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

* Attach Additional Sheets If Necessary

State of New Mexico

Energy Minerals and Natural Resources JUL 0 1 2011

Form C-141 Revised October 10, 2003

HOBBS OCD JXK 16 00454390

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

RECEIVED

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

Release Notification and Corrective Action

					OPERA'	TOR		■ Initial	al Report		Final Rep
Name of Co	mpany	COG Opera	ting, LLC		Contact	Pat El	lis				
Address	550 W.	Texas, Suite 1	00 Midland, TX 7970	1	Telephone 1	No. 432-230	-0077	116.			
Facility Nar	ne FE	E MA B #4	Tank Battery		Facility Typ	e Tank Ba	attery	Tay'			
Surface Ow	ner Priv	ate	Mineral C)wner				Lease N	lo. (API #	[‡]) 30-0	25-36494
					OF RE	LEASE			146		
Unit Letter H	Section 31	Township R	Feet from the 1650		South Line ORTH	Feet from the 900		est Line AST	County	LEA	
				.793333	7 17 1		2			- 5	
- 45.1			NAT	URE	OF REL						
Type of Rele		roduced Water	C		Volume of				Recovered		bbls
Source of Re	icase rai	ulty water trans	ier pump nose		01/23/	lour of Occurrence 2010 8:00 a			Hour of Di: 23/2010		
Was Immedia	ate Notice Gi		es 🗆 No 🖾 Not Re	equired	If YES, To		a.111.	01/	23/2010	1:00) p.m.
By Whom?					Date and H	lour					
Was a Water	course Reach		′es ⊠ No			lume Impacting t	the Water	course.			
A defective h Describe Are The water wa	a Affected ar	rater transfer pu	East corner of the pad. C	ne-call	protocol will	be made by dirt o	contractor	who will	then remov	ve satur	ated soils
prior to soil s	ampling by T	Tetra Tech. Tet	ra Tech will then sample MOCD/BLM for your ap	the spill	site area to d	lelineate any poss	sible conta	amination	from the re	elease a	nd we will
regulations al public health should their o or the environ	or the environment. In additional to the environment of the environmen	re required to re nment. The ac we failed to ade	a above is true and complete port and/or file certain receptance of a C-141 report and report and report acceptance of a C-141 rejor acceptance of a C-141 rejors.	elease no rt by the emediate	tifications ar NMOCD ma contamination	d perform correct arked as "Final Roon that pose a three	tive action eport" does eat to grow	ns for rele es not reli und water	eases which eve the ope s, surface wa	may en rator of ater, hu	danger liability man health
Signature:	1	21	25	-		OIL CONS		TION	DIVISIO	ON	1.1.27
Printed Name	: Josh Ru	ISSO			Approved by	District Superviso	or:			1	
Title: HS	E Coordinato	r - COG Opera	ting, LLC	A	Approval Date	:	Ex	piration	Date:		
E-mail Addre	ess: jrusso /26/2010	@conchoresou	rces.com	_ 0	Conditions of	Approval:			Attached		

<u>District I</u> 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 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505

Date: 6-2-11

* Attach Additional Sheets If Necessary

State of New Mexico Energy Minerals and Natural Resources

JUL 01 2011

HOBBS OCD

Form C-141 Revised October 10, 2003

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

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

			Rele	ease Notific	cati	on and Co	rrective A	ction		6
						OPERA			al Report	Final Repor
Name of Co	ompany (COG Opera	ting LLC			Contact Pa	t Ellis	R ₂₀ 1	79	
				nd, Texas 7970)1	Telephone N	No. (432) 230-0	0077		
		AAB #4 Tan			73		e Tank Batte		· " 50	
Surface Ow	ner: Priva	te		Mineral (Owne	r		Lease 1	No. 30-025-3	6494
During of the					TON	The second of the	EACE			
Unit Letter	Section	Township	Dongo	Feet from the	_	ON OF REI	Feet from the	East/West Line	County	
H	31	Township 17S	Range 32E	1650	INOI	North	900	East		LEA
						N° Longitud				
Type of Rele	ase: Produc	ed Water		vi.	100		Release 24 bbls	Volume I	Recovered 0 b	bls
Source of Re	lease						lour of Occurrence		Hour of Disco	very
Faulty wate						1/23/10	7	1/23/10	1:00 p.m.	
Was Immedi	ate Notice (Yes [No ⊠ Not R	equire	If YES, To	Whom?			
By Whom?					1	Date and H	lour			
Was a Water	course Read	ched?					olume Impacting	the Watercourse.		
			Yes 🛛	No		N/A				
		em and Reme			ak out	t onto the location	on. The hose that	caused the spill wa	s repaired.	
Tetra Tech in Site was then Tech prepare	nspected site backfilled d closure re	to 4' and a 40 eport and subn	d samples) mil liner nitted to N	to define spills ex installed. The site IMOCD for revie	e was t	then backfilled a	and brought up to	removed and haul surface grade with	clean backfill	material. Tetra
regulations a public health should their or the enviro	or the envi operations h nment. In a	are required to ronment. The nave failed to a	to report and acceptant adequately OCD acceptant	nd/or file certain ince of a C-141 report investigate and in	release ort by remed	the NMOCD materials and the ma	nd perform correct arked as "Final R on that pose a thr	inderstand that purse tive actions for rele eport" does not reli eat to ground water responsibility for co	eases which make the operate, surface water	ay endanger or of liability r, human health
Signature: E	Oatu	22.8		5		Approved by	OIL CON	SERVATION or:	DIVISION	1
Printed Name	e. Patrick L	. EHIS								
Title: Enviro	nmental and	d Safety Super	rvisor			Approval Dat	e:	Expiration	Date:	6 1 1 1 1 1 1 1 1 1
E-mail Addre	ess: pellis@	conchoresour	ces.com			Conditions of	Approval:		Attached [

Phone: (432) 686-3023

		SITE INFO	RMATION	
		Report Type	: Work Plan RECEIVED	
General Site Info	ormation:			
Site:		FEE MA B #4 Tank Batte	ery OCI 2 / 2010	Salahar .
Company:		COG Operating LLC		
Section, Towns	hip and Range	Unit H - Sec 31 - T17S -	R32E HOBBSOCD	Park to
Lease Number:		API-30-025-36494		T. B.
County:		Lea County		
GPS:		32.793333	N 103.696712° W	
Surface Owner:		Private		TAKE:
Mineral Owner: Directions:			el east 4.6 miles, turn left (north) Dog Lake Road 0.5 miles, t	
		0.6 miles, turn left 0.2 miles	to location	
Release Data:				
Date Released:		1/23/2010		
Type Release:		Produced Water		
Source of Contar Fluid Released:	nination:	Faulty water transfer pum 24 bbls	p nose	
Fluids Recovered	d:	0 bbls		
Official Commu				
Name:	Pat Ellis		Kim Dorey	
Company:	COG Operating, L	LC	Tetra Tech	
Address:	550 W. Texas Ave		1910 N. Big Spring	
P.O. Box		2/2/2/2		S. Frid
City:	Midland Texas, 79	701	Midland, Texas	
Phone number:	(432) 686-3023		(432) 631-0348	
The state of the s				WENTS.
Fax:	(432) 684-7137		가는 하고 있습니다. 나는 사람들은 1000년 1000년 1000년 100년 100년 100년 100년	

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	

Accepta	ble Soil RRAL (n	ng/kg)
Benzene	Total BTEX	TPH
10	50	5,000



RECEIVED

OCT 27 2010 HOBBSOCD

October 15, 2010

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

Re: Work Plan for the COG Operating LLC., FEE MA B #4 Tank Battery, Unit H. Section 31, Township 17 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 FEE MA B #4 Tank Battery, Unit H, Section 31, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.793333°, W 103.696712°. 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 23, 2010, and released approximately twenty four (24) barrels of produced water due to a faulty water transfer pump hose. To alleviate the problem, COG personnel repaired the hose. Zero (0) barrels of standing fluids were recovered. The spill was contained in a native low-lying pasture area south of the tank battery and impacted an area approximately 60' x 80'. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 31. However, the USGS Well Report did list two wells in Section 11 with reported depths of 70' and 105' below ground surface (bgs). To establish depth to groundwater, Tetra Tech previously



installed a temporary monitor well (TMW) in Section 30 to a depth of 180' bgs and did not encounter groundwater. The groundwater data is shown in Appendix A.

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 March 30, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of four (4) auger holes (AH-1 through AH-4) 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 results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all the submitted samples were below the RRAL for both BTEX and TPH. Elevated chloride concentrations were detected for each of the auger holes. Deeper samples were obtained due to a dense caliche formation. The bottom auger hole samples showed chloride concentrations at AH-1 (2-2.5') of 3,180 mg/kg, AH-2 (4-4.5') of 9,110 mg/kg, AH-3 (1-1.5') of 1,390 mg/kg, and AH-4 (0-1') of 913 mg/kg.

To delineate the chloride impact, Tetra Tech supervised the installation of three (3) soil boreholes (SB-1 through SB-3) utilizing an air rotary drilling rig on May 10, 2010. SB-1 and SB-2 were installed in the vicinity of AH-1 and AH-2, respectively. SB-3 was installed between AH-3 and AH-4. Soil samples were collected to a total depth of 80', where the upper sand sequences started slumping in not allowing deeper penetration or samples. The soil boring results are summarized in Table 1. The soil boring locations are shown on Figure 3.



Referring to Table 1, the assessment data showed a deep chloride impact to the subsurface soils. However, the chloride concentrations had a significant decline at a depth of 70' for each of the three soil borings.

Work Plan

COG proposes to excavate the impacted soils to a depth of 15' to 20' below surface. The excavation depths are shown in Table 1. Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil. The liner will be installed at a depth of 4' to 5' below surface.

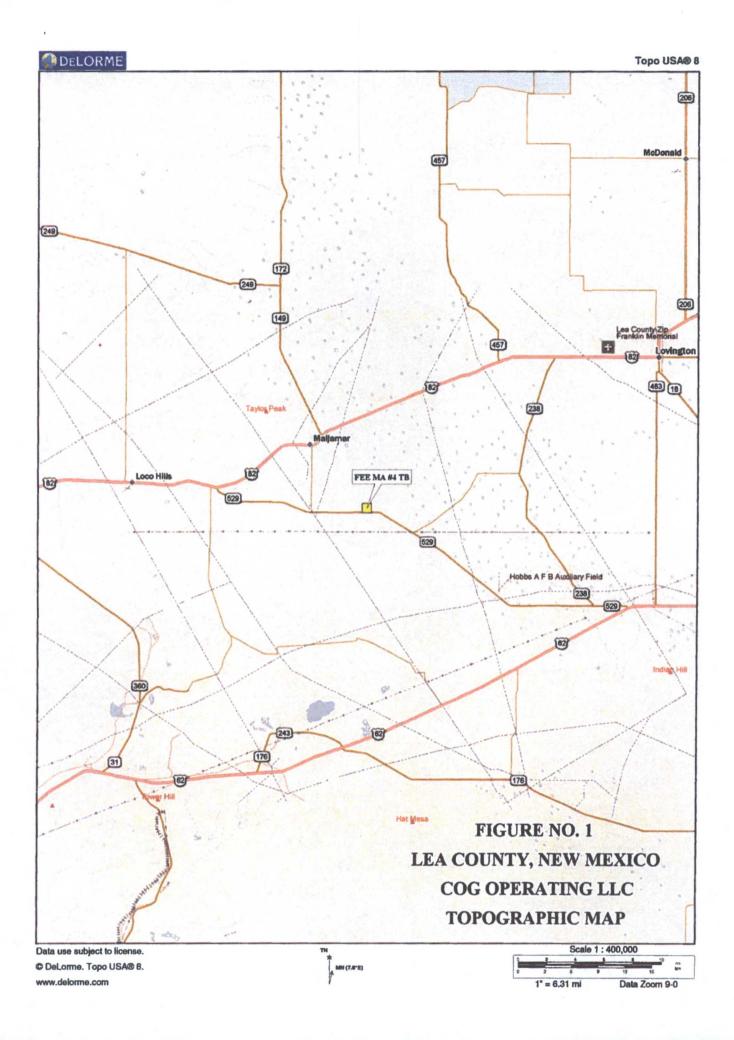
Since the impacted area is in the native sand dunes, the proposed excavation depths may not be reached due to wall cave ins, safety concerns for lines, equipment operators as well, as other onsite personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable and capped with liner.

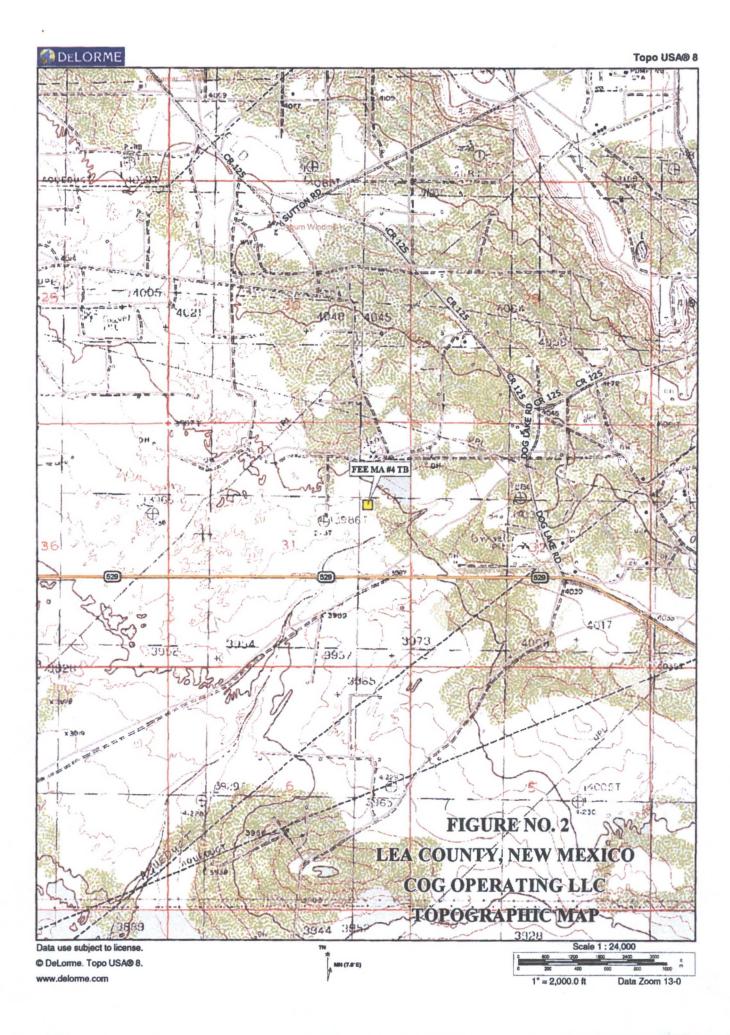
Respectfully submitted,

TETRA TECH

Kim Dorey Staff Geologist

cc: Pat Ellis - COG





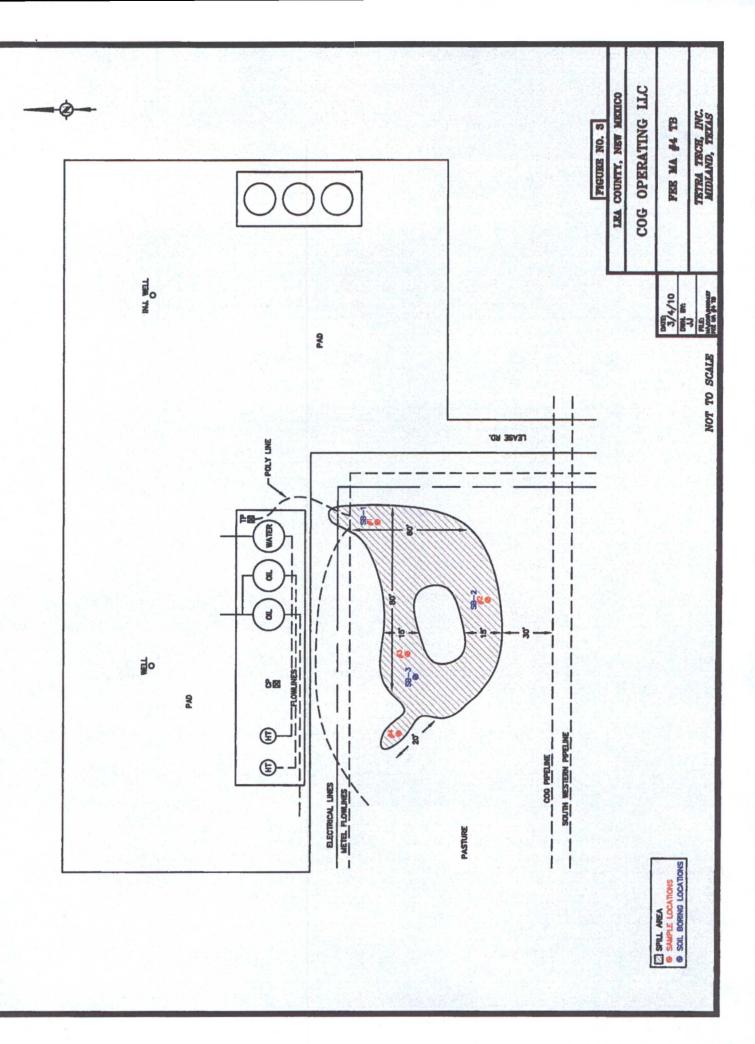


Table 1
COG Operating LLC.
FEE MA B #4 Tank Battery
LEA COUNTY, NEW MEXICO

Xviene Chloride		<0.0100 <200	- 298	- 3,180	- 736	- 2,600	- 2,010	- 2,750	- 3,790	- 5,830	- 8,570	- 11,500	- 6,870	- 5,040	- 8,480	- 3,790	
Ethlyhanzana	_	<0.0100				•				•				•	•	•	
Tolliene	(mg/kg)	<0.0100						•					•	•			
Renzene	(mg/kg)	<0.0100															
(6)	Total	<50.0					-						•	•			
TPH (mg/kg)	DRO	<50.0		-				•				•			•	•	
T	GRO	<1.00							-			•			-		
Soil Status	Removed																
Soil	In-Situ	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Denth	(BEB)	NA	NA	NA	NA	N/A	NVA	NA	NVA	NA	NA	NA	NA	NA	NA	NA	AVA
Sample	Depth (ft)	0-1,	1-1.5'	2-2.5'	1.	2.	Ġ.	5.	7.	10,	15'	20,	30,	40,	50'	.09	,02
Sample	Date	3/30/2010			5/10/2010												
Sample	OI	AH-1			SB-1												

COG Operating LLC.
FEE MA B #4 Tank Battery
LEA COUNTY, NEW MEXICO

4,330 4,570 <0.100 0.348 <50.0 <60.0 <0.100 0.348 	4,570 <0.100 <50.00 <0.100	4,330 4,570 <0.100 <50.0 <50.0 <0.100	4,330 4,570 <0.100 <50.0 <50.0 <0.100	X 240 4,330 4,570 <0.100 X <1.00 <50.0 <50.0 <0.100 X	X 240 4,330 4,570 <0.100
	<50.0 <50.0 <0.100	<50.0 <50.0 <0.100	<1.00 <50.0 <50.0 <0.100	X <1.00 <50.0 <50.0 <0.100	N/A X <1.00 <50.0 <50.0 <0.100
				· · ·	N/A X
				· · · ·	X
			·	X VIA	
			· · · · · ·	X VN	
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				×××××	NA X X X X X X X X X X X X X X X X X X X
				****	NA X X NA NA X NA X X NA X X NA X X NA X X NA NA X X NA NA X X NA
NA N	3' N/A 5' N/A 7' N/A 10' N/A	10 10 10 10 10 10 10 10 10 10 10 10 10 1		5/10/2010	

COG Operating LLC.
FEE MA B #4 Tank Battery
LEA COUNTY, NEW MEXICO

Sample	Sample	Sample	Depth	Soil	Soil Status	TP	TPH (mg/kg)	6)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
Q	Date		(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-3	3/30/2010	0-1,	NA	×		1.62	112	113.62	<0.0100	<0.0100	<0.0100	<0.0100	374
		1-1.5'	NA	×									1,390
SB-3	5/10/2010	-	NA	×									604
		2'	NA	×						- 10			1,320
		3,	N/A	×									3,260
		5.	NA	×									767
		7.	NA	×					1000				1,500
		10,	NVA	×		,	-	-					7,590
		15'	NA	×		-							7,120
		20,	NA	×		-		-		•			8,360
		30,	N/A	×									5,830
		40.	NA	×							•	•	11,000
		20,	NA	×		•		•					6,750
		,09	NA	×		- 35 - 35 - 35 - 35 - 35 - 35 - 35 - 35		•	•				2,640
		,02	NA	×		8 0. T. S.	•	100-00		•			362
		80,	NA	×		•	•	•	•	•	•	•	333
AH-4	3/30/2010	0-1.	NA	×	7.0	<1.00	66.20	66.20	<0.0100	<0.0100	<0.0100	<0.0100	913

Proposed Liner

Below Excavation Bottom

(--) Not Analyzed

Proposed excavated material

Water Well Data Average Depth to Groundwater (ft) COG - FEE MA B #4 Tank Battery Lea County, New Mexico

	16 5	South	3	1 East			16 S	outh	3	2 East			16 S	outh	33	East	
6	5	4	3	2	1	6	5	4	3	5 2 265	1 265	6	5 180	4 15	0 3 130	148	1 14
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13	18	200 17	16	182	14	142
0	1''	10	113	117	113	10	"	221	13		215	100	182	180	175	143	110
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21		23	24
						220		210		210						120	
80	29	28	27	26	25	30	29	28	27	26 243	25	30	29	28 190	130	26 143	25 120
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
290	302		34	33		01		100	1	-	260	190	168	00	160		00
	17 5	South	3	1 East			17 S	outh	3	2 East			17 Sc	outh	33	East	
3	5	4	3	2	1	6	5	4 82	3	2 60	1 225	6 90	5	4	3 155	2 158	1 150
7	8	9	10	11	12	7	8	9	10	11 70 88	12	7 167	8 173	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	13 165
19	20	21	22 SITE	23	24	19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30 180 dry	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
			271		SITE	SITE		100	199		40,000					155	
	18 9	South	3	1 East			18 S	outh	3	2 East			18 S	outh	33	East	
3	5	4	3	2	1	6	5	4 65	3	2	1	6	5	4	3	2	1
,	8	9	10	11	12	7 460	8	9	10	11	12	7	8 100	9	10	11	12 143
18	17	16	15	14	13		17	16	15	14	13	18	17	16		14	13 6
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
							164		429			>140					195
30	29	28	27	26	25	30	29	28	27	26	25	30 35	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
				261		2-7-1-4			117		\$500.T.22	_			177		1

New Mexico State Engineers Well Reports

USGS Well Reports

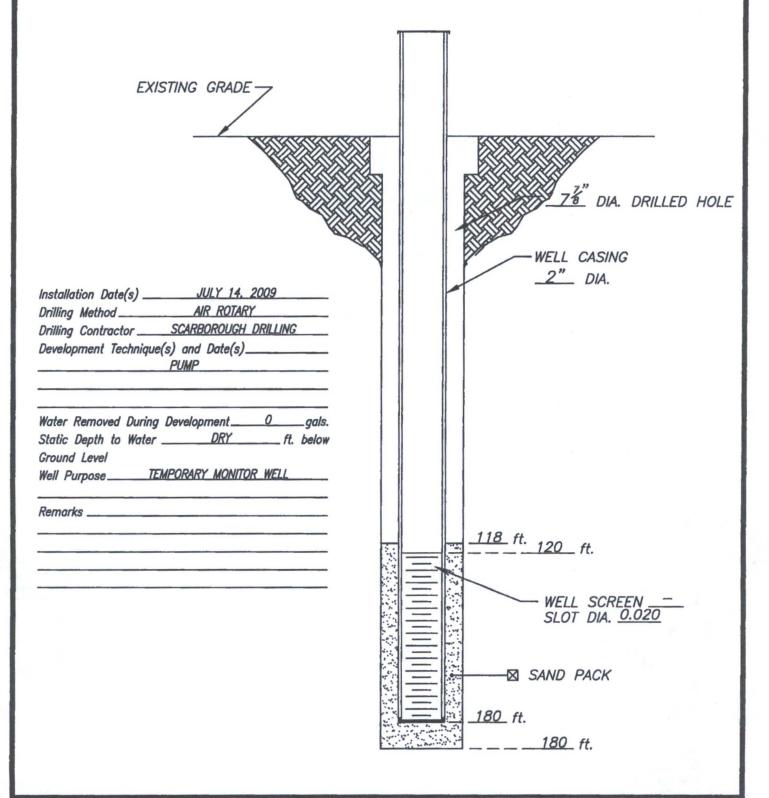
Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

TEMPORARY WELL CONSTRUCTION LOG



DATE: JULY 14, 2009

TETRA TECH, INC. MIDLAND, TEXAS CLIENT: COG OPERATING LLC

PROJECT: PRONGHORN 30 (114-6400224)

LOCATION: LEA COUNTY, NEW MEXICO

WELL NO.

TMW-1

SAMPLE LOG

Boring/Well:

TMW-1

Project Number: 114-6400224

COG

Client: Site Location:

Pronghorn Section 30 Lea County, New Mexico

Location:

180

Total Depth
Date Installed:

07/14/09

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6		Brown fine grain sand
10-11		Buff limestone
15-16		Tan to buff calcareous sand with chert intermixed.
20-21		Tan calcareous sand
25-26		Tan fine grain sand
30-31		Tan to yellow sandy clay
35-36		Reddish clayey sand with gravel
40-41		Red gravelly fine grain sand
45-46		Red to buff gravelly calcareous sand
50-51		Red fine grain sand
55-56		Red sandy silt
60-61		Red silty clay (dry)
65-66		Red coarse grain clayey sand
70-71		Red fine grain sand
75-76		Red fine grain sand
80-81		Red gravelly sand
85-86		Red fine grain silty clay with some sand intermixed
90-91		Red fine grain silty clay with some sand intermixed
95-96		Red fine grain silty clay with some sand intermixed
100-101		Red fine grain silty clay with some sand intermixed
105-106		Tan red fine grain sand
110-111		Tan fine grain sand
115-116		Tan fine grain sand
120-121		Tan to red fine grain sand
130-131		Red clay of high plasticity (Red bed)
140-141		Red clay of high plasticity (Red bed)
150-151		Red clay of high plasticity (Red bed) intermixed with gravel
160-161		Red clay of high plasticity (Red bed) intermixed with gravel
170-171		Red clay of high plasticity (Red bed) intermixed with gravel
180-181		Red clay of high plasticity (Red bed)

Total Depth is 181 feet

Groundwater was not encountered

Page Number: 1 of 3

Summary Report

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

Report Date: April 9, 2010

Work Order: 10033102

Project Location: Lea County, NM

Project Name:

COG/Fee MH #4 TB

Project Number: 114-6400437

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
227110	AH-1 0-1'	soil	2010-03-30	00:00	2010-03-30
227111	AH-1 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227112	AH-1 2-2.5'	soil	2010-03-30	00:00	2010-03-30
227113	AH-2 0-1'	soil	2010-03-30	00:00	2010-03-30
227114	AH-2 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227115	AH-2 2-2.5'	soil	2010-03-30	00:00	2010-03-30
227116	AH-2 3-3.5'	soil	2010-03-30	00:00	2010-03-30
227117	AH-2 4-4.5'	soil	2010-03-30	00:00	2010-03-30
227118	AH-3 0-1'	soil	2010-03-30	00:00	2010-03-30
227119	AH-3 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227120	AH-4 0-1'	soil	2010-03-30	00:00	2010-03-30

			BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
227110 - AH-1 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	<50.0	<1.00
227113 - AH-2 0-1'	< 0.100	0.348	0.645	2.60	4330	240
227114 - AH-2 1-1.5'					< 50.0	<1.00
227118 - AH-3 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	112	1.62
227120 - AH-4 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	66.2	<1.00

Sample: 227110 - AH-1 0-1'

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

Sample: 227111 - AH-1 1-1.5'

Report Date: April 9, 2010		Work Order: 10033102	Page Number: 2 of 3	
Param	Flag	Result	Units	RL
Chloride		298	mg/Kg	4.00
Sample: 227112 -	· AH-1 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		3180	mg/Kg	4.00
Sample: 227113 -	· AH-2 0-1'			
Param	Flag	Result	Units	RL
Chloride		1120	mg/Kg	4.00
Sample: 227114 -	AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		888	mg/Kg	4.00
Sample: 227115 -	· AH-2 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		2060	mg/Kg	4.00
Sample: 227116 -	AH-2 3-3.5'			
Param	Flag	Result	Units	RL
Chloride		6040	mg/Kg	4.00
Sample: 227117 -	AH-2 4-4.5'			
Parain	Flag	Result	Units	RL
Chloride		9110	mg/Kg	4.00
Sample: 227118 -	AH-3 0-1'			
Param	Flag	Result	Units	RL
Chloride		374	mg/Kg	4.00

Page Number: 3 of 3 Report Date: April 9, 2010 Work Order: 10033102 Sample: 227119 - AH-3 1-1.5' Param Result Units RL Chloride 1390 mg/Kg 4.00 Sample: 227120 - AH-4 0-1' Param Flag Result Units RL mg/Kg Chloride 913 4.00

Summary Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX 79705 Report Date: May 20, 2010

Page Number: 1 of 7

Work Order: 10051212

Project Name:

COG/Fee MA B #4

Project Number: 114-6400437

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
231280	SB-1 1'	soil	2010-05-10	00:00	2010-05-11
231281	SB-1 2'	soil	2010-05-10	00:00	2010-05-11
231282	SB-1 3'	soil	2010-05-10	00:00	2010-05-11
231283	SB-1 5'	soil	2010-05-10	00:00	2010-05-11
231284	SB-1 7'	soil	2010-05-10	00:00	2010-05-11
231285	SB-1 10'	soil	2010-05-10	00:00	2010-05-11
231286	SB-1 15'	soil	2010-05-10	00:00	2010-05-11
231287	SB-1 20'	soil	2010-05-10	00:00	2010-05-11
231288	SB-1 30'	soil	2010-05-10	00:00	2010-05-11
231289	SB-1 40'	soil	2010-05-10	00:00	2010-05-11
231290	SB-1 50'	soil	2010-05-10	00:00	2010-05-11
231291	SB-1 60'	soil	2010-05-10	00:00	2010-05-11
231292	SB-1 70'	soil	2010-05-10	00:00	2010-05-11
231293	SB-1 80'	soil	2010-05-10	00:00	2010-05-11
231294	SB-2 2'	soil	2010-05-10	00:00	2010-05-11
231295	SB-2 3'	soil	2010-05-10	00:00	2010-05-11
231296	SB-2 5'	soil	2010-05-10	00:00	2010-05-11
231297	SB-2 7'	soil	2010-05-10	00:00	2010-05-11
231298	SB-2 10'	soil	2010-05-10	00:00	2010-05-11
231299	SB-2 15'	soil	2010-05-10	00:00	2010-05-11
231300	SB-2 20'	soil	2010-05-10	00:00	2010-05-11
231301	SB-2 30'	soil	2010-05-10	00:00	2010-05-11
231302	SB-2 40'	soil	2010-05-10	00:00	2010-05-11
231303	SB-2 50'	soil	2010-05-10	00:00	2010-05-11
231304	SB-2 60'	soil	2010-05-10	00:00	2010-05-11
231305	SB-2 70'	soil	2010-05-10	00:00	2010-05-11
231306	SB-2 80'	soil	2010-05-10	00:00	2010-05-11
231307	SB-3 1'	soil	2010-05-10	00:00	2010-05-11
231308	SB-3 2'	soil	2010-05-10	00:00	2010-05-11
231309	SB-3 3'	soil	2010-05-10	00:00	2010-05-11
231310	SB-3 5'	soil	2010-05-10	00:00	2010-05-11

_				
Param	Flag	Result	Units	RL
Chloride		2600	mg/Kg	4.00

Sample: 231282 - SB-1 3'				
Param	Flag	Result	Units	RL
Chloride		2010	mg/Kg	4.00

Sample: 231283 - SB-1 5'					
Param	Flag	Result	Units	RL	
Chloride	A STATE OF THE STA	2750	mg/Kg	4.00	

Sample: 231264 - 5D-1 /					
Param	Flag	Result	Units	RL	
Chloride		3790	mg/Kg	4 00	

Sample: 231285 - SB-1 10'

Commiss 201204 CD 1 72

Sample: 231281 - SB-1 2'

Report Date: May 20, 2010		Work Order: 10051212	Page Number: 3 of 7	
Param	Flag	Result	Units	RL
Chloride		5830	mg/Kg	4.00
Sample: 231286	- SB-1 15'			
Param	Flag	Result	Units	RL
Chloride		8570	mg/Kg	4.00
Sample: 231287	- SB-1 20'			
Param	Flag	Result	Units	RL
Chloride		11500	mg/Kg	4.00
Sample: 231288	- SB-1 30'			
Param	Flag	Result	Units	RL
Chloride	11116	6870	mg/Kg	4.00
Sample: 231289 · Param Chloride	- SB-1 40' Flag	Result 5040	Units mg/Kg	RL 4.00
Sample: 231290 -	· SB-1 50'			
Param	Flag	Result	Units	RL
Chloride		8480	mg/Kg	4.00
Sample: 231291 -	SB-1 60'			
		Dli	77-14-	D.1
Param Chloride	Flag	Result 3790	Units mg/Kg	RL 4.00
	1 (4 · 1 · 4 · 1 · 1 · 1 · 1 · 1 · 1 · 1 ·		0/6	
Sample: 231292 -	SB-1 70'			
Param	Flag	Result	Units	RL
Chloride		356	mg/Kg	4.00

Report Date: May 20, 2010	Work Order: 10051212	Pag	ge Number: 4 of 7
Sample: 231293 - SB-1 80'			
Param Flag	Result	Units	RL
Chloride	341	mg/Kg	4.00
Sample: 231294 - SB-2 2'			
Param Flag	Result	Units	RL
Chloride	906	mg/Kg	4.00
Sample: 231295 - SB-2 3'			
Param Flag	Result	Units	RL
Chloride	9860	mg/Kg	4.00
Sample: 231296 - SB-2 5'			
Param Flag		Units	RL
Chloride	5290	mg/Kg	4.00
Sample: 231297 - SB-2 7'			
Param Flag	Result	Units	RL
Chloride	5000	mg/Kg	4.00
Sample: 231298 - SB-2 10'			
Param Flag	Result	Units	RL
Chloride	1670	mg/Kg	4.00
Sample: 231299 - SB-2 15'			
Param Flag	Result	Units	RL
Chloride	13000	mg/Kg	4.00
Sample: 231300 - SB-2 20'			
Param Flag	Result	Units	RL
Chloride	14900	mg/Kg	4.00

Report Date: May 20, 2010	Work Order: 10051212		Page Number: 5 of 7
Sample: 231301 - SB-2 30'			
Param Fla	g Result	Units	RL
Chloride	6630	mg/Kg	4.00
Sample: 231302 - SB-2 40'			
Param Fla	g Result	Units	RL
Chloride	7890	mg/Kg	4.00
Sample: 231303 - SB-2 50'			
Param Fla	g Result	Units	RL
Chloride	9240	mg/Kg	4.00
Sample: 231304 - SB-2 60'			
Param Fla		Units	RL
Chloride	2380	mg/Kg	4.00
Sample: 231305 - SB-2 70'			
Param Fla		Units	RL
Chloride	407	mg/Kg	4.00
Sample: 231306 - SB-2 80'			
Param Fla	g Result	Units	RL
Chloride	<200	mg/Kg	4.00
Sample: 231307 - SB-3 1'			
Param Fla		Units	RL
Chloride	604	mg/Kg	4.00
Sample: 231308 - SB-3 2'			
Param Fla	Result	Units	RL
Chloride	1320	mg/Kg	4.00

Report Date: May 2	20, 2010	Work Order: 10051212	Page	Number: 6 of 7
Sample: 231309 -	SB-3 3'			
Param	Flag	Result	Units	RL
Chloride		3260	mg/Kg	4.00
Sample: 231310 -	SB-3 5'			
Param	Flag	Result	Units	RL
Chloride		767	mg/Kg	4.00
Sample: 231311 -	SB-3 7'			
Param	Flag	Result	Units	RL
Chloride		1500	mg/Kg	4.00
Sample: 231312 - Param Chloride	Flag	Result 7590	Units mg/Kg	RL 4.00
Sample: 231313 -	CD-2 15'			
	Flag	Result		
Param			T1-:4-	DI
	1105	7120	Units mg/Kg	RL 4.00
Chloride				
Chloride Sample: 231314 -	SB-3 20'	7120	mg/Kg	4.00
Chloride Sample: 231314 - Param				
Chloride Sample: 231314 - Param Chloride	SB-3 20' Flag	7120 Result	mg/Kg Units	4.00 RL
Chloride Sample: 231314 - Param Chloride Sample: 231315 -	SB-3 20' Flag SB-3 30'	7120 Result 8360	mg/Kg Units mg/Kg	4.00 RL 4.00
Chloride Sample: 231314 - Param Chloride Sample: 231315 - Param	SB-3 20' Flag	7120 Result	mg/Kg Units	4.00 RL
Chloride Sample: 231314 - Param Chloride Sample: 231315 - Param Chloride	SB-3 20' Flag SB-3 30' Flag	7120 Result 8360	mg/Kg Units mg/Kg Units	4.00 RL 4.00
	SB-3 20' Flag SB-3 30' Flag	7120 Result 8360	mg/Kg Units mg/Kg Units	4.00 RL 4.00

Report Date: May 20, 2010		Work Order: 10051212		Page Number: 7 of 7		
Sample: 231317 - SB-3 50'						
Param	Flag	Result	Units	RL		
Chloride		6750	mg/Kg	4.00		
Sample: 231318	- SB-3 60'					
Param	Flag	Result	Units	RL		
Chloride		2640	mg/Kg	4.00		
Sample: 231319	- SB-3 70'					
Param	Flag	Result	Units	RL		
Chloride		362	mg/Kg	4.00		
Sample: 231320	- SB-3 80'					
Param	Flag	Result	Units	RL		
Chloride		333	mg/Kg	4.00		

		SI	TE INFORMATI	ON	
		Report	Type: Closure	Rep	ort
General Site Inf	ormation:				。 第一章
Site:	THE STATE OF		4 Tank Battery		50.17713
Company:		COG Operat			
Section, Towns	hip and Range		31 - T17S - R32E		
Lease Number:		API-30-025-3	36494		
County:		Lea County		-	
GPS:		5	32.793333° N		103.696712° W
Surface Owner:		Private			
Mineral Owner: Directions:		From CD 100	and 500 traval and 40.	selles Aus	rn left (north) Dog Lake Road 0.5 miles, turn lef
		0.6 miles, turn	left 0.2 miles to location		
Release Data:		1/23/2010			
Type Release:	- 1	Produced Wa	ater		7.7
Source of Contai	mination:		transfer pump hose		
Fluid Released:		24 bbls			
Fluids Recovered	d:	0 bbls	The state of the same of	and the	and the state of t
Official Commu	nication:				
Name:	Pat Ellis			H	Kim Dorey
Company:	COG Operating, L	LC		1	Tetra Tech
Address:	550 W. Texas Ave		. 4	1	1910 N. Big Spring
P.O. Box	A MARIE AND A STATE OF THE PARTY OF THE PART	100	and the second		
City:	Midland Texas, 79	701		N	Midland, Texas
Phone number:	(432) 686-3023				432) 631-0348
Fax:	(432) 684-7137				
Email:	pellis@conchores	Oliroes com		. L	kim.dorey@tetratech.com
Lilian.	penis e concriores	ources.com	7 47 - 184 - 18	<u> </u>	Min.dorey & tetratech.com
Ranking Criteria					
Depth to Groundy	vater:		Ranking Score		Site Data

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	The state of the s
>1,000 ft.	0	0
And the state of t	and the state of t	
Total Ranking Score:	0	HOBBS OCD

Accepta	ble Soil RRAL (r	ng/kg)
Benzene	Total BTEX	TPH
10	50	5,000

JUL 0 1 2011

RECEIVED



April 12, 2011

HOBBS OCD

JUL 0 1 2011

RECEIVED

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

Closure Report for the COG Operating LLC., FEE MA B #4 Tank Re: Battery, Unit H, Section 31, Township 17 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 FEE MA B #4 Tank Battery, Unit H, Section 31, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.793333°, W 103.696712°. 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 23, 2010, and released approximately twenty four (24) barrels of produced water due to a faulty water transfer pump hose. To alleviate the problem, COG personnel repaired the hose. Zero (0) barrels of standing fluids were recovered. The spill was contained in a native low-lying pasture area south of the tank battery and impacted an area approximately 60' x 80'. The initial and final C-141 forms are enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports did not list any wells in Section 31. However, the USGS Well Report did list two wells in Section 11 with reported depths of 70' and 105' below ground surface (bgs). To establish depth to groundwater, Tetra Tech previously



installed a temporary monitor well (TMW) in Section 30 to a depth of 180' bgs and did not encounter groundwater. The groundwater data is shown in Appendix A.

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 March 30, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of four (4) auger holes (AH-1 through AH-4) 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 results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all the submitted samples were below the RRAL for both BTEX and TPH. Elevated chloride concentrations were detected for each of the auger holes. Deeper samples were obtained due to a dense caliche formation. The bottom auger hole samples showed chloride concentrations at AH-1 (2-2.5') of 3,180 mg/kg, AH-2 (4-4.5') of 9,110 mg/kg, AH-3 (1-1.5') of 1,390 mg/kg, and AH-4 (0-1') of 913 mg/kg.

To delineate the chloride impact, Tetra Tech supervised the installation of three (3) soil boreholes (SB-1 through SB-3) utilizing an air rotary drilling rig on May 10, 2010. SB-1 and SB-2 were installed in the vicinity of AH-1 and AH-2, respectively. SB-3 was installed between AH-3 and AH-4. Soil samples were collected to a total depth of 80', where the upper sand sequences started slumping in not allowing deeper penetration or samples. The soil boring results are summarized in Table 1. The soil boring locations are shown on Figure 3.



Referring to Table 1, the assessment data showed a deep chloride impact to the subsurface soils. However, the chloride concentrations had a significant decline at a depth of 70' for each of the three soil borings.

Remedial Work and Closure Request

Tetra Tech personnel supervised the excavation of the site from February 23, 2011 through March 8, 2011. As approved by the NMOCD, the excavation measured approximately 30' x 80', with a depth of approximately 20' below ground surface. The excavation depth are highlighted in Table 1 and shown on Figure 4.

Approximately 4596 yards³ were removed and hauled to CRI Waste of Hobbs, NM. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. Prior to backfilling to grade, a 40 mil liner was installed at 4.0' below surface. Photos of the excavation are attached. A copy of the C-141 (Final) is included in Appendix A. Based on the work performed at this site, COG request closure of this site.

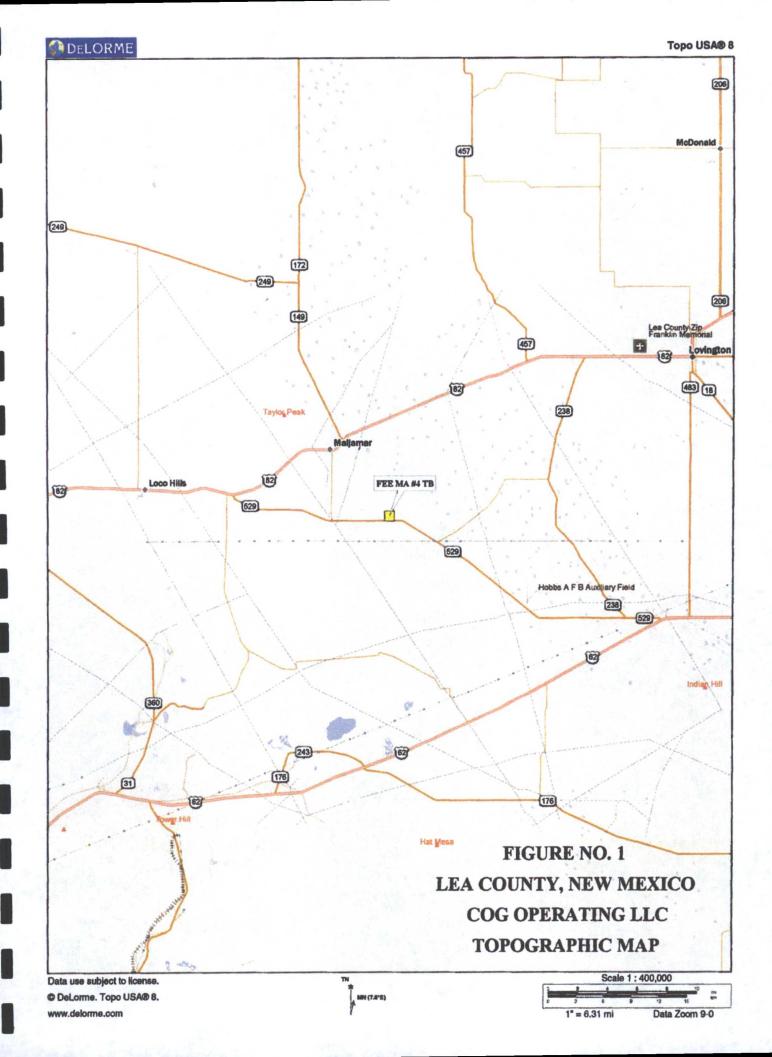
If you require any additional information or have any questions or comments concerning this report, please call at (432) 682-4559.

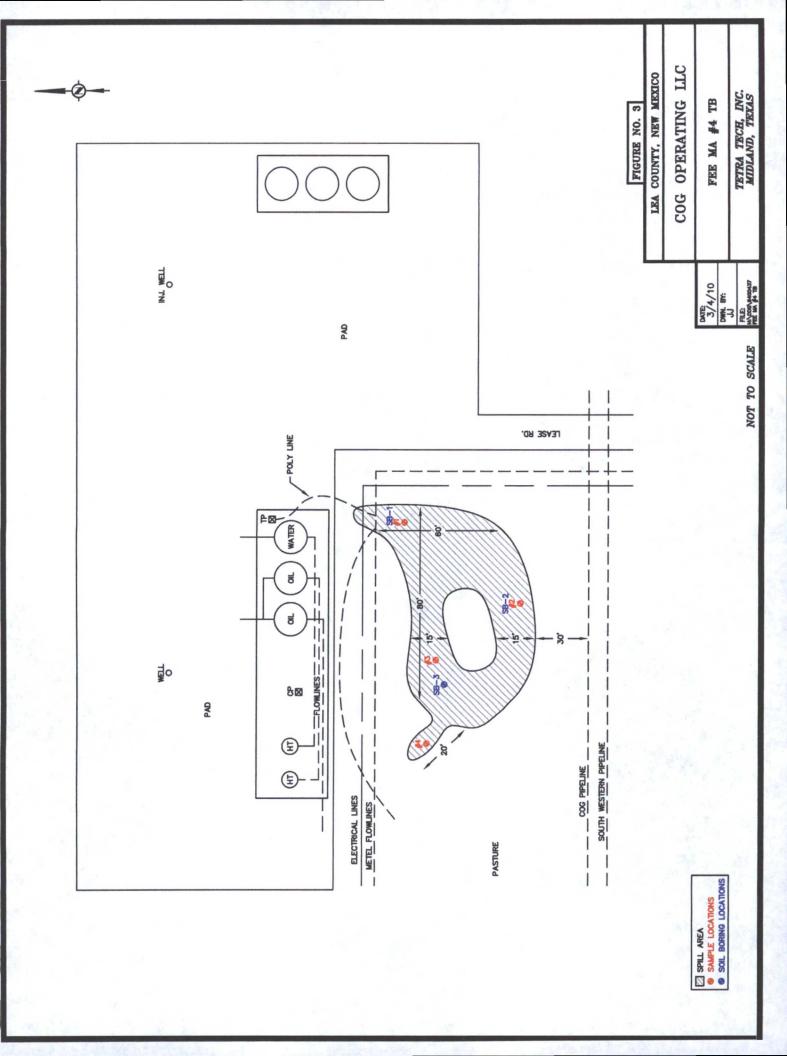
Respectfully submitted,

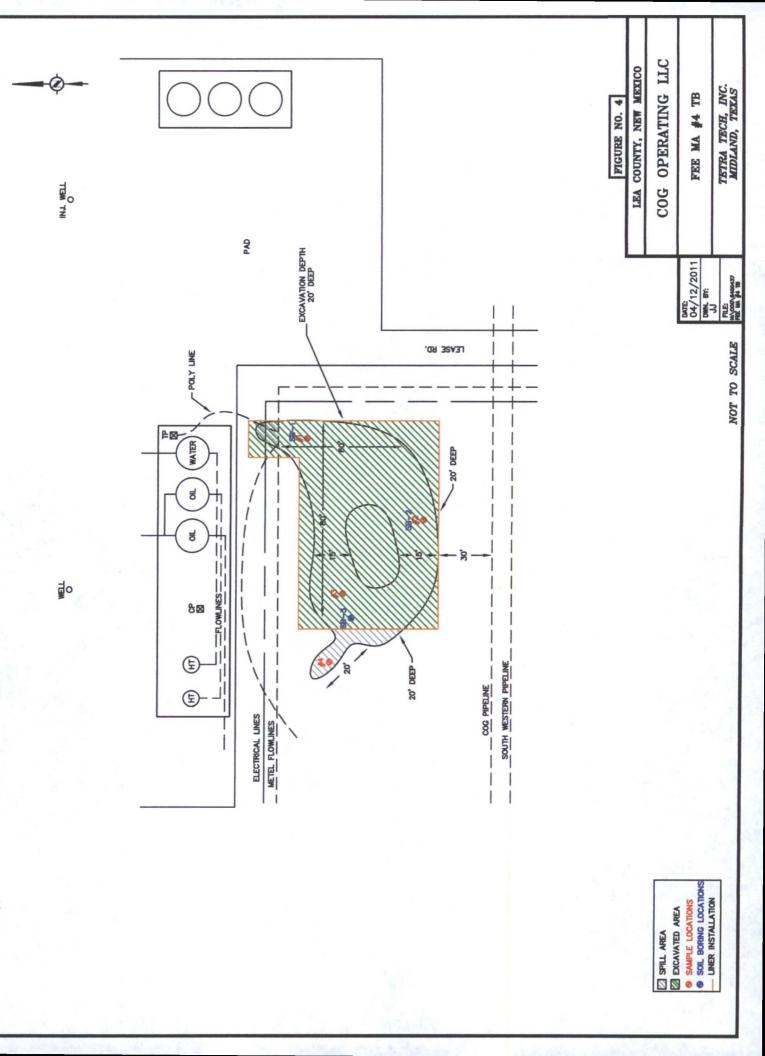
TETRA TECH

Kim Dorey Staff II Geologist

cc: Pat Ellis - COG







COG Operating LLC.
FEE MA B #4 Tank Battery
LEA COUNTY, NEW MEXICO

Sample	Sample	Depth	Soil	Status	TP	TPH (mg/kg)	(6	Benzene	Toluene	Ethlybenzene	Xvlene	Chloride
Oep	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
No.	0-1,	N/A		×	<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	<200
	1-1.5'	N/A		×	1							298
	2-2.5'	N/A		×								3,180
	CONTRACTOR DE LA CONTRA											
203	-	NA		×	,	•						736
N. GHO	2'	N/A		×		-			1			2,600
No. of the last	3.	N/A		×	-							2,010
2 30 000	5'	N/A		×		•			1			2,750
N. MARTIN	7.	N/A		×			-					3,790
	10,	NA		×				•		-		5,830
	15'	NA		×					-		•	8,570
	20,	NA		×						•	•	11,500
	30,	N/A	×			1	1			-		6,870
	40,	NA	×		1		1		1			5,040
	50'	N/A	×		-	1	1			1	,	8,480
	,09	N/A	×		-	,	,				1	3,790
	,02	NA	×		1		•			-		356
	80,	N/A	×		,	,		,				341

COG Operating LLC.
FEE MA B #4 Tank Battery
LEA COUNTY, NEW MEXICO

Sample	Sample	Sample	Depth	Soil	Status	T T	TPH (mg/kg)	(6	Benzene	Toluene	Ethlybenzene	Xvlene	Chloride
O	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-2	3/30/2010	0-1,	N/A		×	240	4,330	4,570	<0.100	0.348	0.645	2.6	1,120
		1-1.5'	NA		×	<1.00	<50.0	<50.0	<0.100	0.348	0.645	2.6	888
		2-2.5'	N/A		×	•		-	•	•	•		2,060
		3-3.5	NA		×	1			•			•	6,040
		4-4.5'	N/A		×	•				•	•		9,110
SB-2	5/10/2010	.2	N/A		×	1	1	•			•	•	906
		3,	N/A		×		•		•	-		•	9,860
9		5'	N/A		×				•	•		•	5,290
6		7.	N/A		×	-						- 1	5,000
		10,	NA		×	-							1,670
		15'	N/A		×			•	-				13,000
		20,	N/A		×	-							14,900
	1	30,	N/A	×	The state of the s	-	-	-		1			6,630
		40,	N/A	×		1	1	1			1		7,890
		50'	N/A	×		1	1	,					9,240
		,09	N/A	×				•		-			2,380
		70,	N/A	×		,	,	,		,			407
		108	N/A	×		,		,			1		<200

LEA COUNTY, NEW MEXICO FEE MA B #4 Tank Battery COG Operating LLC. Table 1

Sample	Sample	Sample	Depth	Soil	Status	TP	TPH (mg/kg)	(b)	Benzene	Toluene	Ethlybenzene	Xvlene	Chloride
O.	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-3	3/30/2010	0-1,	NA		×	1.62	112	113.62	<0.0100	<0.0100	<0.0100	<0.0100	374
		1-1.5'	N/A		×								1,390
SB-3	5/10/2010	1.	N/A		×	•		•	•	-	1	•	604
		2'	N/A		×						•		1,320
		3,	N/A		×		-	•		•	1		3,260
		5.	N/A		×		-			•			797
		.2.	N/A		×	-		7	•			•	1,500
		10,	N/A		×			-	•	•		1	7,590
		15'	N/A		×	-			-	•	-		7,120
		20,	N/A	×	2 1/2		-					,	8,360
		30,	N/A	×			1					1	5,830
		40,	N/A	×		-	- 1				1		11,000
		20,	N/A	×		ı	1	-			Г		6,750
		,09	N/A	×		,					ı		2,640
		,02	N/A	×		,	1	,			1		362
		80,	N/A	×		,	,	,			1	-	333
AH-4	3/30/2010	0-1	NA	×		<1.00	66.20	66.20	<0.0100	<0.0100	<0.0100	<0.0100	913

Below Excavation Bottom BEB

Not Analyzed 1

Excavated material

Liner Depth

COG Operating LLC FEE MA #4 Tank Battery Lea County, New Mexico





Excavated area near SB-2



Excavation pit near SB-3 and SB-2

COG Operating LLC FEE MA #4 Tank Battery Lea County, New Mexico





Final excavation depth ~20' BGS



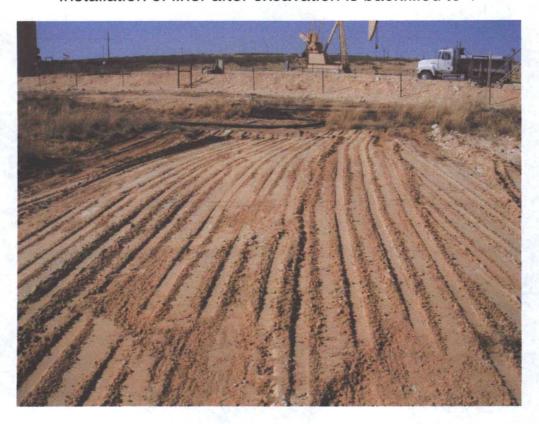
Backfilling with clean material

COG Operating LLC FEE MA #4 Tank Battery Lea County, New Mexico





Installation of liner after excavation is backfilled to 4'



After liner was installed and clean material backfilled to surface grade

Water Well Data Average Depth to Groundwater (ft) COG - FEE MA B #4 Tank Battery Lea County, New Mexico

	100	South	-	1 East	14	6	THE REAL PROPERTY.	South	Market Street, Square,	2 East	1	C	16 S	The Personal Property lies and		East	Ta
	5	4	3	12	1'	O	5	14	3 65	2 265	265	0	5 180	150	3 130	148	142
_	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	111	12
					288						215		200		182	1	142
3	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	13
					113			221		1 1 2	215		182	180	175	143	110
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
	100	100	27	26	105	220 30	29	210 28	27	210 26	25	00	100	00		120	0.5
0	29	28	27	26	25	30	29	28	21	243	25	30 191	29	28 190	27 130	26 143	25 120
1	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
90										1 1 1 1	260	190	168		160		
			1	N 2			4=				14						
	STREET, SQUARE, SQUARE,	South	The same of the sa	1 East			STATE OF THE PERSON NAMED IN	South	Name and Address of the Owner, where the Owner, which is the Own	2 East		-	17 S	Of the latest terms	THE RESERVE OF THE PERSON NAMED IN	East	_
	5	4	3	2	1	6	5	4 82	3 1 75	A. A.	1 225	6 90	5	4	3 155	2 158	1 15
	8	9	10	11	12	7	8	9	10	11 70	12	7 167	1	9	10	11	12
	147	10	15	14	13	18	17	16	15	14	13	18	173 17	161	15	111	10
8	17	16	15	14	13	18	117	16	15	14	13	188	180	16	15	14	13 165
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
			SITE			3.55	11 7						190			115	
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	25
		F -19				180 dry	10										
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
-			271		SITE	SITE	_							-		155	_
	18 9	South	3	1 East			18 9	South	3	2 East			18 S	outh	33	East	
3	5	4	3	2	1	6	5	4 65	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7 460	8	9	10	11	12	7	8 100	9	10	11	12 143
	100	7 7			400	82		14		1				100	62		140
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	13
				317				84					85			36	60
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
	29	28	27	26	25	30	1 64	28	429 27	26	25	>140 30	29	28	27	26	195 25
0	25	20	12'	20	20	00	120	120	-	20	25	35	29	20	2	20	25
80		33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36
30	32			261			1		117					168	177		

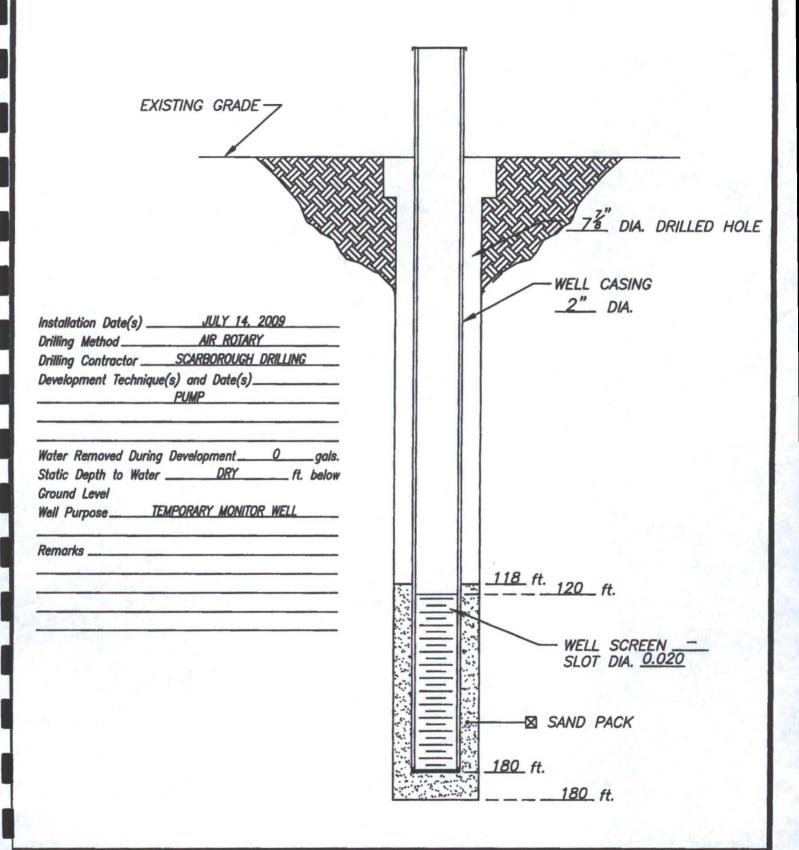
NMOCD - Groundwater Data

Temporary monitor well - 180' Dry

New Mexico Water and Infrastructure Data System

Field water level

TEMPORARY WELL CONSTRUCTION LOG



TETRA TECH, INC.
MIDLAND, TEXAS

CLIENT: COG OPERATING LLC

PROJECT: PRONGHORN 30 (114-6400224)

LOCATION: LEA COUNTY, NEW MEXICO

WELL NO.

TMW-1

SAMPLE LOG

Boring/Well: TMW-1
Project Number: 114-6400224
Client: COG

Site Location:

Pronghorn Section 30 Lea County, New Mexico

Total Depth 180
Date Installed: 07/14/09

Location:

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION	_
5-6		Brown fine grain sand	
10-11		Buff limestone	
15-16		Tan to buff calcareous sand with chert intermixed.	
20-21		Tan calcareous sand	
25-26		Tan fine grain sand	
30-31		Tan to yellow sandy clay	
35-36	-	Reddish clayey sand with gravel	
40-41	-	Red gravelly fine grain sand	
45-46	-	Red to buff gravelly calcareous sand	
50-51		Red fine grain sand	
55-56		Red sandy silt	
60-61		Red silty clay (dry)	
65-66		Red coarse grain clayey sand	
70-71		Red fine grain sand	
75-76		Red fine grain sand	_
80-81		Red gravelly sand	
85-86		Red fine grain silty clay with some sand intermixed	
90-91		Red fine grain silty clay with some sand intermixed	
95-96		Red fine grain silty clay with some sand intermixed	
100-101		Red fine grain silty clay with some sand intermixed	
105-106		Tan red fine grain sand	
110-111		Tan fine grain sand	
115-116		Tan fine grain sand	
120-121		Tan to red fine grain sand	
130-131	-	Red clay of high plasticity (Red bed)	
140-141		Red clay of high plasticity (Red bed)	
150-151		Red clay of high plasticity (Red bed) intermixed with gravel	-
160-161		Red clay of high plasticity (Red bed) intermixed with gravel	
170-171		Red clay of high plasticity (Red bed) intermixed with gravel	
180-181		Red clay of high plasticity (Red bed)	

Total Depth is 181 feet

Groundwater was not encountered

Summary Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX 79705

Report Date: April 9, 2010

Work Order: 10033102

Project Location: Lea County, NM Project Name:

COG/Fee MH #4 TB

Project Number: 114-6400437

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
227110	AH-1 0-1'	soil	2010-03-30	00:00	2010-03-30
227111	AH-1 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227112	AH-1 2-2.5'	soil	2010-03-30	00:00	2010-03-30
227113	AH-2 0-1'	soil	2010-03-30	00:00	2010-03-30
227114	AH-2 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227115	AH-2 2-2.5'	soil	2010-03-30	00:00	2010-03-30
227116	AH-2 3-3.5'	soil	2010-03-30	00:00	2010-03-30
227117	AH-2 4-4.5'	soil	2010-03-30	00:00	2010-03-30
227118	AH-3 0-1'	soil	2010-03-30	00:00	2010-03-30
227119	AH-3 1-1.5'	soil	2010-03-30	00:00	2010-03-30
227120	AH-4 0-1'	soil	2010-03-30	00:00	2010-03-30

			BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
227110 - AH-1 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	<50.0	<1.00
227113 - AH-2 0-1'	< 0.100	0.348	0.645	2.60	4330	240
227114 - AH-2 1-1.5'					<50.0	<1.00
227118 - AH-3 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	112	1.62
227120 - AH-4 0-1'	< 0.0100	< 0.0100	< 0.0100	< 0.0100	66.2	<1.00

Sample: 227110 - AH-1 0-1'

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

Sample: 227111 - AH-1 1-1.5'

Report Date: April 9, 2010		Work Order: 10033102	Page Number: 2 of 3		
Param	Flag	Result	Units	RL	
Chloride		298	mg/Kg	4.00	
Sample: 227112 -	AH-1 2-2.5'				
Param	Flag	Result	Units	RL	
Chloride		3180	mg/Kg	4.00	
Sample: 227113 -	AH-2 0-1'				
Param	Flag	Result	Units	RL	
Chloride		1120	mg/Kg	4.00	
Sample: 227114 -	AH-2 1-1.5'				
Param	Flag	Result	Units	RL	
Chloride		888	mg/Kg	4.00	
Param	AH-2 2-2.5' Flag	Result 2060	Units mg/Kg		
Param Chloride	Flag		Units mg/Kg	RL 4.00	
Param Chloride Sample: 227116 -	Flag AH-2 3-3.5'	2060	mg/Kg	4.00	
Param Chloride Sample: 227116 -	Flag			4.00	
Param Chloride Sample: 227116 - Param Chloride	Flag AH-2 3-3.5' Flag	2060 Result	mg/Kg Units	4.00	
Param Chloride Sample: 227116 - Param Chloride Sample: 227117 -	Flag AH-2 3-3.5' Flag AH-2 4-4.5'	2060 Result 6040	mg/Kg Units mg/Kg	4.00 RL 4.00	
Param Chloride Sample: 227116 - Param Chloride Sample: 227117 -	Flag AH-2 3-3.5' Flag	2060 Result	mg/Kg Units	4.00 RL 4.00	
Param Chloride Sample: 227116 - Param Chloride Sample: 227117 - Param Chloride	Flag AH-2 3-3.5' Flag AH-2 4-4.5' Flag	Result 6040	mg/Kg Units mg/Kg Units	4.00 RL 4.00	
Sample: 227115 - Param Chloride Sample: 227116 - Param Chloride Sample: 227117 - Param Chloride Sample: 227118 - Param Chloride	Flag AH-2 3-3.5' Flag AH-2 4-4.5' Flag	Result 6040	mg/Kg Units mg/Kg Units	4.00	

Report Date: April 9, 2010 Work Order: 10033102 Page Number: 3 of 3 Sample: 227119 - AH-3 1-1.5' Param Flag Result Units RL Chloride 1390 mg/Kg 4.00 Sample: 227120 - AH-4 0-1' Param Flag Result Units RL

913

mg/Kg

4.00

Chloride

Summary Report

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

Report Date: May 20, 2010

Work Order: 10051212

Project Name:

COG/Fee MA B #4

Project Number: 114-6400437

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
231280	SB-1 1'	soil	2010-05-10	00:00	2010-05-11
231281	SB-1 2'	soil	2010-05-10	00:00	2010-05-11
231282	SB-1 3'	soil	2010-05-10	00:00	2010-05-11
231283	SB-1 5'	soil	2010-05-10	00:00	2010-05-11
231284	SB-1 7'	soil	2010-05-10	00:00	2010-05-11
231285	SB-1 10'	soil	2010-05-10	00:00	2010-05-11
231286	SB-1 15'	soil	2010-05-10	00:00	2010-05-11
231287	SB-1 20'	soil	2010-05-10	00:00	2010-05-11
231288	SB-1 30'	soil	2010-05-10	00:00	2010-05-11
231289	SB-1 40'	soil	2010-05-10	00:00	2010-05-11
231290	SB-1 50'	soil	2010-05-10	00:00	2010-05-11
231291	SB-1 60'	soil	2010-05-10	00:00	2010-05-11
231292	SB-1 70'	soil	2010-05-10	00:00	2010-05-11
231293	SB-1 80'	soil	2010-05-10	00:00	2010-05-11
231294	SB-2 2'	soil	2010-05-10	00:00	2010-05-11
231295	SB-2 3'	soil	2010-05-10	00:00	2010-05-11
231296	SB-2 5'	soil	2010-05-10	00:00	2010-05-11
231297	SB-2 7'	soil	2010-05-10	00:00	2010-05-11
231298	SB-2 10'	soil	2010-05-10	00:00	2010-05-11
231299	SB-2 15'	soil	2010-05-10	00:00	2010-05-11
231300	SB-2 20'	soil	2010-05-10	00:00	2010-05-11
231301	SB-2 30'	soil	2010-05-10	00:00	2010-05-11
231302	SB-2 40'	soil	2010-05-10	00:00	2010-05-11
231303	SB-2 50'	soil	2010-05-10	00:00	2010-05-11
231304	SB-2 60'	soil	2010-05-10	00:00	2010-05-11
231305	SB-2 70'	soil	2010-05-10	00:00	2010-05-11
231306	SB-2 80'	soil	2010-05-10	00:00	2010-05-11
231307	SB-3 1'	soil	2010-05-10	00:00	2010-05-11
231308	SB-3 2'	soil	2010-05-10	00:00	2010-05-11
231309	SB-3 3'	soil	2010-05-10	00:00	2010-05-11
231310	SB-3 5'	soil	2010-05-10	00:00	2010-05-11

Sample:	231280 -	SB-1 1)
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SB-3 80'

231320

Param	Flag	Result	Units	RL
Chloride		736	mg/Kg	4.00

2010-05-10

00:00

2010-05-11

soil

Sample: 231281 - SB-1 2'

Param	Flag	Result	Units	RL
Chloride		2600	mg/Kg	4.00

Sample: 231282 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		2010	mg/Kg	4.00

Sample: 231283 - SB-1 5'

Param	Flag	Result	Units	RL
Chloride		2750	mg/Kg	4.00

Sample: 231284 - SB-1 7'

Param	Flag	Result	Units	RL
Chloride		3790	mg/Kg	4.00

Sample: 231285 - SB-1 10'

Report Date: May 20, 2010		Work Order: 10051212	Page Number: 3	
Param	Flag	Result	Units	RI
Chloride		5830	mg/Kg	4.00
Sample: 231286 -	· SB-1 15'			
Param	Flag	Result	Units	RI
Chloride		8570	mg/Kg	4.00
Sample: 231287 -	SB-1 20'			
Param	Flag	Result	Units	RI
Chloride	1.005	11500	mg/Kg	4.00
Sample: 231288 -		P	**	
Param Chloride	Flag	Result 6870	Units mg/Kg	RI 4.00
Sample: 231289 -	SB-1 40'			
Param				
Chloride	Flag	Result.	Units	RI.
	Flag	Result 5040	Units mg/Kg	
Sample: 231290 -				
Param		5040 Result		4.00
Param	SB-1 50'	5040	mg/Kg	4.00
Param	SB-1 50'	5040 Result	mg/Kg Units	4.00
Param Chloride	SB-1 50' Flag	5040 Result	mg/Kg Units	4.00
Param Chloride Sample: 231291 -	SB-1 50' Flag	Result 8480	mg/Kg Units mg/Kg Units	RL 4.00
Param Chloride Sample: 231291 -	SB-1 50' Flag SB-1 60'	Result 8480	mg/Kg Units mg/Kg	4.00 RL 4.00
Sample: 231290 - Param Chloride Sample: 231291 - Param Chloride Sample: 231292 -	SB-1 50' Flag SB-1 60' Flag	Result 8480	mg/Kg Units mg/Kg Units	4.00 RL 4.00
Param Chloride Sample: 231291 - Param Chloride	SB-1 50' Flag SB-1 60' Flag	Result 8480	mg/Kg Units mg/Kg Units	4.00 RL 4.00

Report Date: May 20	0, 2010	Work Order: 10051212	Page	Number: 4 of 7
Camania, 221202	CD 1 903		***************************************	
Sample: 231293 -			**	
Param Chloride	Flag	Result	Units	RI
Chioride		341	mg/Kg	4.00
Sample: 231294 -	SB-2 2'			
Param	Flag	Result	Units	RI
Chloride		906	mg/Kg	4.00
Sample: 231295 -	SB-2 3'			
Param	Flag	Result	Units	RL
Chloride		9860	mg/Kg	4.00
Sample: 231296 -	SB-2 5'			
Param	Flag	Result	Units	RL
Chloride		5290	mg/Kg	4.00
Sample: 231297 - 9	SB-2 7'	Result	Units	RL
Chloride	riag	5000	mg/Kg	4.00
Sample: 231298 - 5	SB-2 10'		3, 3	
Param	Flag	Result	Units	RL
Chloride		1670	mg/Kg	4.00
Sample: 231299 - 5	SB-2 15'			
Param	Flag	Result	Units	RL
Chloride		13000	mg/Kg	4.00
Sample: 231300 - 5	SB-2 20'			
Param	Flag	Result	Units	RL
Chloride	~			4.00

Report Date: May 20, 2010		Work Order: 10051212	Page Number: 5 of 7	
Sample: 231301	- SB-2 30'			
Param	Flag	Result	Units	RL
Chloride		6630	mg/Kg	4.00
Sample: 231302	- SB-2 40'			
Param	Flag	Result	Units	RL
Chloride		7890	mg/Kg	4.00
Sample: 231303 -	- SB-2 50'			
Param	Flag	Result	Units	RL
Chloride		9240	mg/Kg	4.00
Sample: 231304 -		Result	Unite	DI
Param	Flag		Units	RL
Chloride		2380	mg/Kg	4.00
Sample: 231305 - Param	· SB-2 70' Flag	Result	Units	RL
Chloride Sample: 231305 - Param Chloride				
Sample: 231305 -	Flag	Result	Units	RL
Sample: 231305 - Param Chloride Sample: 231306 - Param	Flag	Result 407	Units mg/Kg Units	RL
Sample: 231305 - Param Chloride	Flag SB-2 80'	Result 407	Units mg/Kg	RL 4.00
Sample: 231305 - Param Chloride Sample: 231306 - Param Chloride	Flag SB-2 80' Flag	Result 407	Units mg/Kg Units	RL 4.00
Sample: 231305 - Param Chloride Sample: 231306 - Param Chloride Sample: 231307 -	Flag SB-2 80' Flag SB-3 1'	Result 407	Units mg/Kg Units	RL 4.00
Sample: 231305 - Param Chloride Sample: 231306 - Param	Flag SB-2 80' Flag	Result 407 Result <200	Units mg/Kg Units mg/Kg	RL 4.00
Sample: 231305 - Param Chloride Sample: 231306 - Param Chloride Sample: 231307 - Param	Flag SB-2 80' Flag SB-3 1' Flag	Result 407 Result <200	Units mg/Kg Units mg/Kg Units	RL 4.00
Sample: 231305 - Param Chloride Sample: 231306 - Param Chloride Sample: 231307 - Param Chloride	Flag SB-2 80' Flag SB-3 1' Flag	Result 407 Result <200	Units mg/Kg Units mg/Kg Units	RL 4.00

Report Date: May 20), 2010	Work Order: 10051212	1	Page Number: 6 of 7
Sample: 231309 - 5	SB-3 3'			
Param	Flag	Result	Units	RL
Chloride		3260	mg/Kg	4.00
Sample: 231310 - 5	SB-3 5'			
Param	Flag	Result	Units	RL
Chloride		767	mg/Kg	4.00
Sample: 231311 - 5	SB-3 7'			
Param	Flag	Result	Units	RL
Chloride		1500	mg/Kg	4.00
Sample: 231312 - S	SB-3 10'			
Param	Flag	Result	Units	RL
Chloride		7590	mg/Kg	4.00
Sample: 231313 - S	SB-3 15'			
Param	Flag	Result	Units	RL
Chloride		7120	mg/Kg	4.00
Sample: 231314 - S	IR-9 20'			
				2
Param Chloride	Flag	Result 8360	Units	RL 4.00
Chloride		8300	mg/Kg	4.00
Sample: 231315 - S	B-3 30'			
Param	Flag	Result	Units	RL
Chloride		5830	mg/Kg	4.00
101-				
Sample: 231316 - S	B-3 40'			
Param	Flag	Result	Units	RL
Chloride		11000	mg/Kg	4.00

Report Date: May 20, 2010		y 20, 2010 Work Order: 10051212		Page Number: 7 of 7		
Sample: 231317 - SB-3 50'						
Param	Flag	Result	Units	RL		
Chloride		6750	mg/Kg	4.00		
Sample: 231318 -	- SB-3 60'					
Param	Flag	Result	Units	RL		
Chloride		2640	mg/Kg	4.00		
Sample: 231319 -	- SB-3 70'					
Param	Flag	Result	Units	RL		
Chloride		362	mg/Kg	4.00		
Sample: 231320 -	SB-3 80'					
Param	Flag	Result	Units	RL		
Chloride		333	mg/Kg	4.00		