Bratcher, Mike, EMNRD

From: Tavarez, Ike <Ike.Tavarez@tetratech.com>
Sent: Tuesday, July 16, 2013 1:38 PM
To: Bratcher, Mike, EMNRD
Cc: Joshua Russo; Robert Grubbs; Pat Ellis (PEllis@concho.com); Michelle Mullins (MMullins@concho.com)
Subject: COG - F.M. Robertson #1 Tank Battery - Approval Request
Attachments: COG -F.M. Robertson 1 Tank Battery - Work Plan .pdf

Mike,

Please find the enclosed Work Plan for the above reference spill site located in Eddy County, New Mexico. The spill has been assessed and the remedial recommendations are included in the work plan. I will mail you a hard copy of the work plan for your files. Once approved, Tetra Tech will schedule the soil remediation and notify you prior to implementing the work plan. Please let me know if you need additional information or call me if you have any questions

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | www.tetratech.com

Partial print

SITE INFORMATION

Report Type: Work Plan

General Site Information:					
Site:	F.M. Robinson #1 Tank Battery				
Company:	COG Operating LLC				
Section, Township and Range	Unit E	Sec 27	T17S	R29E	
Lease Number:	API-30-015-22037				
County:	Eddy County				
GPS:	32.80775° N			104.06894° W	
Surface Owner:	State				
Mineral Owner:					
Directions:	In Loco Hills at the intersection of CR 217 and Hwy 82. Travel west on Hwy 82 for 5.1 miles, turn left (south) on CR 212 and travel 0.7 mile, turn left (east) and travel 0.1 mile to the site.				

Release Data:	
Date Released:	1/31/2013
Type Release:	Oil and Produced Water
Source of Contamination:	Produced Water Tank
Fluid Released:	210 bbls
Fluids Recovered:	205 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		1910 N. Big Spring
	600 W. Illinois Ave.		
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		(432) 682-3946
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

July 16, 2013

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., F.M. Robinson #1 Tank Battery, Unit E, Section 27, 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 F.M. Robinson #1 Tank Battery located in Unit E, Section 27, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80775°, W 104.06894°. 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 January 31, 2013, and released approximately two hundred and ten (210) barrels of produced fluid from a produced water tank overflow. To alleviate the problem, COG personnel restored power to the facility. Two hundred and five (205) barrels of standing fluids were recovered. The spill initiated inside the lined facility and breached the firewalls affecting an area approximately 70' X 120' and 25' x 25' on the pad. The release migrate east off the pad into the pasture affecting an area approximately 10' x 50', 50' x 70', 10' x 35' and 15' x 15'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 27. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 125' below surface. The groundwater data is shown in Appendix B.

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

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 February 13, 2013, Tetra Tech personnel inspected and sampled the spill area. Twelve (12) auger holes (AH-1 through AH-12) 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 sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the auger hole samples exceeded the TPH RRAL. Auger hole (AH-12) exceeded the RRAL for total BTEX at 0-1', but declined below the RRAL of 24.7 mg/kg.

Chloride concentrations were detected in majority of the auger holes. Auger holes (AH-8 and AH-11) did not show a significant chloride impact to the areas. A shallow chloride impact (0-1') was detected in the areas of AH-2, AH-3, AH-4 and AH-10, which declined at 1-1.5' below surface. A deeper impact was encountered in the areas of AH-1 and AH-5, but declined with depth at 3-3.5' to 82.5 mg/kg and 589 mg/kg, respectively. The area of AH-1 did show a chloride spike at 8-8.5' and 9-9.5'. The remaining areas of were not vertically defined showing bottom auger hole samples of 5,220 mg/kg (AH-6), 2,500 mg/kg (AH-7) and 3,830 mg/kg (AH-9) at 7.0' below surface.

On April 30, 2013, Tetra Tech supervised the installation of four (4) soil borings (SB-1 through SB-4) using an air rotary drilling rig to define the chloride extents in the areas of AH-1, AH-6, AH-7 and AH-9. The soil borings were installed to approximate depths of 40.0' to 50.0' below surface. The soil boring locations are shown on Figure 3. Copies of the laboratory analysis chain-of-custody documentation are included in Appendix C. The soil boring results are summarized in Table 1.

TETRA TECH

Referring to Table 1, SB-1 (AH-1) was installed to define the chloride spike detected at 8.0' to 9.0' below surface. Soil boring (SB-1) showed a spike of 9-10' and declined to 150 mg/kg at 14-15' below surface. SB-2 (AH-6) did detect elevated chlorides from surface to a depth of approximately 30.0' below surface, which significantly declined to 1,300 mg/kg at 39-40' and 356 mg/kg at 49-50' below surface. Soil borings SB-3 (AH-7) and SB-4 (AH-9) showed vertical delineation and declined below 1,000 mg/kg chlorides at 24-25' below surface.

Work Plan

COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. In the areas of AH-2, AH-3, AH-4, AH-5, AH-10 and AH-12 will be excavated to a depth of approximately 1.0' below surface. The area of AH-1 (SB-1) will be excavated to a depth of 2.0' to 3.0' below surface. Due to the proximity of the facility, lines and tanks, the area of AH-6 (SB-2) on the pad will be excavated to an approximate depth of 3.0' to 4.0' and capped either clay or 40 mil liner for safety concerns.

In the areas of AH-7 (SB-3) and AH-9 (SB-4), the proposed excavation will range from 4.0' to 5.0' below surface. A COG water line is located in the area of AH-9 and performing deeper excavation is a safety concern excavating near the active line. Once excavated to the appropriate depth, the areas will be capped with a 40 mil liner at 4.0' below surface. The material will be hauled off for proper disposal and the excavation will be backfilled with clean soil to surface grade.

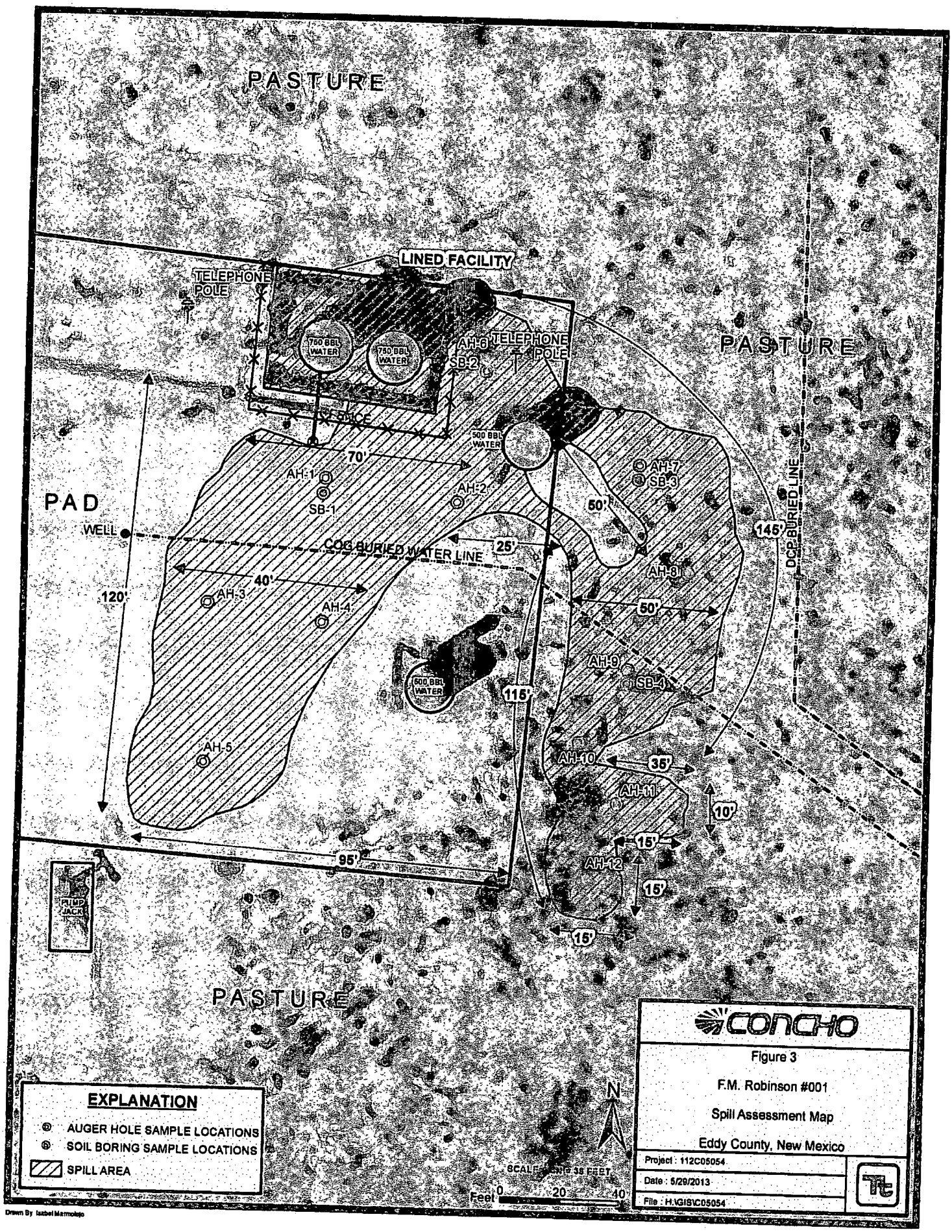
The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

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


PASTURE
LINED FACILITY
TELEPHONE POLE
750 BBL WATER
750 BBL WATER
AH-6
SB-2
TELEPHONE POLE
PASTURE
SLICE
500 BBL WATER
70'
AH-1
SB-1
AH-2
AH-7
SB-3
50'
PAD
WELL
COG BURIED WATER LINE
25'
145'
DCP BURIED LINE
40'
120'
AH-3
AH-4
AH-8
50'
AH-9
SB-4
500 BBL WATER
115'
AH-5
AH-10
35'
AH-11
10'
15'
95'
AH-12
15'
15'
PUMP JACK
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
SPILL AREA
N
SCALE: 1" = 38 FEET
Feet 0 20 40
CONCHO
Figure 3
F.M. Robinson #001
Spill Assessment Map
Eddy County, New Mexico
Project : 112C05054
Date : 5/29/2013
File : H:\GIS\C05054
Drawn By: Isabel Marmolejo

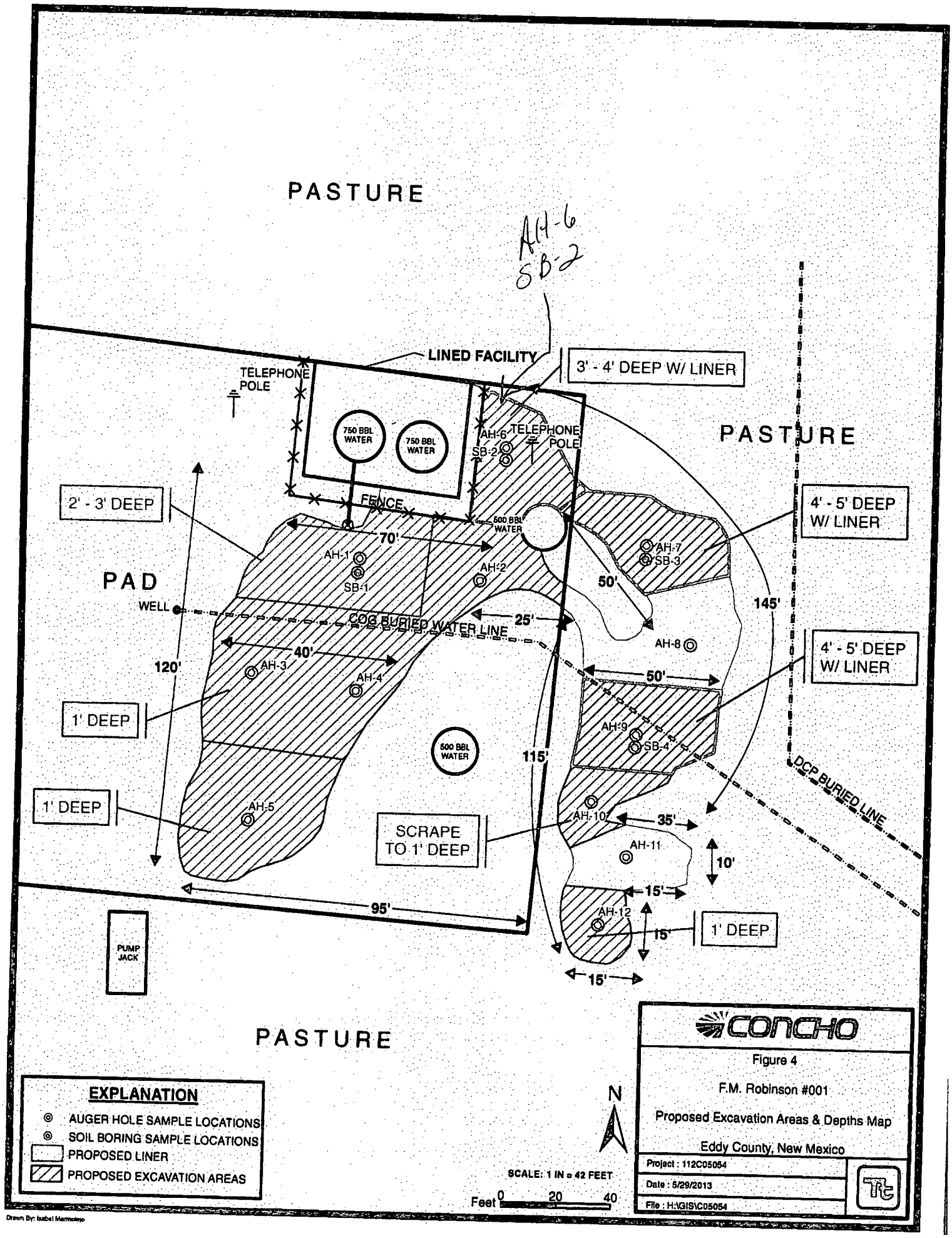

PASTURE
AH-6
SB-2
LINED FACILITY
3' - 4' DEEP W/ LINER
TELEPHONE POLE
750 BBL WATER
750 BBL WATER
AH-6
SB-2
TELEPHONE POLE
PASTURE
2' - 3' DEEP
FENCE
500 BBL WATER
70'
4' - 5' DEEP W/ LINER
AH-1
SB-1
AH-2
AH-7
SB-3
PAD
50'
145'
WELL
COG BURIED WATER LINE
25'
AH-8
40'
120'
AH-3
AH-4
50'
4' - 5' DEEP W/ LINER
1' DEEP
AH-9
SB-4
500 BBL WATER
115'
DCP BURIED LINE
1' DEEP
AH-5
AH-10
35'
SCRAPE TO 1' DEEP
AH-11
10'
15'
95'
AH-12
15'
1' DEEP
15'
PUMP JACK
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
PROPOSED LINER
PROPOSED EXCAVATION AREAS
N
SCALE: 1 IN = 42 FEET
Feet 0 20 40
CONCHO
Figure 4
F.M. Robinson #001
Proposed Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 112C05054
Date : 5/29/2013
File : H:\GIS\C05054
Drawn By: Isabel Marmolejo

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
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)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	2/13/2013	0-1	X		5.46	<50.0	5.46	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	6,650
	"	1-1.5	X		-	-	-	-	-	-	-	-	3,770
	"	2-2.5	X		-	-	-	-	-	-	-	-	2,250
	"	3-3.5	X		-	-	-	-	-	-	-	-	82.6
	"	4-4.5	X		-	-	-	-	-	-	-	-	82.6
	"	5-5.5	X		-	-	-	-	-	-	-	-	48.6
	"	6-6.5	X		-	-	-	-	-	-	-	-	287
	"	7-7.5	X		-	-	-	-	-	-	-	-	845
	"	8-8.5	X		-	-	-	-	-	-	-	-	1,660
	"	9-9.5	X		-	-	-	-	-	-	-	-	1,700
SB-1	4/29/2013	0-1	X		-	-	-	-	-	-	-	-	1,640
	"	2-3	X		-	-	-	-	-	-	-	-	3,470
	"	4-5	X		-	-	-	-	-	-	-	-	726
	"	6-7	X		-	-	-	-	-	-	-	-	792
	"	9-10	X		-	-	-	-	-	-	-	-	1,030
	"	14-15	X		-	-	-	-	-	-	-	-	150
	"	19-20	X		-	-	-	-	-	-	-	-	170
	"	24-25	X		-	-	-	-	-	-	-	-	184
AH-2	2/13/2013	0-1	X		71.8	453	525	<0.0400	<0.0400	<0.0400	0.256	0.256	1,260
	"	1-1.5	X		-	-	-	-	-	-	-	-	379
	"	2-2.5	X		-	-	-	-	-	-	-	-	818
	"	3-3.5	X		-	-	-	-	-	-	-	-	639
	"	4-4.5	X		-	-	-	-	-	-	-	-	459
	"	5-5.5	X		-	-	-	-	-	-	-	-	409
	"	6-6.5	X		-	-	-	-	-	-	-	-	245
	"	7-7.5	X		-	-	-	-	-	-	-	-	463
	"	8-8.5	X		-	-	-	-	-	-	-	-	399
	"	9-9.5	X		-	-	-	-	-	-	-	-	302

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
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)	Total BTEX (mg/kg)	Chloride (mg/kg)	
			In-Situ	Removed	GRO	DRO	Total							
AH-3	2/13/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,800	
	"	1-1.5	X		-	-	-	-	-	-	-	-	524	
	"	2-2.5	X		-	-	-	-	-	-	-	-	519	
	"	3-3.5	X		-	-	-	-	-	-	-	-	1,030	←
	"	4-4.5	X		-	-	-	-	-	-	-	-	1,040	←
	"	5-5.5	X		-	-	-	-	-	-	-	-	1,020	←
	"	6-6.5	X		-	-	-	-	-	-	-	-	520	
	"	7-7.5	X		-	-	-	-	-	-	-	-	303	
	"	8-8.5	X		-	-	-	-	-	-	-	-	243	
	"	9-9.5	X		-	-	-	-	-	-	-	-	263	
AH-4	2/13/2013	0-1	X		<80.0	2,800	2,800	<0.400	<0.400	<0.400	<0.400	<0.400	1,530	
	"	1-1.5	X		-	-	-	-	-	-	-	-	450	
	"	2-2.5	X		-	-	-	-	-	-	-	-	692	
	"	3-3.5	X		-	-	-	-	-	-	-	-	477	
	"	4-4.5	X		-	-	-	-	-	-	-	-	391	
	"	5-5.5	X		-	-	-	-	-	-	-	-	66.0	
	"	6-6.5	X		-	-	-	-	-	-	-	-	335	
	"	7-7.5	X		-	-	-	-	-	-	-	-	173	
AH-5	2/13/2013	0-1	X		8.95	133	142	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,880	
	"	1-1.5	X		-	-	-	-	-	-	-	-	543	
	"	2-2.5	X		-	-	-	-	-	-	-	-	3,800	←
	"	3-3.5	X		-	-	-	-	-	-	-	-	589	
	"	4-4.5	X		-	-	-	-	-	-	-	-	497	
	"	5-5.5	X		-	-	-	-	-	-	-	-	452	
	"	6-6.5	X		-	-	-	-	-	-	-	-	221	
	"	7-7.5	X		-	-	-	-	-	-	-	-	126	

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
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)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-6	2/13/2013	0-1	X		98.7	953	1,052	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	50.2
	"	1-1.5	X		-	-	-	-	-	-	-	-	201
	"	2-2.5	X		-	-	-	-	-	-	-	-	306
	"	3-3.5	X		-	-	-	-	-	-	-	-	467
	"	4-4.5	X		-	-	-	-	-	-	-	-	2,890
	"	5-5.5	X		-	-	-	-	-	-	-	-	4,570
	"	6-6.5	X		-	-	-	-	-	-	-	-	4,180
	"	7-7.5	X		-	-	-	-	-	-	-	-	5,220
SB-2	4/30/2013	0-1	X		-	-	-	-	-	-	-	-	3,380
	"	2-3	X		-	-	-	-	-	-	-	-	1,050
	"	4-5	X		-	-	-	-	-	-	-	-	2,120
	"	6-7	X		-	-	-	-	-	-	-	-	5,140
	"	9-10	X		-	-	-	-	-	-	-	-	6,360
	"	14-15	X		-	-	-	-	-	-	-	-	5,220
	"	19-20	X		-	-	-	-	-	-	-	-	4,900
	"	24-25	X		-	-	-	-	-	-	-	-	6,880
	"	29-30	X		-	-	-	-	-	-	-	-	8,320
	"	39-40	X		-	-	-	-	-	-	-	-	1,300
	"	49-50	X		-	-	-	-	-	-	-	-	356

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-7	2/13/2013	0-1	X		<20.0	90.7	90.7	<0.100	<0.100	<0.100	<0.100	<0.100	963
	"	1-1.5	X		-	-	-	-	-	-	-	-	1,330
	"	2-2.5	X		-	-	-	-	-	-	-	-	2,580
	"	3-3.5	X		-	-	-	-	-	-	-	-	4,010
	"	4-4.5	X		-	-	-	-	-	-	-	-	5,940
	"	5-5.5	X		-	-	-	-	-	-	-	-	6,160
	"	6-6.5	X		-	-	-	-	-	-	-	-	3,160
	"	7-7.5	X		-	-	-	-	-	-	-	-	3,340
	"	7.5-8	X		-	-	-	-	-	-	-	-	2,500
SB-3	4/30/2013	0-1	X		-	-	-	-	-	-	-	-	681
	"	2-3	X		-	-	-	-	-	-	-	-	844
	"	4-5	X		-	-	-	-	-	-	-	-	2,240
	"	6-7	X		-	-	-	-	-	-	-	-	5,400
	"	9-10	X		-	-	-	-	-	-	-	-	3,410
	"	14-15	X		-	-	-	-	-	-	-	-	3,010
	"	19-20	X		-	-	-	-	-	-	-	-	1,850
	"	24-25	X		-	-	-	-	-	-	-	-	869
	"	29-30	X		-	-	-	-	-	-	-	-	790
	"	39-40	X		-	-	-	-	-	-	-	-	339
	"	49-50	X		-	-	-	-	-	-	-	-	<20.0
AH-8	2/13/2013	0-1	X		<200	4,310	4,310	<1.00	<1.00	<1.00	<1.00	<1.00	90.9
	"	1-1.5	X		-	-	-	-	-	-	-	-	263
	"	2-2.5	X		-	-	-	-	-	-	-	-	177
	"	3-3.5	X		-	-	-	-	-	-	-	-	273
	"	4-4.5	X		-	-	-	-	-	-	-	-	409

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
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)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-9	2/13/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	419
	"	1-1.5	X		-	-	-	-	-	-	-	-	586
	"	2-2.5	X		-	-	-	-	-	-	-	-	1,490
	"	3-3.5	X		-	-	-	-	-	-	-	-	1,490
	"	4-4.5	X		-	-	-	-	-	-	-	-	2,520
	"	5-5.5	X		-	-	-	-	-	-	-	-	1,730
	"	6-6.5	X		-	-	-	-	-	-	-	-	4,110
	"	7-7.5	X		-	-	-	-	-	-	-	-	3,830
SB-4	4/30/2013	0-1	X		-	-	-	-	-	-	-	-	618
	"	2-3	X		-	-	-	-	-	-	-	-	707
	"	4-5	X		-	-	-	-	-	-	-	-	1,540
	"	6-7	X		-	-	-	-	-	-	-	-	3,730
	"	9-10	X		-	-	-	-	-	-	-	-	2,560
	"	14-15	X		-	-	-	-	-	-	-	-	2,860
	"	19-20	X		-	-	-	-	-	-	-	-	1,530
	"	24-25	X		-	-	-	-	-	-	-	-	873
	"	29-30	X		-	-	-	-	-	-	-	-	397
	"	39-40	X		-	-	-	-	-	-	-	-	357

Table 1
COG Operating LLC.
F.M. Robinson #1 Tank Battery
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)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-10	2/13/2013	0-1	X		626	964	1,590	<0.400	5.76	11.6	21.9	39.3	1,830
	"	1-1.5	X		-	-	-	-	-	-	-	-	271
	"	2-2.5	X		-	-	-	-	-	-	-	-	227
	"	3-3.5	X		-	-	-	-	-	-	-	-	367
	"	4-4.5	X		-	-	-	-	-	-	-	-	991
	"	5-5.5	X		-	-	-	-	-	-	-	-	648
	"	6-6.5	X		-	-	-	-	-	-	-	-	474
	"	7-7.5	X		-	-	-	-	-	-	-	-	303
	"	8-8.5	X		-	-	-	-	-	-	-	-	323
	"	9-9.5	X		-	-	-	-	-	-	-	-	499
AH-11	2/13/2013	0-1	X		4.91	76.4	81.3	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	34.2
	"	1-1.5	X		-	-	-	-	-	-	-	-	196
	"	2-2.5	X		-	-	-	-	-	-	-	-	48.9
	"	3-3.5	X		-	-	-	-	-	-	-	-	53.8
AH-12	2/13/2013	0-1	X		1,800	1,290	3,090	3.93	52.9	47.5	77.5	182	103
	"	1-1.5	X		-	-	-	<0.100	2.26	8.28	14.2	24.7	<20.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	127
	"	4-4.5	X		-	-	-	-	-	-	-	-	468

DRO 1800 @ 0-1'

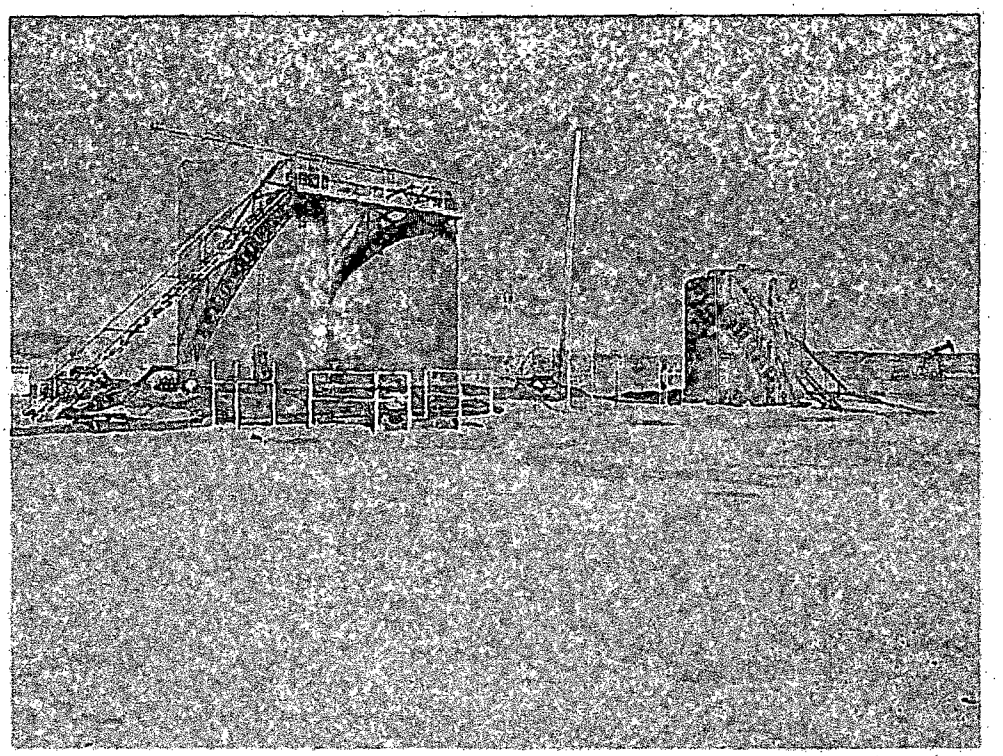
(-) Not Analyzed

Proposed Excavation Depths

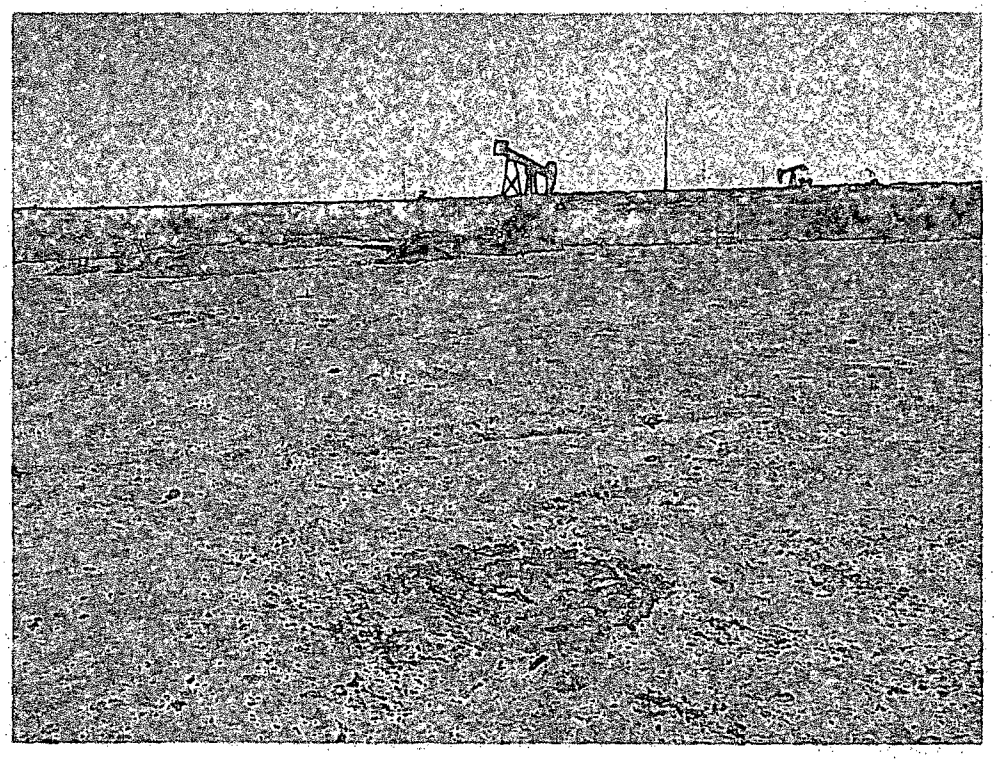
Proposed Lioner or Clay Installation

COG Operating LLC
F.M. Robinson Tank Battery
Eddy County, New Mexico

TETRA TECH



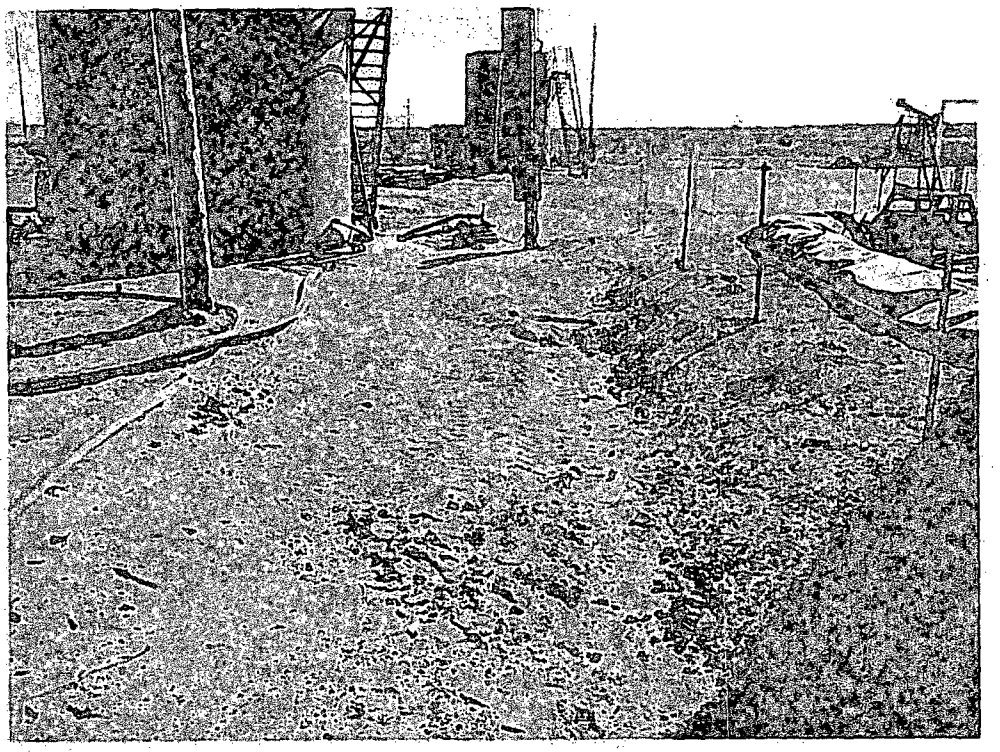
View Northeast – Area of AH-1(SB-1) and AH-2



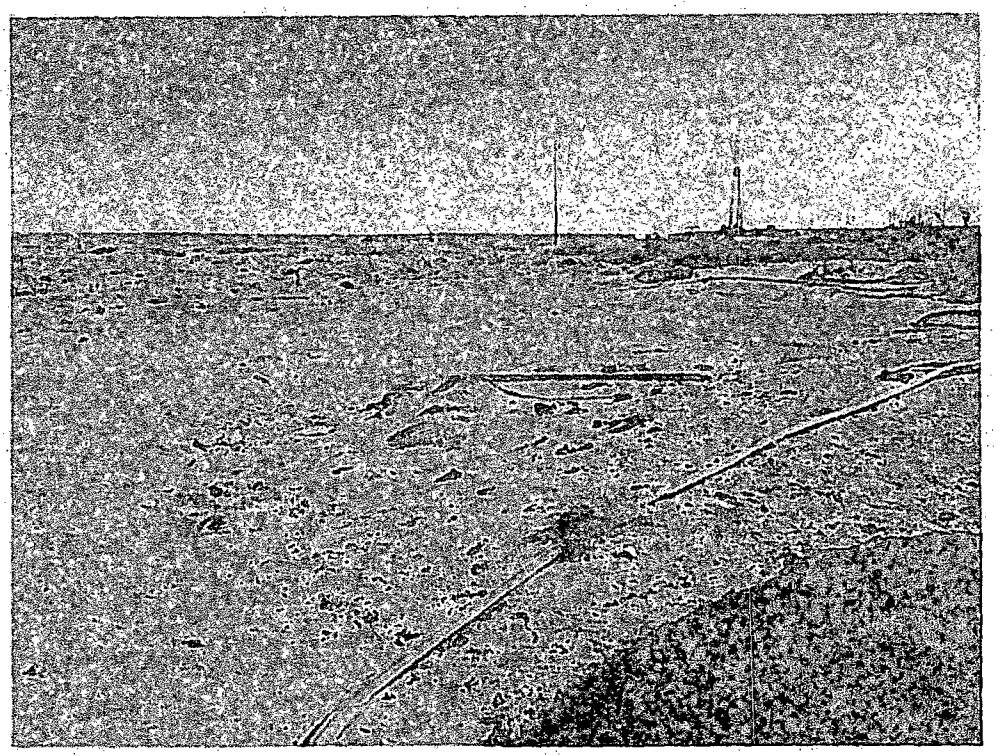
View South – Area of AH-3, AH-4 and AH-5

COG Operating LLC
F.M. Robinson Tank Battery
Eddy County, New Mexico

TETRA TECH



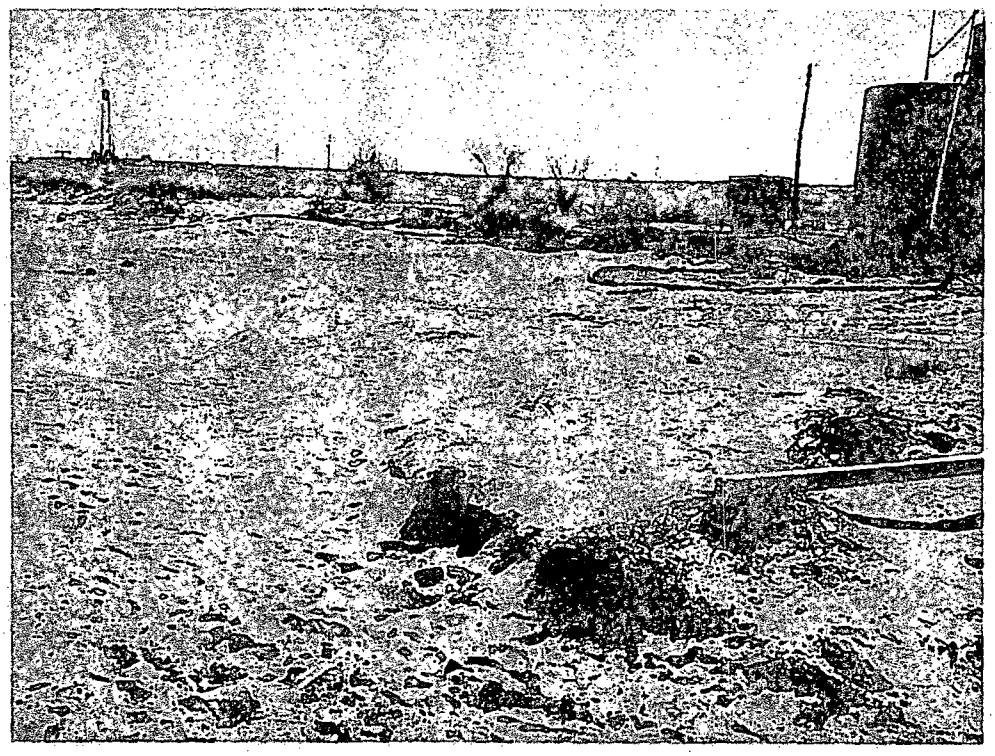
View South – Area of AH-6 (SB-2)



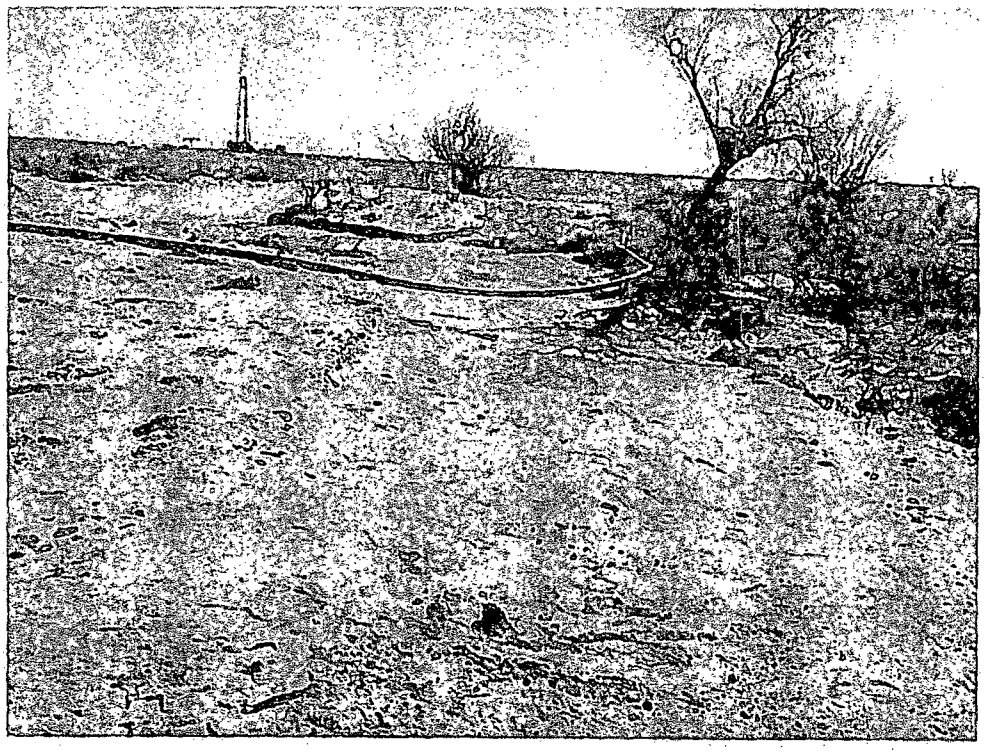
View Southeast – Area of AH-7 (SB-3)

COG Operating LLC
F.M. Robinson Tank Battery
Eddy County, New Mexico

TETRA TECH



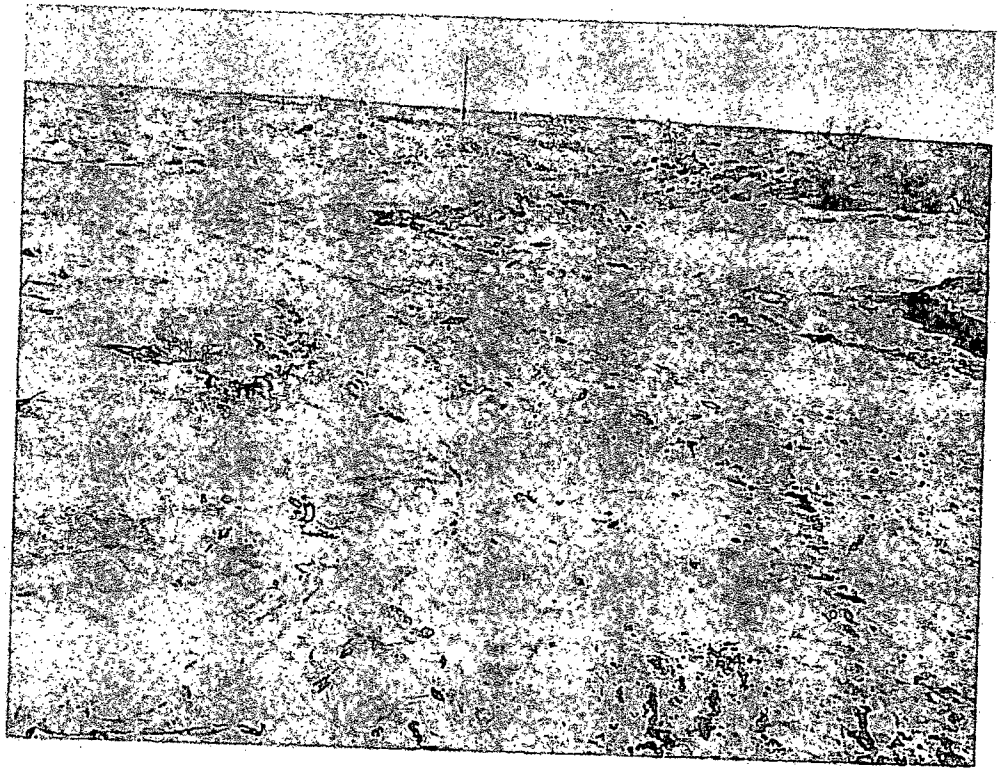
View South – Area of AH-8 and AH-9 (SB-3)



View South – Area of AH-10 and AH-11

COG Operating LLC
F.M. Robinson Tank Battery
Eddy County, New Mexico

TETRA TECH



View South – Area of AH-11 and AH-12