



TETRA TECH

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APR 22 2010

NMOCD ARTESIA

April 5, 2010

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

Re: Work Plan for the COG Operating LLC., Muskegon 16 State Com #1 Tank Battery, Unit N, Section 16, 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 at the Muskegon 16 State Com #1 Tank Battery located in Unit N, Section 16, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.82888°, W 104.08204°. 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 October 28, 2009. Approximately ten (10) barrels of crude oil and forty (40) barrels of produced water were released due to a pump malfunction and a tank overflowing. Vacuum trucks were utilized to recover five (5) barrels of crude oil and thirty (30) barrels of standing fluids. The initial C-141 is included in Appendix A.

Groundwater

A water well located in Section 22, Township 17 South, Range 29 East, was measured using a steel tape to gauge the depth to water. The water well was not in use at the time and the static depth to water was measured at approximately 82.0'. The United States Geological Survey (USGS) database did show a well in Section 22, Township 17 South, Range 29 East with reported depth to water of 80' below surface. The Geology and Groundwater Resources of Eddy County, New Mexico showed a well in Section 22, Township 17 South, Range 29 East to have been measured with a depth to water of 79.7' below surface. Copies of the well data are included in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.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 1,000 mg/kg. ✓

Soil Assessment and Results

On November 10, 2009, Tetra Tech personnel inspected the spill area. The spill originated from an open water tank and migrated north of the pad, at a width of approximately 5.0'. The spill then migrated off the pad along the southeast edge of the closed reserve pit and down the lease road (1.0' wide), which had been back dragged with a backhoe. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1.

Referring to Table 1, all submitted samples were below the RRAL for TPH and BTEX. On the pad, elevated chloride concentrations were detected in AH-4 and AH-5 and were not vertically defined at 7-7.5' and 4.0', respectively. The area of AH-7 (reserve pit) did show a chloride impact to the soils. However, this may be from the former reserve pit area.

On February 10, 2010, Tetra Tech personnel were onsite to install one (1) soil boring (SB-1) utilizing an air rotary rig. SB-1 was installed between the previous auger holes (AH-4 and AH-5), which were not vertically defined. The soil boring was extended to a maximum depth of 31' feet bgs, with samples collected at 2 to 3 foot intervals for the first 10 feet and 5 foot intervals thereafter. The samples were submitted to the laboratory for analysis of chlorides. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The soil boring results are summarized in Table 2. The soil boring location is shown on Figure 3.

Referring to Table 2, the chloride concentrations ranged from <200 mg/kg at 15.0' to 1,700 mg/kg at 0-1'. The chloride concentrations declined with depth to <200 mg/kg at 15' below surface.



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Work Plan

Based on the data, the chloride impact at AH-4 and AH-5 originally showed elevated chloride impact to the soils. However, the soil boring between the two auger holes showed a reduced impact to the soils. Based upon the assessment, COG proposes to excavate the chloride impacted areas. The areas of AH-2 and AH-6 will be excavated to approximately 2.0' below surface and areas of AH-4 and AH-5 to a depth of 10.0' below surface. Once completed, the excavated soils will be hauled to proper disposal and backfill with clean soil. The excavated areas are shown on Figure 4.

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

Respectfully submitted,
TETRA TECH

Ike Tavaréz
Geologist/Project Manager

cc: Pat Ellis – COG

FIGURES

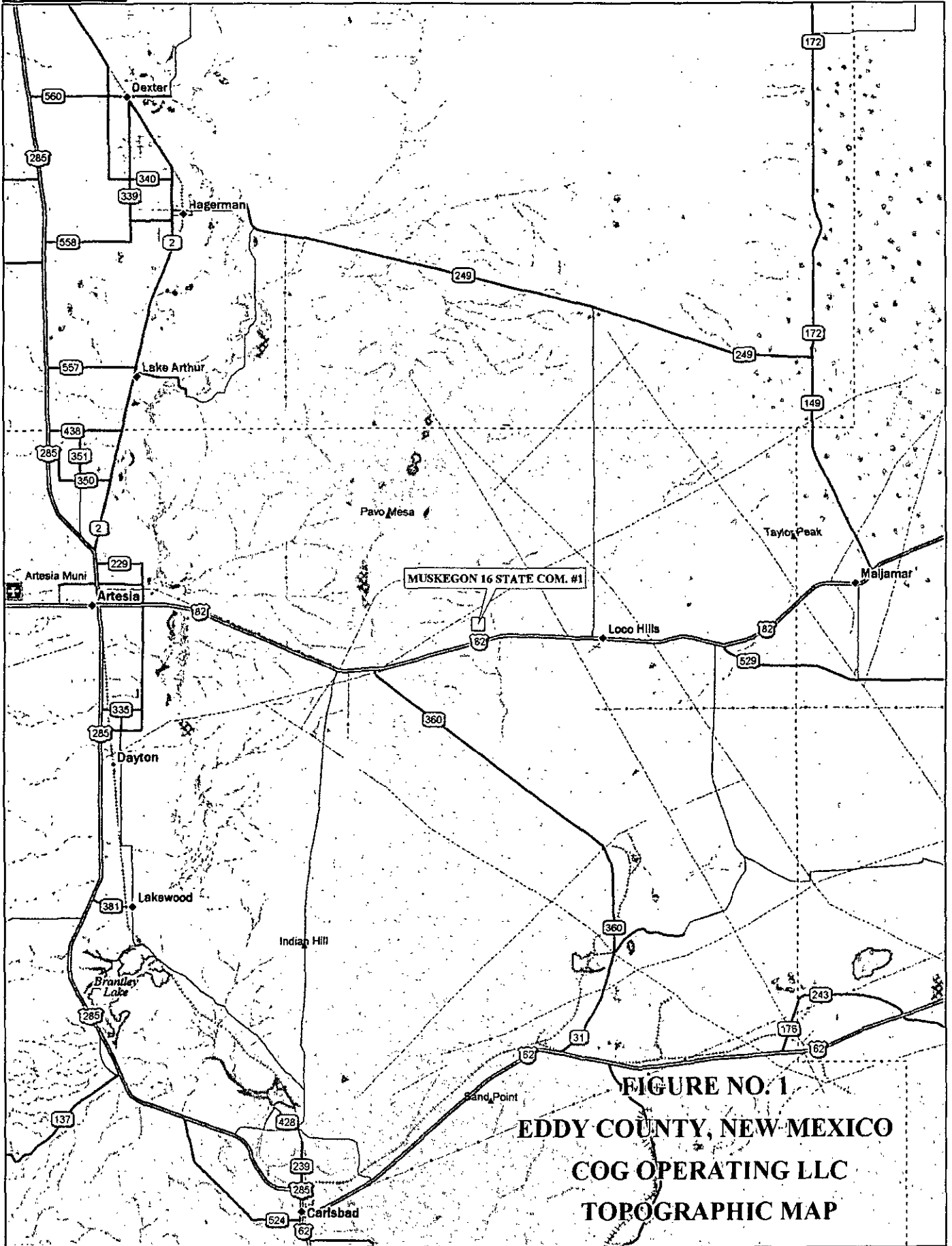
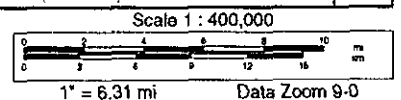


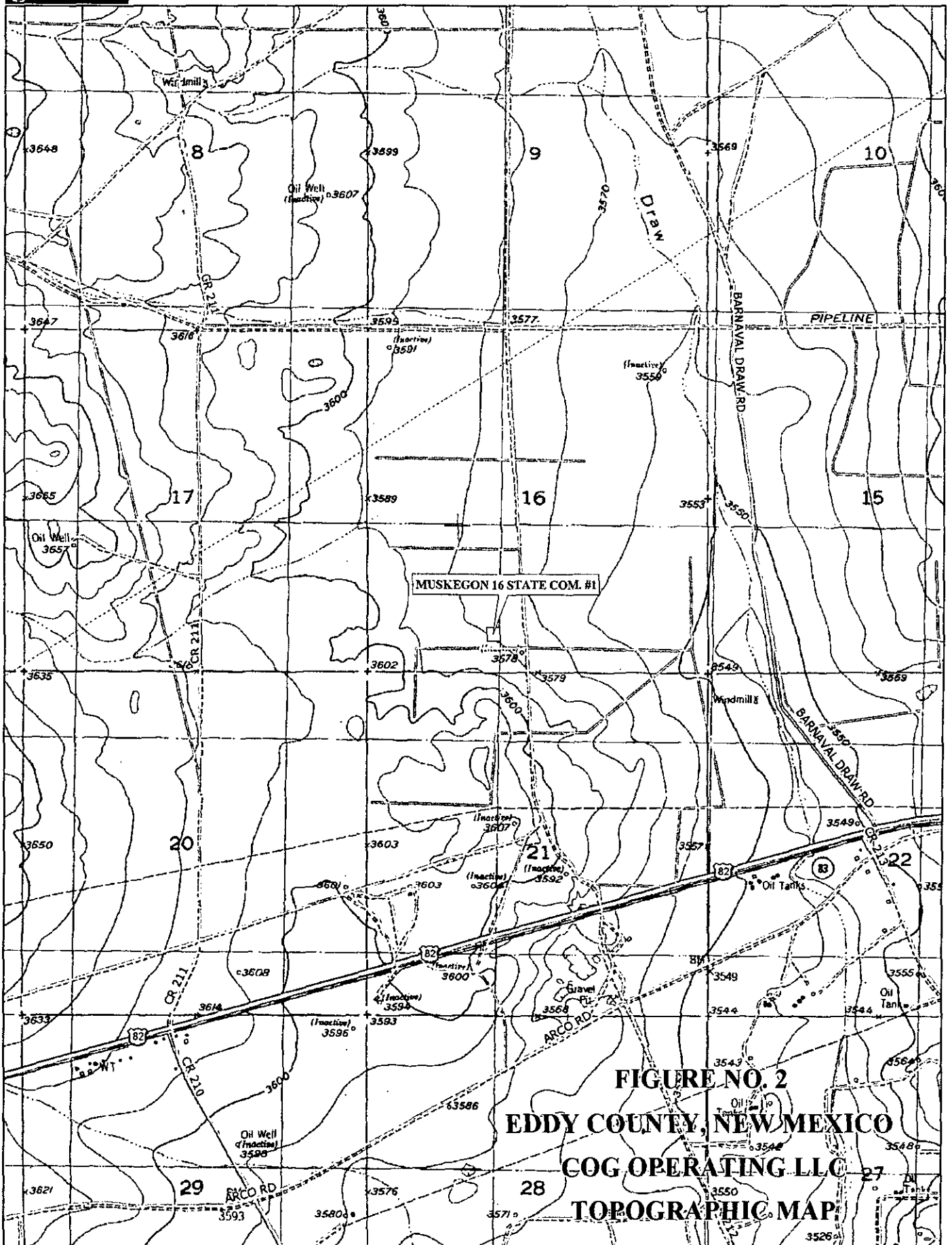
FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
TOPOGRAPHIC MAP

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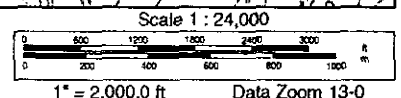




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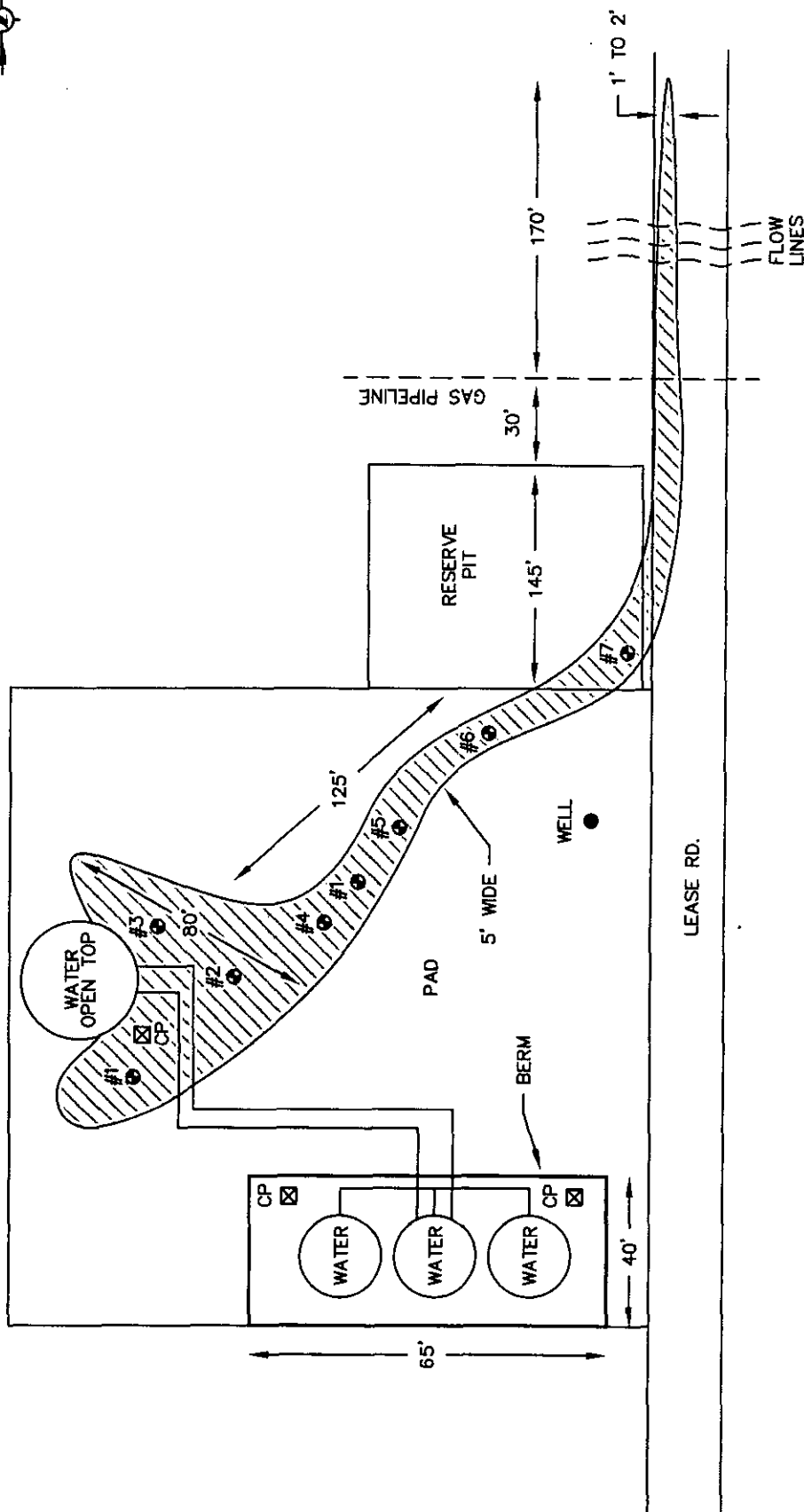


FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

MUSKEGON 16 STATE COM. #1 TB

TETRA TECH, INC.
MIDLAND, TEXAS

DATE: 11/20/09
DRAWN BY: JJ
FILE: MUSKEGON 16 STATE COM. #1 TB

NOT TO SCALE

- ☒ SPILL AREA
- ☒ SAMPLE LOCATIONS
- ☒ SOIL BORING LOCATION

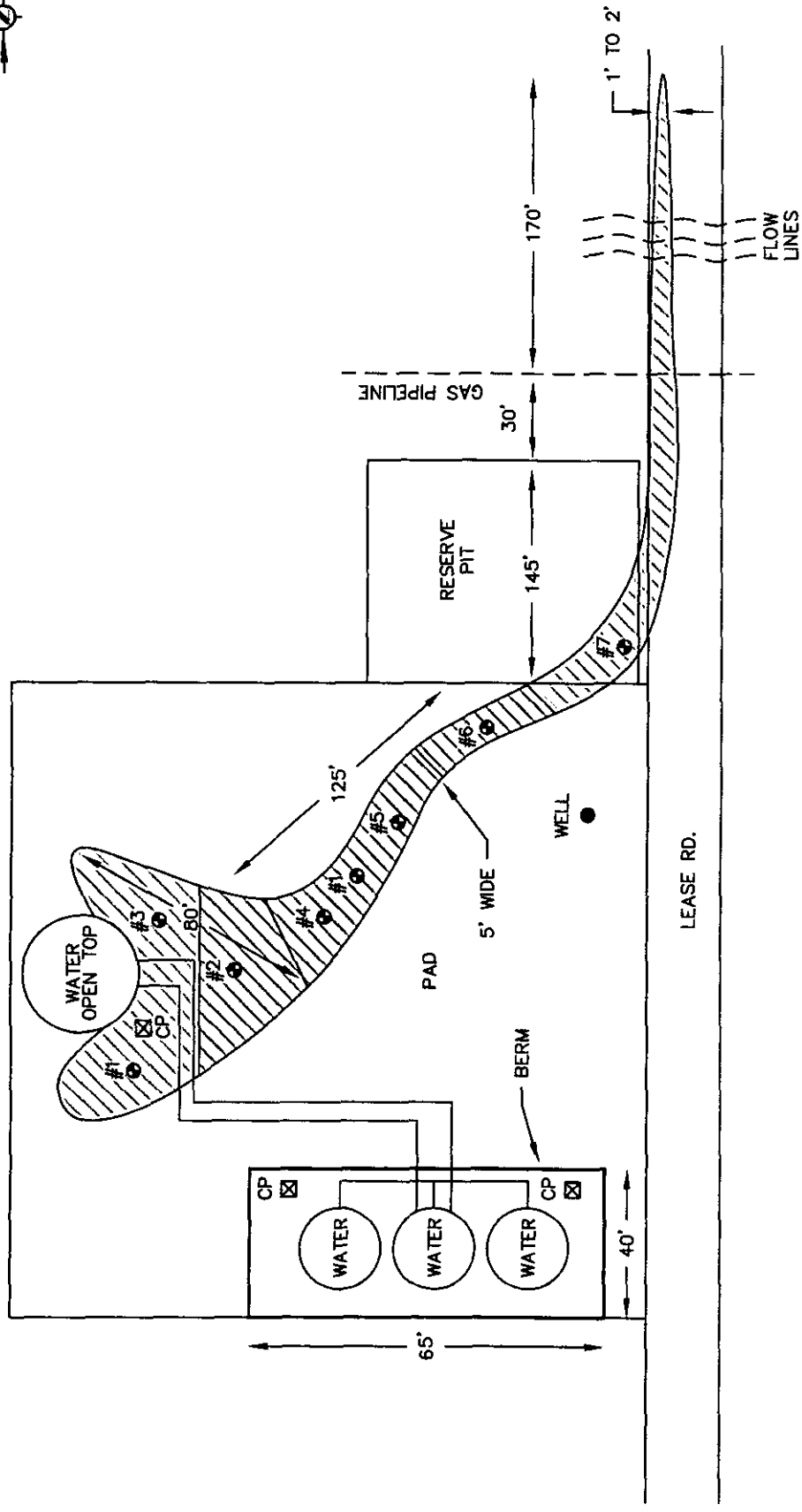


FIGURE NO. 4

EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
MUSKEGON 16 STATE COM. #1 TB
TETRA TECH, INC. MIDLAND, TEXAS

DATE: 11/20/09
DRAWN BY: JJ
FILE: H:\COG\MUSKEGON 16 STATE COM. #1 TB

NOT TO SCALE

- SPILL AREA
- PROPOSED EXCAVATION AREA 2.0' DEEP
- PROPOSED EXCAVATION AREA 10.0' DEEP
- SAMPLE LOCATIONS
- SOIL BORING LOCATION

TABLES

Table 1
COG Operating LLC.
Muskegon 16 State #1
EDDY COUNTY, NEW MEXICO

Sample ID	Date Sampled	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			Depth (BEB)	In-Situ	Removed	GRO	DRO	Total				
AH-1	11/10/2009	0-1'	N/A	X		<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	287
		1-1.5'	N/A	X		-	-	-	-	-	-	218
		2-2.5'	N/A	X		-	-	-	-	-	-	<200
AH-2	11/10/2009	0-1'	N/A	X		4.76	<50.0	4.76	<0.0100	<0.0100	<0.0100	1,690
		1-1.5'	N/A	X		-	-	-	-	-	-	2,910
		2-2.5'	N/A	X		-	-	-	-	-	-	1,190
		3-3.5'	N/A	X		-	-	-	-	-	-	305
		4-4.5'	N/A	X		-	-	-	-	-	-	424
AH-3	11/10/2009	0-1'	N/A	X		<1.00	<50.0	<50.0	-	-	-	<200
		1-1.5'	N/A	X		-	-	-	-	-	-	<200
		2-2.5'	N/A	X		-	-	-	-	-	-	<200
AH-4	11/13/2009	0-1'	N/A	X		<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	9,520
		1-1.5'	N/A	X		-	-	-	-	-	-	7,130
		2-2.5'	N/A	X		-	-	-	-	-	-	8,990
		3-3.5'	N/A	X		-	-	-	-	-	-	6,660
		4-4.5'	N/A	X		-	-	-	-	-	-	5,150
		5-5.5'	N/A	X		-	-	-	-	-	-	4,130
		6-6.5'	N/A	X		-	-	-	-	-	-	3,460
		7-7.5'	N/A	X		-	-	-	-	-	-	6,310
		7.5-8'	N/A	X		-	-	-	-	-	-	4,470

Table 1
COG Operating LLC.
Muskegon 16 State #1
EDDY COUNTY, NEW MEXICO

Sample ID	Date Sampled	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-5	11/10/2009	0-1'	N/A	X		<1.00	254	254	<0.0100	<0.0100	0.0259	0.021	5170
		1-1.5'	N/A	X		-	-	-	-	-	-	-	4,140
		2-2.5'	N/A	X		-	-	-	-	-	-	-	4,480
		3-3.5'	N/A	X		-	-	-	-	-	-	-	4,940
		4-4.5'	N/A	X		-	-	-	-	-	-	-	4,310
AH-6	11/10/2009	0-1'	N/A	X		<1.00	<50.0	<50.0	-	-	-	-	4,480
		1-1.5'	N/A	X		-	-	-	-	-	-	-	1,120
		2-2.5'	N/A	X		-	-	-	-	-	-	-	440
AH-7	11/10/2009	0-1'	N/A	X		<1.00	<50.0	<50.0	-	-	-	-	3,060
		1-1.5'	N/A	X		-	-	-	-	-	-	-	3,310

(-) Not Analyzed

BEB Below Excavation Bottom

Proposed Excavation Depths

Table 2
COG Operating LLC.
Muskegon 16 State #1
EDDY COUNTY, NEW MEXICO

Sample ID	Date Sampled	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-1	2/10/2010	1-2'	N/A	X		-	-	-	-	-	-	-	1,700
		3-4'	N/A	X		-	-	-	-	-	-	-	1,040
		5-6'	N/A	X		-	-	-	-	-	-	-	787
		7-8'	N/A	X		-	-	-	-	-	-	-	401
		10-11'	N/A	X		-	-	-	-	-	-	-	495
		15-16'	N/A	X		-	-	-	-	-	-	-	<200
		20-21'	N/A	X		-	-	-	-	-	-	-	<200
		25-26'	N/A	X		-	-	-	-	-	-	-	<200
		30-31'	N/A	X		-	-	-	-	-	-	-	<200

(-) Not Analyzed
BEB Below Excavation Bottom
Proposed Excavation Depths

PHOTOGRAPHS

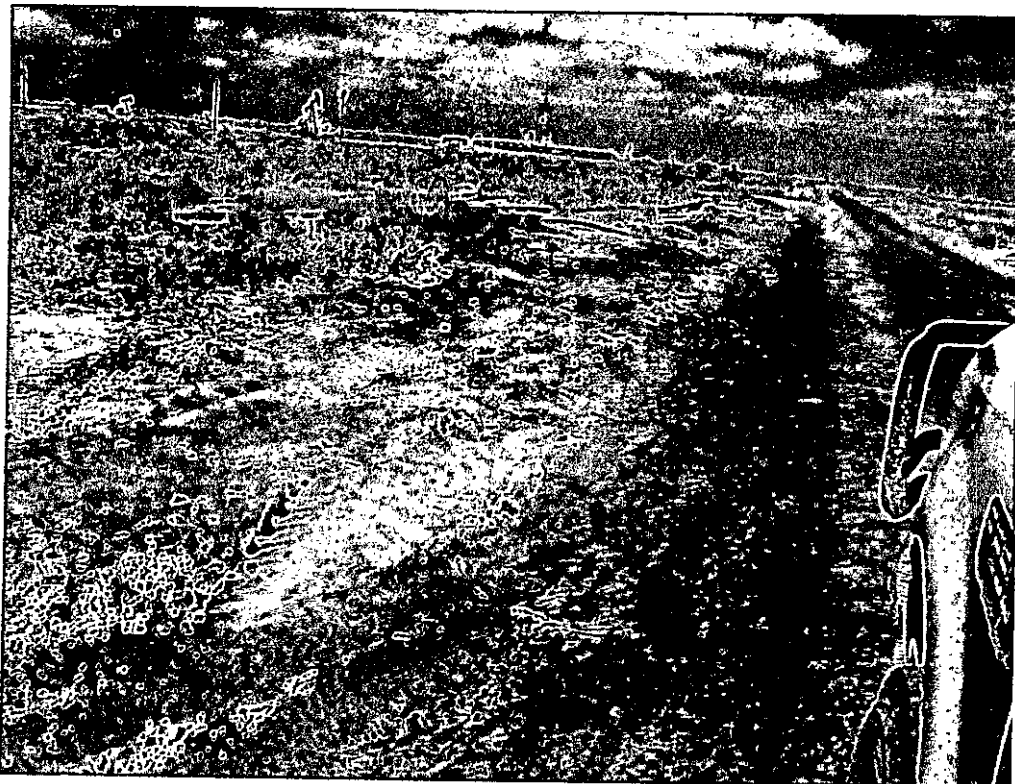
COG Operating LLC
Muskegon 16 State Com #1
Eddy County, New Mexico



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View east – AH-6 edge of pad location (11-10-09)



View east – along lease road edge (11-10-09)

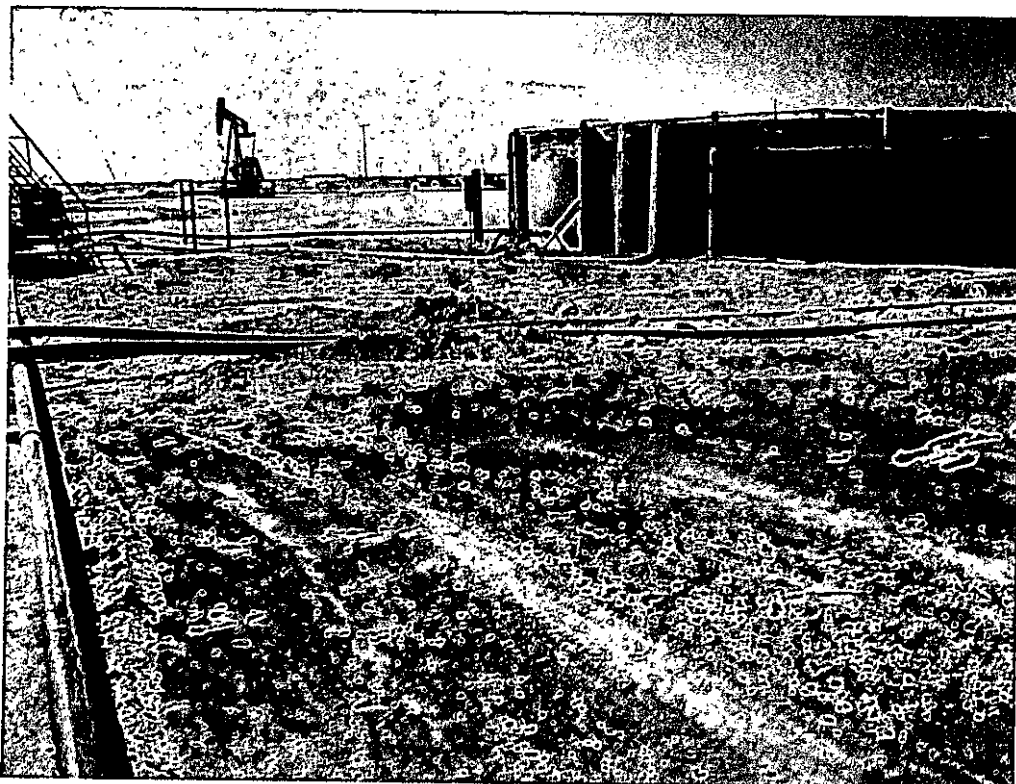
COG Operating LLC
Muskegon 16 State Com #1
Eddy County, New Mexico



TETRA TECH



View northwest – AH-2 (11-10-09)



View northwest – edge of pad AH-5 (11-10-09)

APPENDIX A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Kanicia Carrillo
Address	550 W. Texas, Suite 100 Midland, TX 79701	Telephone No.	432-685-4332
Facility Name	Muskegon 16 State Com #1	Facility Type	Battery

Surface Owner	State	Mineral Owner		Lease No.	30-015-27108
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	16	17S	29E	660	South	1980	West	Eddy

Latitude ___ Longitude ___

NATURE OF RELEASE

Type of Release-10 bbls oil, 40 bbls produced water	Volume of Release-50 bbls	Volume Recovered- 35 bbls (5-oil,30wtr)
Source of Release- Tank	Date and Hour of Occurrence- 10/28/09 Approx. 1:16pm	Date and Hour of Discovery 10/28/09 Approx. 1:16pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher	
By Whom? Pat Ellis	Date and Hour 10/28/09 2:43pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The tank overflowed due to a pump malfunction.

Describe Area Affected and Cleanup Action Taken.*
The release stayed on the pad and entrance road.
Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for your approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 		OIL CONSERVATION DIVISION	
Printed Name: Kanicia Carrillo		Approved by District Supervisor:	
Title: Regulatory Analyst	Approval Date:	Expiration Date:	
E-mail Address: kcarrillo@conchoresources.com	Conditions of Approval:		Attached ☐
Date: 11/11/09	Phone: 432-685-4332		

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Muskegon 16 State Com #1, Eddy County, New Mexico

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

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

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

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

17 South			29 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	SITE	23	24
30	29	210	80	26	25
31	32	208'	34	35	36

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

18 South			28 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	65	36

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

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

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
 Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

121 Abandoned Waterwell (recently measured)

18.21.13.310	Andy Teel	1915	Rolling	4,100	520	8	Limestone	San Andres
27.440	do.	1947	Broad valley	4,200	667	10	do.	do.
32.430	George Teel	1946	Rolling	4,500	815	6	do.	do.
18.23.6.140	Couhaye Bros.	1941	S. of Rio	4,060	500	10	do.	Quaternary (?)
18.25.23.111	G. M. Phelps	-	Penasco	-	-	-	Alluvium (?)	
			Blackdom					
			Terrace					

See explanation at beginning of table.

WATER LEVEL		DATE OF MEASUREMENT	YIELD (g.p.m.)	METHOD OF LIFT	USE OF WATER	REMARKS
LOCATION NUMBER	BELOW LAND SURFACE (feet)					
17.28.2.240	27.6	Dec. 1, 1948	3	W	S	Depth to water measured while pumping.
14.220	80	-	61	W	S & D	Driller: Cy Hinshaw. See analysis, Table 3.
19.200	224.3	Dec. 2, 1948	1.2	W	S	Depth to water measured while pumping.
22.230	45.5	Dec. 1, 1948	-	N	N	Abandoned stock well.
17.29.22.110	79.7	Nov. 29, 1948	3 E.	W	S	Depth to water measured while pumping.
29.400	210	Dec. 3, 1948	1.1	W	S	do.
17.31.34.000	271 +	Dec. 6, 1948	3.5	W	S	See analysis, Table 3.
18.21.13.310	505	-	10 R.	W	S & D	Formerly C.C.C. well. Cased to 30 ft.
27.440	530	-	-	W	S	Cased to 120 ft.
32.430	800 (?)	-	12 R.	W	S & D	Lowered cylinder 5 ft. in 1948 because water level declined. Cased to 380 ft.
18.23.6.140	440	Jan. 12, 1950	-	W	S & D	
18.25.23.111	117.8	Jan. 1950	-	W	S	

See explanation at beginning of table.
1 Measured Dec. 5, 1948.

APPENDIX C

Summary Report

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

Report Date: November 23, 2009

Work Order: 9111610



Project Location: Eddy Co., NM
Project Name: COG/Muskegon 16 State Com. #1
Project Number: 114-6400354

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
214975	AH-1 0-1'	soil	2009-11-10	00:00	2009-11-13
214976	AH-1 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214977	AH-1 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214978	AH-2 0-1'	soil	2009-11-10	00:00	2009-11-13
214979	AH-2 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214980	AH-2 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214981	AH-2 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214982	AH-2 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
214983	AH-3 0-1'	soil	2009-11-10	00:00	2009-11-13
214984	AH-3 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214985	AH-3 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214986	AH-4 0-1'	soil	2009-11-10	00:00	2009-11-13
214987	AH-4 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214988	AH-4 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214989	AH-4 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214990	AH-4 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
214991	AH-4 5'-5.5'	soil	2009-11-10	00:00	2009-11-13
214992	AH-4 6'-6.5'	soil	2009-11-10	00:00	2009-11-13
214993	AH-4 7'-7.5'	soil	2009-11-10	00:00	2009-11-13
214994	AH-4 7.5'-8'	soil	2009-11-10	00:00	2009-11-13
214995	AH-5 0-1'	soil	2009-11-10	00:00	2009-11-13
214996	AH-5 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214997	AH-5 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214998	AH-5 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214999	AH-5 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
215000	AH-6 0-1'	soil	2009-11-10	00:00	2009-11-13
215001	AH-6 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
215002	AH-6 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
215003	AH-7 0-1'	soil	2009-11-10	00:00	2009-11-13
215004	AH-7 1'-1.5'	soil	2009-11-10	00:00	2009-11-13

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
214975 - AH-1 0-1'	<0.0100	<0.0100	<0.0100	<0.0100	<50.0	<1.00
214978 - AH-2 0-1'	<0.0100	<0.0100	<0.0100	<0.0100	<50.0	4.76
214983 - AH-3 0-1'					<50.0	<1.00
214986 - AH-4 0-1'	<0.0100	<0.0100	<0.0100	<0.0100	<50.0	<1.00
214995 - AH-5 0-1'	<0.0100	<0.0100	0.0259	0.0210	254	<1.00
215000 - AH-6 0-1'					<50.0	<1.00
215003 - AH-7 0-1'					<50.0	<1.00

Sample: 214975 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		287	mg/Kg	4.00

Sample: 214976 - AH-1 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		218	mg/Kg	4.00

Sample: 214977 - AH-1 2'-2.5'

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

Sample: 214978 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		1690	mg/Kg	4.00

Sample: 214979 - AH-2 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		2910	mg/Kg	4.00

Sample: 214980 - AH-2 2'-2.5'

Param	Flag	Result	Units	RL
Chloride		1190	mg/Kg	4.00

Sample: 214981 - AH-2 3'-3.5'

Param	Flag	Result	Units	RL
Chloride		305	mg/Kg	4.00

Sample: 214982 - AH-2 4'-4.5'

Param	Flag	Result	Units	RL
Chloride		423	mg/Kg	4.00

Sample: 214983 - AH-3 0-1'

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

Sample: 214984 - AH-3 1'-1.5'

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

Sample: 214985 - AH-3 2'-2.5'

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

Sample: 214986 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		9520	mg/Kg	4.00

Sample: 214987 - AH-4 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		7130	mg/Kg	4.00

Sample: 214988 - AH-4 2'-2.5'

Param	Flag	Result	Units	RL
Chloride		8990	mg/Kg	4.00

Sample: 214989 - AH-4 3'-3.5'

Param	Flag	Result	Units	RL
Chloride		6660	mg/Kg	4.00

Sample: 214990 - AH-4 4'-4.5'

Param	Flag	Result	Units	RL
Chloride		5150	mg/Kg	4.00

Sample: 214991 - AH-4 5'-5.5'

Param	Flag	Result	Units	RL
Chloride		4130	mg/Kg	4.00

Sample: 214992 - AH-4 6'-6.5'

Param	Flag	Result	Units	RL
Chloride		3460	mg/Kg	4.00

Sample: 214993 - AH-4 7'-7.5'

Param	Flag	Result	Units	RL
Chloride		6310	mg/Kg	4.00

Sample: 214994 - AH-4 7.5'-8'

Param	Flag	Result	Units	RL
Chloride		4470	mg/Kg	4.00

Sample: 214995 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		5170	mg/Kg	4.00

Sample: 214996 - AH-5 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		4140	mg/Kg	4.00

Sample: 214997 - AH-5 2'-2.5'

Param	Flag	Result	Units	RL
Chloride		4480	mg/Kg	4.00

Sample: 214998 - AH-5 3'-3.5'

Param	Flag	Result	Units	RL
Chloride		4940	mg/Kg	4.00

Sample: 214999 - AH-5 4'-4.5'

Param	Flag	Result	Units	RL
Chloride		4310	mg/Kg	4.00

Sample: 215000 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		4480	mg/Kg	4.00

Sample: 215001 - AH-6 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		1120	mg/Kg	4.00

Sample: 215002 - AH-6 2'-2.5'

Param	Flag	Result	Units	RL
Chloride		440	mg/Kg	4.00

Sample: 215003 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		3060	mg/Kg	4.00

Sample: 215004 - AH-7 1'-1.5'

Param	Flag	Result	Units	RL
Chloride		3310	mg/Kg	4.00

TRACE ANALYSIS, INC.

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Certifications

WBENC: 237019

HUB: 1752439743100-86536
NCTRCA WFWB38444Y0909

DBE: VN 20657

NELAP Certifications

Lubbock: T104704219-08-TX
LELAP-02003
Kansas E-10317

El Paso: T104704221-08-TX
LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: November 23, 2009

Work Order: 9111610



Project Location: Eddy Co., NM
Project Name: COG/Muskegon 16 State Com. #1
Project Number: 114-6400354

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
214975	AH-1 0-1'	soil	2009-11-10	00:00	2009-11-13
214976	AH-1 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214977	AH-1 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214978	AH-2 0-1'	soil	2009-11-10	00:00	2009-11-13
214979	AH-2 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214980	AH-2 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214981	AH-2 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214982	AH-2 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
214983	AH-3 0-1'	soil	2009-11-10	00:00	2009-11-13
214984	AH-3 1'-1.5'	soil	2009-11-10	00:00	2009-11-13

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
214985	AH-3 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214986	AH-4 0-1'	soil	2009-11-10	00:00	2009-11-13
214987	AH-4 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214988	AH-4 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214989	AH-4 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214990	AH-4 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
214991	AH-4 5'-5.5'	soil	2009-11-10	00:00	2009-11-13
214992	AH-4 6'-6.5'	soil	2009-11-10	00:00	2009-11-13
214993	AH-4 7'-7.5'	soil	2009-11-10	00:00	2009-11-13
214994	AH-4 7.5'-8'	soil	2009-11-10	00:00	2009-11-13
214995	AH-5 0-1'	soil	2009-11-10	00:00	2009-11-13
214996	AH-5 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
214997	AH-5 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
214998	AH-5 3'-3.5'	soil	2009-11-10	00:00	2009-11-13
214999	AH-5 4'-4.5'	soil	2009-11-10	00:00	2009-11-13
215000	AH-6 0-1'	soil	2009-11-10	00:00	2009-11-13
215001	AH-6 1'-1.5'	soil	2009-11-10	00:00	2009-11-13
215002	AH-6 2'-2.5'	soil	2009-11-10	00:00	2009-11-13
215003	AH-7 0-1'	soil	2009-11-10	00:00	2009-11-13
215004	AH-7 1'-1.5'	soil	2009-11-10	00:00	2009-11-13

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 30 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Muskegon 16 State Com. #1 were received by TraceAnalysis, Inc. on 2009-11-13 and assigned to work order 9111610. Samples for work order 9111610 were received intact at a temperature of 8.2 deg. C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	55928	2009-11-19 at 11:00	65456	2009-11-19 at 23:56
Chloride (Titration)	SM 4500-Cl B	55855	2009-11-17 at 12:50	65389	2009-11-18 at 14:45
Chloride (Titration)	SM 4500-Cl B	55856	2009-11-17 at 12:50	65390	2009-11-18 at 14:46
Chloride (Titration)	SM 4500-Cl B	55857	2009-11-17 at 12:51	65391	2009-11-18 at 14:47
Chloride (Titration)	SM 4500-Cl B	55858	2009-11-17 at 12:52	65380	2009-11-18 at 11:03
TPH DRO - NEW	Mod. 8015B	55834	2009-11-16 at 15:56	65341	2009-11-16 at 15:56
TPH GRO	S 8015B	55928	2009-11-19 at 11:00	65457	2009-11-20 at 00:23

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9111610 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: November 23, 2009
114-6400354

Work Order: 9111610
COG/Muskegon 16 State Com. #1

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Eddy Co., NM

Analytical Report

Sample: 214975 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 65456

Prep Batch: 55928

Analytical Method: S 8021B

Date Analyzed: 2009-11-19

Sample Preparation: 2009-11-19

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		1.36	mg/Kg	1	2.00	68	43.1 - 128.4

Sample: 214975 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 65389

Prep Batch: 55855

Analytical Method: SM 4500-Cl B

Date Analyzed: 2009-11-18

Sample Preparation: 2009-11-17

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		287	mg/Kg	50	4.00

Sample: 214975 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 65341

Prep Batch: 55834

Analytical Method: Mod. 8015B

Date Analyzed: 2009-11-16

Sample Preparation: 2009-11-16

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

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Eddy Co., NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		124	mg/Kg	1	100	124	70 - 130

Sample: 214975 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 65457 Date Analyzed: 2009-11-20 Analyzed By: AG
Prep Batch: 55928 Sample Preparation: 2009-11-19 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.84	mg/Kg	1	2.00	92	61.7 - 121.1

Sample: 214976 - AH-1 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65389 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55855 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		218	mg/Kg	50	4.00

Sample: 214977 - AH-1 2'-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65389 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55855 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

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Eddy Co., NM

Sample: 214978 - AH-2 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 65456
Prep Batch: 55928

Analytical Method: S 8021B
Date Analyzed: 2009-11-19
Sample Preparation: 2009-11-19

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.15	mg/Kg	1	2.00	108	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		1.38	mg/Kg	1	2.00	69	43.1 - 128.4

Sample: 214978 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65389
Prep Batch: 55855

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1690	mg/Kg	50	4.00

Sample: 214978 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 65341
Prep Batch: 55834

Analytical Method: Mod. 8015B
Date Analyzed: 2009-11-16
Sample Preparation: 2009-11-16

Prep Method: N/A
Analyzed By: kg
Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		130	mg/Kg	1	100	130	70 - 130

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COG/Muskegon 16 State Com. #1

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Eddy Co., NM

Sample: 214978 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 65457
Prep Batch: 55928

Analytical Method: S 8015B
Date Analyzed: 2009-11-20
Sample Preparation: 2009-11-19

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		4.76	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.86	mg/Kg	1	2.00	93	61.7 - 121.1

Sample: 214979 - AH-2 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65389
Prep Batch: 55855

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2910	mg/Kg	100	4.00

Sample: 214980 - AH-2 2'-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65390
Prep Batch: 55856

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1190	mg/Kg	50	4.00

Sample: 214981 - AH-2 3'-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65390
Prep Batch: 55856

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		305	mg/Kg	50	4.00

Sample: 214982 - AH-2 4'-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		423	mg/Kg	50	4.00

Sample: 214983 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 214983 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 65341 Date Analyzed: 2009-11-16 Analyzed By: kg
Prep Batch: 55834 Sample Preparation: 2009-11-16 Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		130	mg/Kg	1	100	130	70 - 130

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Sample: 214983 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 65457
Prep Batch: 55928

Analytical Method: S 8015B
Date Analyzed: 2009-11-20
Sample Preparation: 2009-11-19

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.12	mg/Kg	1	2.00	106	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.82	mg/Kg	1	2.00	91	61.7 - 121.1

Sample: 214984 - AH-3 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65390
Prep Batch: 55856

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 214985 - AH-3 2'-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65390
Prep Batch: 55856

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 214986 - AH-4 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 65456
Prep Batch: 55928

Analytical Method: S 8021B
Date Analyzed: 2009-11-19
Sample Preparation: 2009-11-19

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

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Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		1.38	mg/Kg	1	2.00	69	43.1 - 128.4

Sample: 214986 - AH-4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9520	mg/Kg	100	4.00

Sample: 214986 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 65341 Date Analyzed: 2009-11-16 Analyzed By: kg
Prep Batch: 55834 Sample Preparation: 2009-11-16 Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		123	mg/Kg	1	100	123	70 - 130

Sample: 214986 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 65457 Date Analyzed: 2009-11-20 Analyzed By: AG
Prep Batch: 55928 Sample Preparation: 2009-11-19 Prepared By: AG

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Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.15	mg/Kg	1	2.00	108	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.87	mg/Kg	1	2.00	94	61.7 - 121.1

Sample: 214987 - AH-4 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7130	mg/Kg	100	4.00

Sample: 214988 - AH-4 2'-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8990	mg/Kg	100	4.00

Sample: 214989 - AH-4 3'-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65390 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55856 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6660	mg/Kg	100	4.00

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Sample: 214990 - AH-4 4'-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		5150	mg/Kg	100	4.00

Sample: 214991 - AH-4 5'-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4130	mg/Kg	100	4.00

Sample: 214992 - AH-4 6'-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3460	mg/Kg	100	4.00

Sample: 214993 - AH-4 7'-7.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6310	mg/Kg	100	4.00

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Sample: 214994 - AH-4 7.5'-8'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4470	mg/Kg	100	4.00

Sample: 214995 - AH-5 0-1'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2009-11-19	Analyzed By:	AG
QC Batch:	65456	Sample Preparation:	2009-11-19	Prepared By:	AG
Prep Batch:	55928				

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		0.0259	mg/Kg	1	0.0100
Xylene		0.0210	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.16	mg/Kg	1	2.00	108	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		1.38	mg/Kg	1	2.00	69	43.1 - 128.4

Sample: 214995 - AH-5 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65391	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55857				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		5170	mg/Kg	100	4.00

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Sample: 214995 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 65341
Prep Batch: 55834

Analytical Method: Mod. 8015B
Date Analyzed: 2009-11-16
Sample Preparation: 2009-11-16

Prep Method: N/A
Analyzed By: kg
Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		254	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		128	mg/Kg	1	100	128	70 - 130

Sample: 214995 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 65457
Prep Batch: 55928

Analytical Method: S 8015B
Date Analyzed: 2009-11-20
Sample Preparation: 2009-11-19

Prep Method: S 5035
Analyzed By: AG
Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.93	mg/Kg	1	2.00	96	61.7 - 121.1

Sample: 214996 - AH-5 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 65391
Prep Batch: 55857

Analytical Method: SM 4500-Cl B
Date Analyzed: 2009-11-18
Sample Preparation: 2009-11-17

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4140	mg/Kg	100	4.00

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Sample: 214997 - AH-5 2'-2.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	65391	Date Analyzed:	2009-11-18
Prep Batch:	55857	Sample Preparation:	2009-11-17
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4480	mg/Kg	100	4.00

Sample: 214998 - AH-5 3'-3.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	65391	Date Analyzed:	2009-11-18
Prep Batch:	55857	Sample Preparation:	2009-11-17
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4940	mg/Kg	100	4.00

Sample: 214999 - AH-5 4'-4.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	65391	Date Analyzed:	2009-11-18
Prep Batch:	55857	Sample Preparation:	2009-11-17
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4310	mg/Kg	100	4.00

Sample: 215000 - AH-6 0-1'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	65380	Date Analyzed:	2009-11-18
Prep Batch:	55858	Sample Preparation:	2009-11-17
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4480	mg/Kg	100	4.00

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Sample: 215000 - AH-6 0-1'

Laboratory:	Midland	Analytical Method:	Mod. 8015B	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2009-11-16	Analyzed By:	kg
QC Batch:	65341	Sample Preparation:	2009-11-16	Prepared By:	kg
Prep Batch:	55834				

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		124	mg/Kg	1	100	124	70 - 130

Sample: 215000 - AH-6 0-1'

Laboratory:	Midland	Analytical Method:	S 8015B	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2009-11-20	Analyzed By:	AG
QC Batch:	65457	Sample Preparation:	2009-11-19	Prepared By:	AG
Prep Batch:	55928				

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.17	mg/Kg	1	2.00	108	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.86	mg/Kg	1	2.00	93	61.7 - 121.1

Sample: 215001 - AH-6 1'-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65380	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55858				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1120	mg/Kg	50	4.00

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Sample: 215002 - AH-6 2'-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65380	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55858				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		440	mg/Kg	50	4.00

Sample: 215003 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2009-11-18	Analyzed By:	AR
QC Batch:	65380	Sample Preparation:	2009-11-17	Prepared By:	AR
Prep Batch:	55858				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3060	mg/Kg	100	4.00

Sample: 215003 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	Mod. 8015B	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2009-11-16	Analyzed By:	kg
QC Batch:	65341	Sample Preparation:	2009-11-16	Prepared By:	kg
Prep Batch:	55834				

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		124	mg/Kg	1	100	124	70 - 130

Sample: 215003 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	S 8015B	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2009-11-20	Analyzed By:	AG
QC Batch:	65457	Sample Preparation:	2009-11-19	Prepared By:	AG
Prep Batch:	55928				

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Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.14	mg/Kg	1	2.00	107	65.3 - 115
4-Bromofluorobenzene (4-BFB)		1.86	mg/Kg	1	2.00	93	61.7 - 121.1

Sample: 215004 - AH-7 1'-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 65380 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55858 Sample Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3310	mg/Kg	100	4.00

Method Blank (1) QC Batch: 65341

QC Batch: 65341 Date Analyzed: 2009-11-16 Analyzed By: kg
Prep Batch: 55834 QC Preparation: 2009-11-16 Prepared By: kg

Parameter	Flag	MDL Result	Units	RL
DRO		<5.86	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		116	mg/Kg	1	100	116	70 - 130

Method Blank (1) QC Batch: 65380

QC Batch: 65380 Date Analyzed: 2009-11-18 Analyzed By: AR
Prep Batch: 55858 QC Preparation: 2009-11-17 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

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Method Blank (1) QC Batch: 65389

QC Batch: 65389
Prep Batch: 55855

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 65390

QC Batch: 65390
Prep Batch: 55856

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 65391

QC Batch: 65391
Prep Batch: 55857

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 65456

QC Batch: 65456
Prep Batch: 55928

Date Analyzed: 2009-11-19
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00410	mg/Kg	0.01
Toluene		<0.00310	mg/Kg	0.01
Ethylbenzene		<0.00240	mg/Kg	0.01
Xylene		<0.00650	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.15	mg/Kg	1	2.00	108	64.9 - 122.7
4-Bromofluorobenzene (4-BFB)		1.31	mg/Kg	1	2.00	66	43.9 - 121.9

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Method Blank (1) QC Batch: 65457

QC Batch: 65457
Prep Batch: 55928

Date Analyzed: 2009-11-20
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.396	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.21	mg/Kg	1	2.00	110	66.2 - 125
4-Bromofluorobenzene (4-BFB)		1.82	mg/Kg	1	2.00	91	62 - 120.5

Laboratory Control Spike (LCS-1)

QC Batch: 65341
Prep Batch: 55834

Date Analyzed: 2009-11-16
QC Preparation: 2009-11-16

Analyzed By: kg
Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	234	mg/Kg	1	250	<5.86	94	57.4 - 133.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	238	mg/Kg	1	250	<5.86	95	57.4 - 133.4	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	112	115	mg/Kg	1	100	112	115	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 65380
Prep Batch: 55858

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 65389
Prep Batch: 55855

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	100	mg/Kg	1	100	<2.18	100	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 65390
Prep Batch: 55856

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	100	mg/Kg	1	100	<2.18	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	98.8	mg/Kg	1	100	<2.18	99	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 65391
Prep Batch: 55857

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.7	mg/Kg	1	100	<2.18	99	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.5	mg/Kg	1	100	<2.18	100	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 65456
Prep Batch: 55928

Date Analyzed: 2009-11-19
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.92	mg/Kg	1	2.00	<0.00410	96	75.4 - 115.7
Toluene	1.90	mg/Kg	1	2.00	<0.00310	95	78.4 - 113.6
Ethylbenzene	1.86	mg/Kg	1	2.00	<0.00240	93	76 - 114.2
Xylene	5.57	mg/Kg	1	6.00	<0.00650	93	76.9 - 113.6

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.94	mg/Kg	1	2.00	<0.00410	97	75.4 - 115.7	1	20
Toluene	1.93	mg/Kg	1	2.00	<0.00310	96	78.4 - 113.6	2	20
Ethylbenzene	1.90	mg/Kg	1	2.00	<0.00240	95	76 - 114.2	2	20
Xylene	5.69	mg/Kg	1	6.00	<0.00650	95	76.9 - 113.6	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.09	2.13	mg/Kg	1	2.00	104	106	65 - 122.9
4-Bromofluorobenzene (4-BFB)	1.34	1.37	mg/Kg	1	2.00	67	68	43.8 - 124.9

Laboratory Control Spike (LCS-1)

QC Batch: 65457
Prep Batch: 55928

Date Analyzed: 2009-11-20
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

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COG/Muskegon 16 State Com. #1

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.5	mg/Kg	1	20.0	<0.396	72	52.5 - 114.3

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	14.4	mg/Kg	1	20.0	<0.396	72	52.5 - 114.3	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.17	2.16	mg/Kg	1	2.00	108	108	66.2 - 128.7
4-Bromofluorobenzene (4-BFB)	1.87	1.84	mg/Kg	1	2.00	94	92	64.1 - 127.4

Matrix Spike (MS-1) Spiked Sample: 214975

QC Batch: 65341
Prep Batch: 55834

Date Analyzed: 2009-11-16
QC Preparation: 2009-11-16

Analyzed By: kg
Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	135	mg/Kg	1	250	<5.86	54	35.2 - 167.1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	138	mg/Kg	1	250	<5.86	55	35.2 - 167.1	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	118	116	mg/Kg	1	100	118	116	70 - 130

Matrix Spike (MS-1) Spiked Sample: 215083

QC Batch: 65380
Prep Batch: 55858

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	14300	mg/Kg	100	10000	3960	103	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	14400	mg/Kg	100	10000	3960	104	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 214979

QC Batch: 65389
Prep Batch: 55855

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12900	mg/Kg	100	10000	2910	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	13000	mg/Kg	100	10000	2910	101	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 214989

QC Batch: 65390
Prep Batch: 55856

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	16500	mg/Kg	100	10000	6660	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	16700	mg/Kg	100	10000	6660	100	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 214999

QC Batch: 65391
Prep Batch: 55857

Date Analyzed: 2009-11-18
QC Preparation: 2009-11-17

Analyzed By: AR
Prepared By: AR

continued ...

matrix spikes continued ...

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	14700	mg/Kg	100	10000	4310	104	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	14800	mg/Kg	100	10000	4310	105	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 214963

QC Batch: 65456
Prep Batch: 55928

Date Analyzed: 2009-11-19
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.16	mg/Kg	1	2.00	<0.00410	108	57.7 - 140.7
Toluene	2.18	mg/Kg	1	2.00	<0.00310	109	53.4 - 146.6
Ethylbenzene	2.20	mg/Kg	1	2.00	<0.00240	110	62.1 - 141.6
Xylene	6.59	mg/Kg	1	6.00	<0.00650	110	61.2 - 142.7

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	¹	1.29	mg/Kg	1	2.00	<0.00410	64	57.7 - 140.7	50	20
Toluene	²	1.32	mg/Kg	1	2.00	<0.00310	66	53.4 - 146.6	49	20
Ethylbenzene	³	1.35	mg/Kg	1	2.00	<0.00240	68	62.1 - 141.6	48	20
Xylene	⁴	4.03	mg/Kg	1	6.00	<0.00650	67	61.2 - 142.7	48	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.15	2.15	mg/Kg	1	2	108	108	62.7 - 119.6
4-Bromofluorobenzene (4-BFB)	1.39	1.39	mg/Kg	1	2	70	70	49.6 - 136.7

¹ MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

² MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

³ MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

⁴ MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: November 23, 2009
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Matrix Spike (MS-1) Spiked Sample: 214963

QC Batch: 65457
Prep Batch: 55928

Date Analyzed: 2009-11-20
QC Preparation: 2009-11-19

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	13.9	mg/Kg	1	20.0	<0.396	70	10 - 198.3

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.0	mg/Kg	1	20.0	<0.396	75	10 - 198.3	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.04	2.12	mg/Kg	1	2	102	106	65.5 - 123
4-Bromofluorobenzene (4-BFB)	1.91	1.93	mg/Kg	1	2	96	96	58.6 - 140

Standard (CCV-2)

QC Batch: 65341

Date Analyzed: 2009-11-16

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	255	102	80 - 120	2009-11-16

Standard (CCV-3)

QC Batch: 65341

Date Analyzed: 2009-11-16

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	260	104	80 - 120	2009-11-16

Standard (CCV-4)

QC Batch: 65341

Date Analyzed: 2009-11-16

Analyzed By: kg

Report Date: November 23, 2009
114-6400354

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Eddy Co., NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	245	98	80 - 120	2009-11-16

Standard (ICV-1)

QC Batch: 65380

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115.	2009-11-18

Standard (CCV-1)

QC Batch: 65380

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-11-18

Standard (ICV-1)

QC Batch: 65389

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.2	99	85 - 115	2009-11-18

Standard (CCV-1)

QC Batch: 65389

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2009-11-18

Standard (ICV-1)

QC Batch: 65390

Date Analyzed: 2009-11-18

Analyzed By: AR

Report Date: November 23, 2009
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Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-11-18

Standard (CCV-1)

QC Batch: 65390

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.8	100	85 - 115	2009-11-18

Standard (ICV-1)

QC Batch: 65391

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-11-18

Standard (CCV-1)

QC Batch: 65391

Date Analyzed: 2009-11-18

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.8	100	85 - 115	2009-11-18

Standard (CCV-1)

QC Batch: 65456

Date Analyzed: 2009-11-19

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0923	92	80 - 120	2009-11-19
Toluene		mg/Kg	0.100	0.0906	91	80 - 120	2009-11-19
Ethylbenzene		mg/Kg	0.100	0.0898	90	80 - 120	2009-11-19
Xylene		mg/Kg	0.300	0.269	90	80 - 120	2009-11-19

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Standard (CCV-2)

QC Batch: 65456

Date Analyzed: 2009-11-19

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0961	96	80 - 120	2009-11-19
Toluene		mg/Kg	0.100	0.0945	94	80 - 120	2009-11-19
Ethylbenzene		mg/Kg	0.100	0.0925	92	80 - 120	2009-11-19
Xylene		mg/Kg	0.300	0.274	91	80 - 120	2009-11-19

Standard (CCV-3)

QC Batch: 65456

Date Analyzed: 2009-11-19

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0972	97	80 - 120	2009-11-19
Toluene		mg/Kg	0.100	0.0966	97	80 - 120	2009-11-19
Ethylbenzene		mg/Kg	0.100	0.0940	94	80 - 120	2009-11-19
Xylene		mg/Kg	0.300	0.280	93	80 - 120	2009-11-19

Standard (CCV-1)

QC Batch: 65457

Date Analyzed: 2009-11-20

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.955	96	80 - 120	2009-11-20

Standard (CCV-2)

QC Batch: 65457

Date Analyzed: 2009-11-20

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.921	92	80 - 120	2009-11-20

Standard (CCV-3)

QC Batch: 65457

Date Analyzed: 2009-11-20

Analyzed By: AG

Report Date: November 23, 2009
114-6400354

Work Order: 9111610
COG/Muskeegon 16 State Com. #1

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.987	99	80 - 120	2009-11-20

Order #: 9111610

Analysis Request of Chain of Custody Record

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ANALYSIS REQUEST
(Circle or Specify Method No.)**TETRA TECH**1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: COG		SITE MANAGER: Ike Tavaré	
PROJECT NO.: 114-440354		PROJECT NAME: COG / Muskogean IL State Cor #1	
LAB I.D. NUMBER		SAMPLE IDENTIFICATION	
DATE	TIME	MATRIX	GRAB
2001	11:10	5	X
24975		5	X
976			
977			
978			
979			
980			
981			
982			
983			
984			

BTEX 8021B	TPH 8015 MOD (Ext. to C35)	PAH 8270	ACRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	HCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Al)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
X	X											X				

RELINQUISHED BY: (Signature)		Date: 11/13/01	Time: 5:35
RELINQUISHED BY: (Signature)		Date: 11/13/01	Time: 5:35
RELINQUISHED BY: (Signature)		Date: 11/13/01	Time: 5:35
RECEIVING LABORATORY: 114-440354		REMARKS: Run deeper samples 17 TPH exceeds 1,000 mg/kg.	
ADDRESS: Midland	STATE: TX	PHONE: 71	ZIP: 71
CITY: Midland		DATE: 11/13/01	
CONTACT: 822 c in tact		REMARKS: Run (4) BTEX w/ highest TPH.	
SAMPLE CONDITION WHEN RECEIVED:		REMARKS: Run (4) BTEX w/ highest TPH.	
LABORATORY retaining Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.		REMARKS: Run (4) BTEX w/ highest TPH.	

Please fill out all copies - Laboratory retaining Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Summary Report

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

Report Date: February 19, 2010

Work Order: 10021125



Project Location: Eddy Co., NM
Project Name: COG/Muskegon 16 State Com. #1
Project Number: 114-6400354

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
222098	SB-1 1'-2'	soil	2010-02-10	00:00	2010-02-11
222099	SB-1 3'-4'	soil	2010-02-10	00:00	2010-02-11
222100	SB-1 5'-6'	soil	2010-02-10	00:00	2010-02-11
222101	SB-1 7'-8'	soil	2010-02-10	00:00	2010-02-11
222102	SB-1 10'-11'	soil	2010-02-10	00:00	2010-02-11
222103	SB-1 15'-16'	soil	2010-02-10	00:00	2010-02-11
222104	SB-1 20'-21'	soil	2010-02-10	00:00	2010-02-11
222105	SB-1 25'-26'	soil	2010-02-10	00:00	2010-02-11
222106	SB-1 30'-31'	soil	2010-02-10	00:00	2010-02-11

Sample: 222098 - SB-1 1'-2'

Param	Flag	Result	Units	RL
Chloride		1700	mg/Kg	4.00

Sample: 222099 - SB-1 3'-4'

Param	Flag	Result	Units	RL
Chloride		1040	mg/Kg	4.00

Sample: 222100 - SB-1 5'-6'

continued ...

sample 222100 continued ...

Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		787	mg/Kg	4.00

Sample: 222101 - SB-1 7'-8'

Param	Flag	Result	Units	RL
Chloride		401	mg/Kg	4.00

Sample: 222102 - SB-1 10'-11'

Param	Flag	Result	Units	RL
Chloride		495	mg/Kg	4.00

Sample: 222103 - SB-1 15'-16'

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

Sample: 222104 - SB-1 20'-21'

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

Sample: 222105 - SB-1 25'-26'

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

Sample: 222106 - SB-1 30'-31'

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

TRACE ANALYSIS, INC.

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Certifications

WBENC: 237019

HUB: 1752439743100-86536
NCTRCA WFWB38444Y0909

DBE: VN 20657

NELAP Certifications

Lubbock: T104704219-08-TX
LELAP-02003
Kansas E-10317

El Paso: T104704221-08-TX
LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: February 19, 2010

Work Order: 10021125



Project Location: Eddy Co., NM
Project Name: COG/Muskeegon 16 State Com. #1
Project Number: 114-6400354

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
222098	SB-1 1'-2'	soil	2010-02-10	00:00	2010-02-11
222099	SB-1 3'-4'	soil	2010-02-10	00:00	2010-02-11
222100	SB-1 5'-6'	soil	2010-02-10	00:00	2010-02-11
222101	SB-1 7'-8'	soil	2010-02-10	00:00	2010-02-11
222102	SB-1 10'-11'	soil	2010-02-10	00:00	2010-02-11
222103	SB-1 15'-16'	soil	2010-02-10	00:00	2010-02-11
222104	SB-1 20'-21'	soil	2010-02-10	00:00	2010-02-11
222105	SB-1 25'-26'	soil	2010-02-10	00:00	2010-02-11
222106	SB-1 30'-31'	soil	2010-02-10	00:00	2010-02-11

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Muskegon 16 State Com. #1 were received by TraceAnalysis, Inc. on 2010-02-11 and assigned to work order 10021125. Samples for work order 10021125 were received intact at a temperature of 4.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	57778	2010-02-16 at 09:22	67597	2010-02-17 at 15:22
Chloride (Titration)	SM 4500-Cl B	57779	2010-02-16 at 09:23	67598	2010-02-17 at 15:24

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10021125 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: February 19, 2010
114-6400354

Work Order: 10021125
COG/Muskegon 16 State Com. #1

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Eddy Co., NM

Analytical Report

Sample: 222098 - SB-1 1'-2'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-02-17	Analyzed By:	AR
QC Batch:	67597	Sample Preparation:	2010-02-16	Prepared By:	AR
Prep Batch:	57778				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1700	mg/Kg	50	4.00

Sample: 222099 - SB-1 3'-4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-02-17	Analyzed By:	AR
QC Batch:	67597	Sample Preparation:	2010-02-16	Prepared By:	AR
Prep Batch:	57778				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1040	mg/Kg	50	4.00

Sample: 222100 - SB-1 5'-6'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-02-17	Analyzed By:	AR
QC Batch:	67597	Sample Preparation:	2010-02-16	Prepared By:	AR
Prep Batch:	57778				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		787	mg/Kg	50	4.00

Sample: 222101 - SB-1 7'-8'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-02-17	Analyzed By:	AR
QC Batch:	67597	Sample Preparation:	2010-02-16	Prepared By:	AR
Prep Batch:	57778				

continued ...

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sample 222101 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		401	mg/Kg	50	4.00

Sample: 222102 - SB-1 10'-11'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	67597	Date Analyzed:	2010-02-17	Analyzed By: AR
Prep Batch:	57778	Sample Preparation:	2010-02-16	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		495	mg/Kg	50	4.00

Sample: 222103 - SB-1 15'-16'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	67597	Date Analyzed:	2010-02-17	Analyzed By: AR
Prep Batch:	57778	Sample Preparation:	2010-02-16	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 222104 - SB-1 20'-21'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	67597	Date Analyzed:	2010-02-17	Analyzed By: AR
Prep Batch:	57778	Sample Preparation:	2010-02-16	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

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Sample: 222105 - SB-1 25'-26'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 67597 Date Analyzed: 2010-02-17 Analyzed By: AR
Prep Batch: 57778 Sample Preparation: 2010-02-16 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 222106 - SB-1 30'-31'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 67598 Date Analyzed: 2010-02-17 Analyzed By: AR
Prep Batch: 57779 Sample Preparation: 2010-02-16 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Method Blank (1) QC Batch: 67597

QC Batch: 67597 Date Analyzed: 2010-02-17 Analyzed By: AR
Prep Batch: 57778 QC Preparation: 2010-02-16 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 67598

QC Batch: 67598 Date Analyzed: 2010-02-17 Analyzed By: AR
Prep Batch: 57779 QC Preparation: 2010-02-16 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

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Laboratory Control Spike (LCS-1)

QC Batch: 67597
Prep Batch: 57778

Date Analyzed: 2010-02-17
QC Preparation: 2010-02-16

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.0	mg/Kg	1	100	<2.18	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.9	mg/Kg	1	100	<2.18	100	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 67598
Prep Batch: 57779

Date Analyzed: 2010-02-17
QC Preparation: 2010-02-16

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.7	mg/Kg	1	100	<2.18	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 222105

QC Batch: 67597
Prep Batch: 57778

Date Analyzed: 2010-02-17
QC Preparation: 2010-02-16

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10100	mg/Kg	100	10000	<218	101	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10300	mg/Kg	100	10000	<218	103	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spike (MS-1) Spiked Sample: 222115

QC Batch: 67598
Prep Batch: 57779

Date Analyzed: 2010-02-17
QC Preparation: 2010-02-16

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11000	mg/Kg	100	10000	910	101	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	11100	mg/Kg	100	10000	910	102	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 67597

Date Analyzed: 2010-02-17

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.7	100	85 - 115	2010-02-17

Standard (CCV-1)

QC Batch: 67597

Date Analyzed: 2010-02-17

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2010-02-17

Standard (ICV-1)

QC Batch: 67598

Date Analyzed: 2010-02-17

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.4	98	85 - 115	2010-02-17

Standard (CCV-1)

QC Batch: 67598

Date Analyzed: 2010-02-17

Analyzed By: AR

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-02-17

Analysis Request of Chain of Custody Record

**1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 688-**



Analysis Request of Chain of Custody Record

ANALYSIS REQUEST
(Circle or Specify Method No.)

PAGE: / OF: /

CLIENT NAME:		PROJECT NAME:		SITE MANAGER:		PRESERVATIVE METHOD	
6064		6064 / Muskogean 16 State		Ike Tovar-2			
PROJECT NO.:		DATE		TIME		NUMBER OF CONTAINERS	
114-LUD0635-4		2/10		1-2		1	
LAB I.D. NUMBER		DATE		TIME		PRESERVATIVE METHOD	
222098		2/10		1-2		HCL	
099		2/10		3-4		HNO3	
100		2/10		5-6		ICE	
101		2/10		7-8		NONE	
102		2/10		10-11			
103		2/10		15-16			
104		2/10		20-21			
105		2/10		25-26			
106		2/10		30-31			
B2		2/10					
RELINQUISHED BY: (Signature)		Date: 2-11-10		Received BY: (Signature)		Date: 2/11/10	
RELINQUISHED BY: (Signature)		Time: 11:00		RECEIVED BY: (Signature)		Time: 16:30	
RELINQUISHED BY: (Signature)		Date: _____		RECEIVED BY: (Signature)		Date: _____	
RELINQUISHED BY: (Signature)		Time: _____		RECEIVED BY: (Signature)		Time: _____	
RECEIVING LABORATORY:		Date: _____		RECEIVED BY: (Signature)		Date: _____	
ADDRESS: _____		Time: _____		RECEIVED BY: (Signature)		Time: _____	
CITY: _____		State: _____		RECEIVED BY: (Signature)		Date: _____	
CONTACT: _____		ZIP: _____		RECEIVED BY: (Signature)		Time: _____	
REMARKS:		DATE: _____		TIME: _____			
SAMPLE CONDITION WHEN RECEIVED:		4.0c intact					

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.