/2014
File : H:\GIS\MC06129

Tables

Table 1
COG Operating LLC.
Spruce Goose
Lea County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	10/29/2013	0-1	0		X	<4.00	<50.00	<50.00	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	5,150
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	1,870
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	5,240
	"	3-3.5	"		X	-	-	-	-	-	-	-	-	12,000
	"	4-4.5'	"		X	-	-	-	-	-	-	-	-	5,250
	"	5-5.5	"		X	-	-	-	-	-	-	-	-	2,810
6' deep	"	6-6.5	"		X	-	-	-	-	-	-	-	-	2,000
	"	7-7.5	"	X		-	-	-	-	-	-	-	-	1,670
	"	8-8.5	"	X		-	-	-	-	-	-	-	-	842
	"	9-9.5	"	X		-	-	-	-	-	-	-	-	1,360
North Sidewall	5/28/2014	-	-	X		-	-	-	-	-	-	-	-	12,000
East Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	11,900
West Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	130
South Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	2,160
BH-1	6/19/2014	6-7	-	X		-	-	-	-	-	-	-	-	8,710
	"	9-10	-	X		-	-	-	-	-	-	-	-	2,570
	"	14-15	-	X		-	-	-	-	-	-	-	-	286
	"	19-20	-	X		-	-	-	-	-	-	-	-	381
AH-2	10/29/2013	0-1	0		X	<4.00	<50.00	<50.00	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,090
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	735
	"	3-3.5	"		X	-	-	-	-	-	-	-	-	9,620
4' deep	"	4-4.5	"		X	-	-	-	-	-	-	-	-	<20.0
	"	5-5.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	6-6.5	"	X		-	-	-	-	-	-	-	-	<20.0
North Sidewall	5/29/2014	-	-	X		-	-	-	-	-	-	-	-	104
West Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	17,100
South Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	1,340
Bottom hole	"	4	-	X		-	-	-	-	-	-	-	-	543

Table 1
COG Operating LLC.
Spruce Goose
Lea County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-3	10/29/2013	0-1	0		X	<4.00	<50.00	<50.00	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,600
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	2,650
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	9,810
	"	3-3.5	"		X	-	-	-	-	-	-	-	-	6,070
4' deep	"	4-4.5	"		X	-	-	-	-	-	-	-	-	752
	"	5-5.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	6-6.5	"	X		-	-	-	-	-	-	-	-	<20.0
North Sidewall	5/29/2014	-	-	X		-	-	-	-	-	-	-	-	284
South Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	4,240
East Sidewall	"	-	-	X		-	-	-	-	-	-	-	-	52.0
Bottom hole	"	4	-	X		-	-	-	-	-	-	-	-	2,510

(-) Not Analyzed

(BEB) Below Excavation Bottom

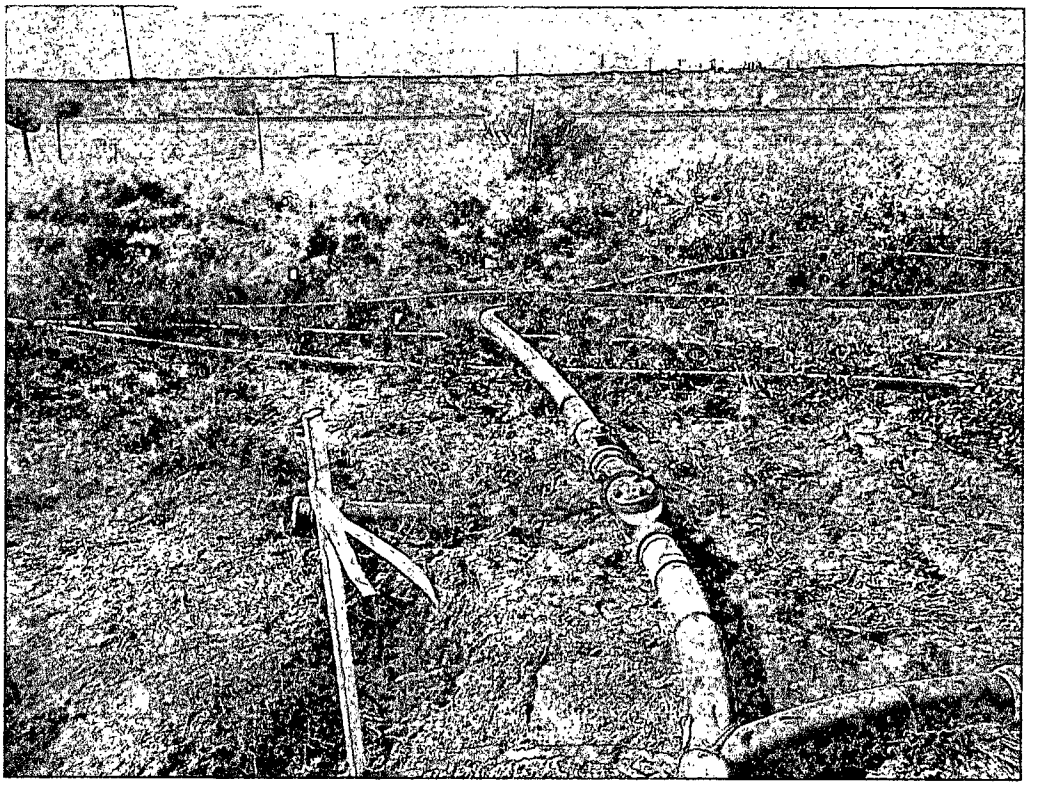
Liner Depth

Excavation Depths

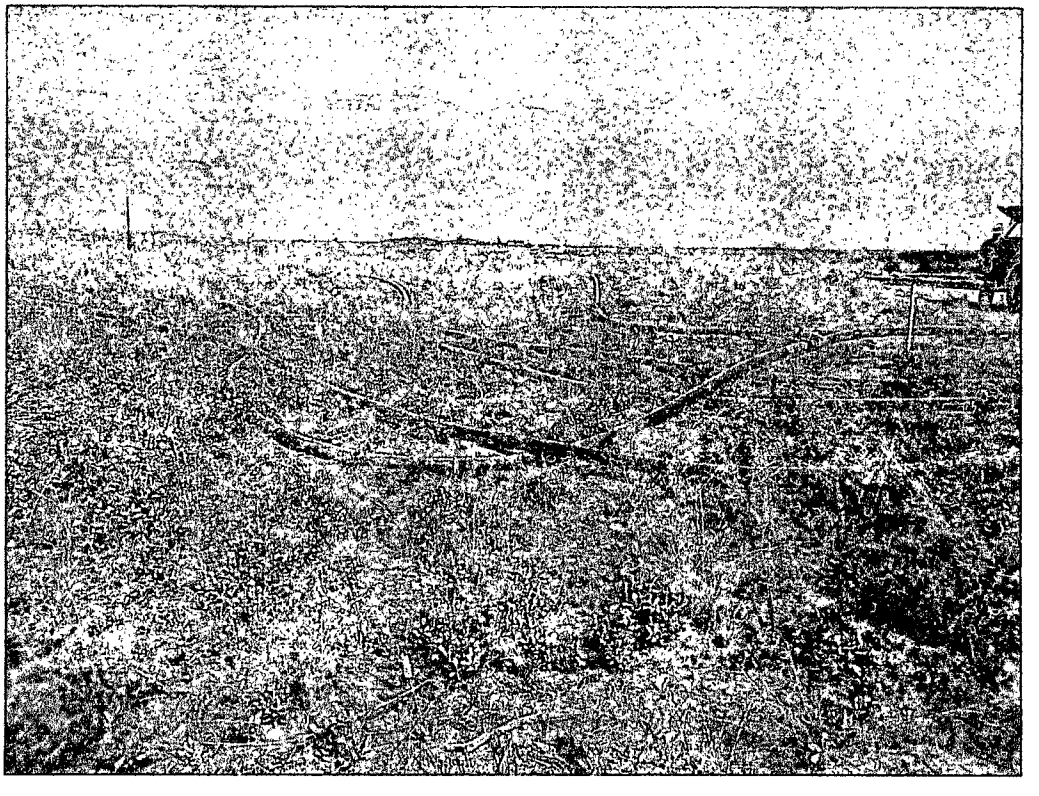
Photos

COG Operating LLC
Spruce Goose Fed #1
Lea County, New Mexico

TETRA TECH



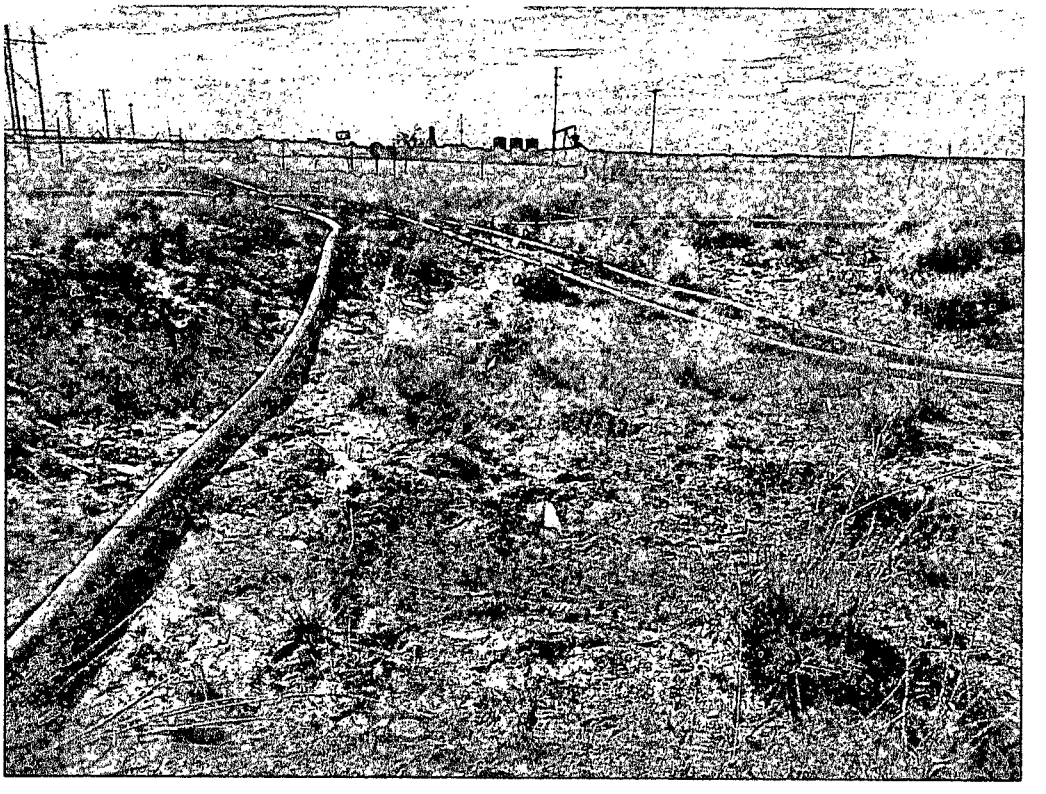
View West – AH-1



View East – AH-1 and AH-2

COG Operating LLC
Spruce Goose Fed #1
Lea County, New Mexico

TETRA TECH

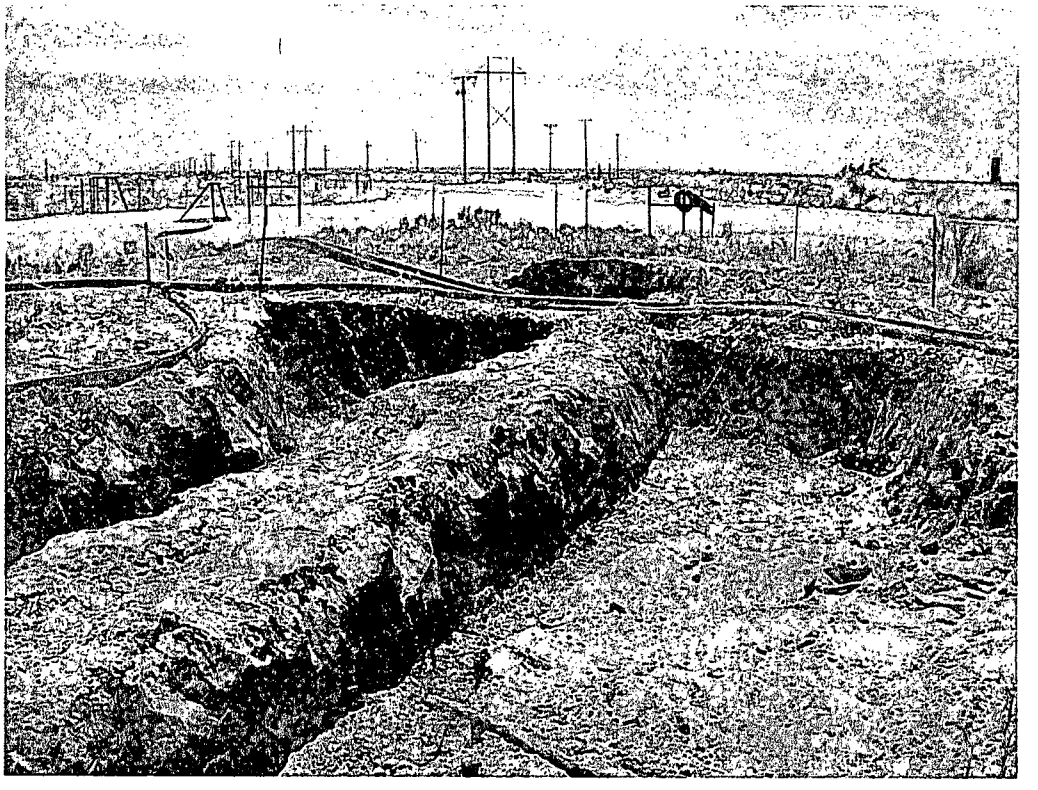


View West – AH-2 and AH-3

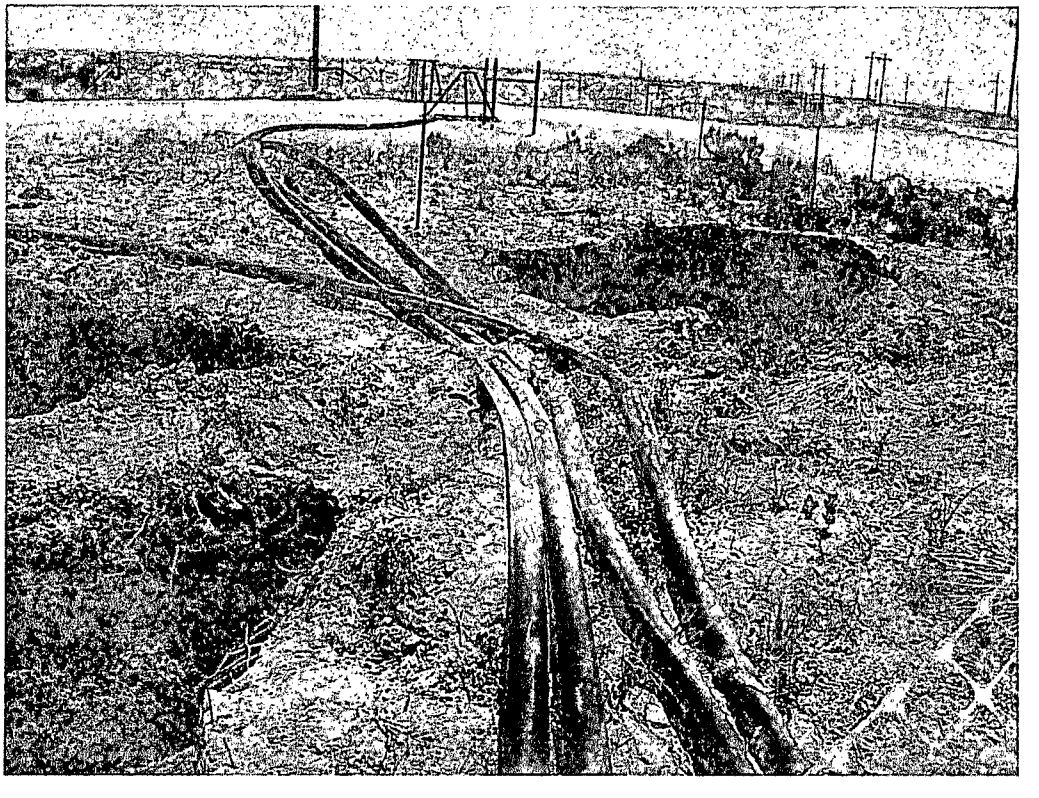
Typical Trench

COG Operating LLC
Spruce Goose Fed #1
Lea County, New Mexico

TETRA TECH



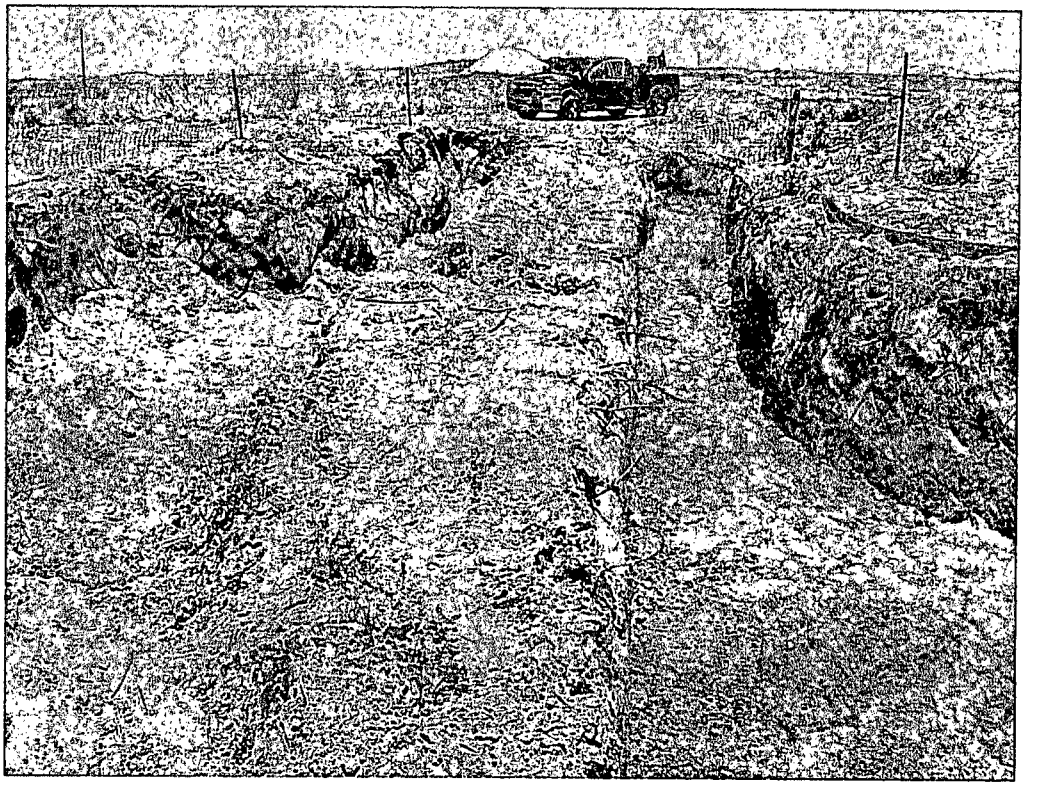
View West – Excavated area of AH-2



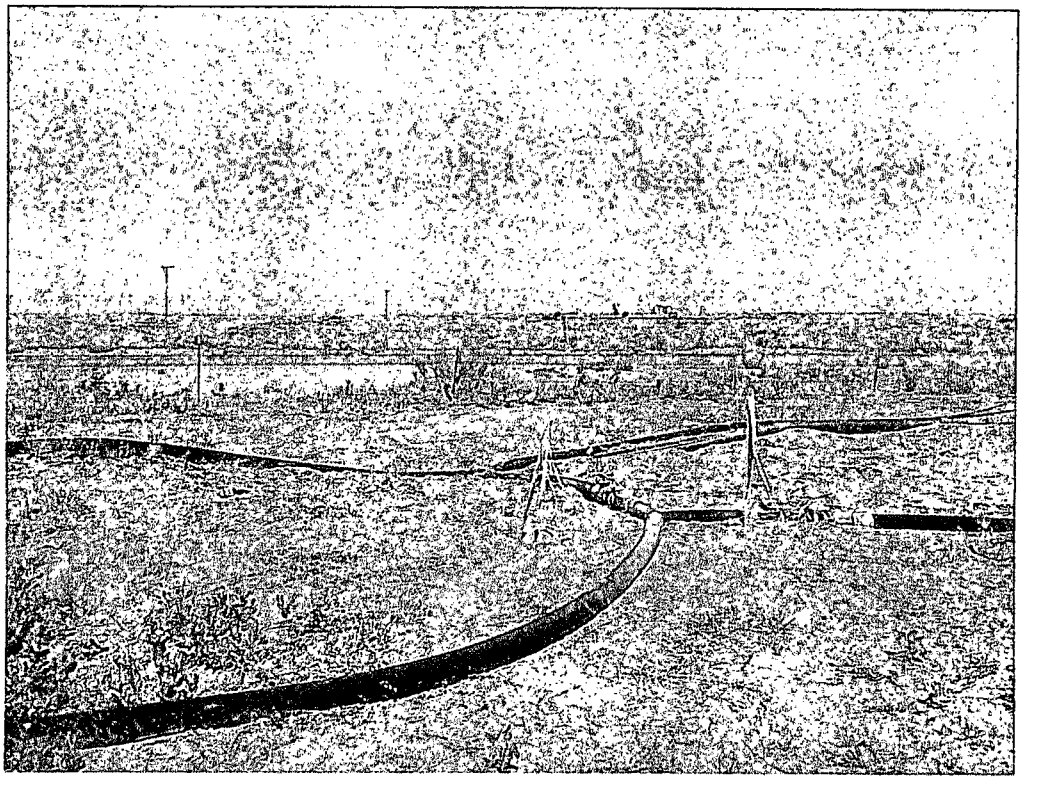
View West – Excavated area of AH-1

COG Operating LLC
Spruce Goose Fed #1
Lea County, New Mexico

TETRA TECH



View Northeast – Excavated area of AH-3



View West – Area of BH-1 (AH-1)

Appendix A