

## SITE INFORMATION

### Report Type: Closure Report

#### General Site Information:

Site:	Geronimo Federal #003					
Company:	COG Operating LLC					
Section, Township and Range	Unit D	Sec. 31	T 19S	R 33E		
Lease Number:	API No. 30-025-31174					
County:	Lea County					
GPS:	32.62201° N			103.70961° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From intersection of 126A & Dry Lake Rd travel EAST on Dry Lake for 5.10 mi, turn SOUTH onto lease road for 2.10 mi, turn SOUTHWEST for 1.0 mi, turn WEST for 0.60 mi, turn SOUTH for 0.50 mi, turn EAST for 0.10 mi to location.					

#### Release Data:

<b>Date Released:</b>	10/17/2016
<b>Type Release:</b>	Oil
<b>Source of Contamination:</b>	Oil Tank
<b>Fluid Released:</b>	38 bbls
<b>Fluids Recovered:</b>	0 bbls

**APPROVED**

**By Olivia Yu at 10:17 am, Jul 06, 2017**

#### Official Communication:

<b>Name:</b>	Robert McNeil	Ike Tavaréz
<b>Company:</b>	COG Operating, LLC	Tetra Tech
<b>Address:</b>	One Concho Center 600 W. Illinois Ave.	4000 N. Big Spring Ste 401
<b>City:</b>	Midland Texas, 79701	Midland, Texas
<b>Phone number:</b>	(432) 686-3023	(432) 682-4559
<b>Fax:</b>	(432) 684-7137	
<b>Email:</b>	<a href="mailto:rmcneil@conchoresources.com">rmcneil@conchoresources.com</a>	<a href="mailto:Ike.Tavaréz@tetratech.com">Ike.Tavaréz@tetratech.com</a>

#### Ranking Criteria

<b>Depth to Groundwater:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
<b>WellHead Protection:</b>	<b>Ranking Score</b>	<b>Site Data</b>
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
<b>Surface Body of Water:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
<b>Total Ranking Score:</b>		<b>0</b>

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

NMOCD grants closure to 1RP-4484.



January 3, 2017

Ms. Kristen Lynch  
Environmental Engineer Specialist  
Oil Conservation Division, District 1  
1625 North French Drive  
Hobbs, New Mexico 88240

**Re: Closure Report for the COG Operating LLC., Geronimo Federal #003, Unit D, Section 31, Township 19 South, Range 33 East, Lea County, New Mexico.**

Ms. Lynch:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from the Geronimo Federal #003, Unit D, Section 31, Township 19 South, Range 33 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.62201°, W 103.70961°. 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 17, 2016, and released approximately thirty eight (38) barrels of oil due to a hole in a tank. None of the fluid was recovered. The release was confined within the facility berm. COG personnel scraped the area in order to remove the impacted soil, which was then hauled for proper disposal. The release area measured approximately 30' x 80'. The initial C-141 form is included in Appendix A.

## **Groundwater**

No water wells were listed within Section 31 on the New Mexico Office of the State Engineer's website. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area is between 200' to 225' below surface. The groundwater data is shown in Appendix B.

## **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-

**Tetra Tech**

4000 North Big Spring, Suite 401, Midland, TX 79705  
Tel 432.682.4559 Fax 432.682.3946 [www.tetrattech.com](http://www.tetrattech.com)



based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

### **Soil Assessment and Analytical Results**

On December 1, 2016, Tetra Tech personnel were onsite to evaluate and sample the release area. Two sample trenches (T-1 and T-2) were installed inside the facility firewalls to a total depth of 3.0' below surface using a backhoe. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The trench locations are shown on Figure 3.

Referring to Table 1, none of the trench samples exceeded the RRAL's for TPH, benzene or total BTEX. The areas of trenches (T-1 and T-2) at 0-1' showed total TPH concentrations of <20.0 mg/kg and 2,603 mg/kg, respectively. The total BTEX concentrations at 0-1' in these areas were <0.300 mg/kg (T-1) and 24.9 mg/kg (T-2) and benzene concentrations below the laboratory reporting limit. Additionally, the areas of trenches (T-1 and T-2) did not show a significant chloride impact to the area with a concentration high of 48.0 mg/kg.

### **Conclusion**

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

Respectfully submitted,  
TETRA TECH

A handwritten signature in blue ink, appearing to read 'Ike Tavarez'.

Ike Tavarez, PG  
Senior Project Manager

A handwritten signature in blue ink, appearing to read 'Clair Gonzales'.

Clair Gonzales,  
Geologist I

cc: Robert McNeill – COG  
Dakota Neel – COG  
Shelly Tucker - BLM

## Figures

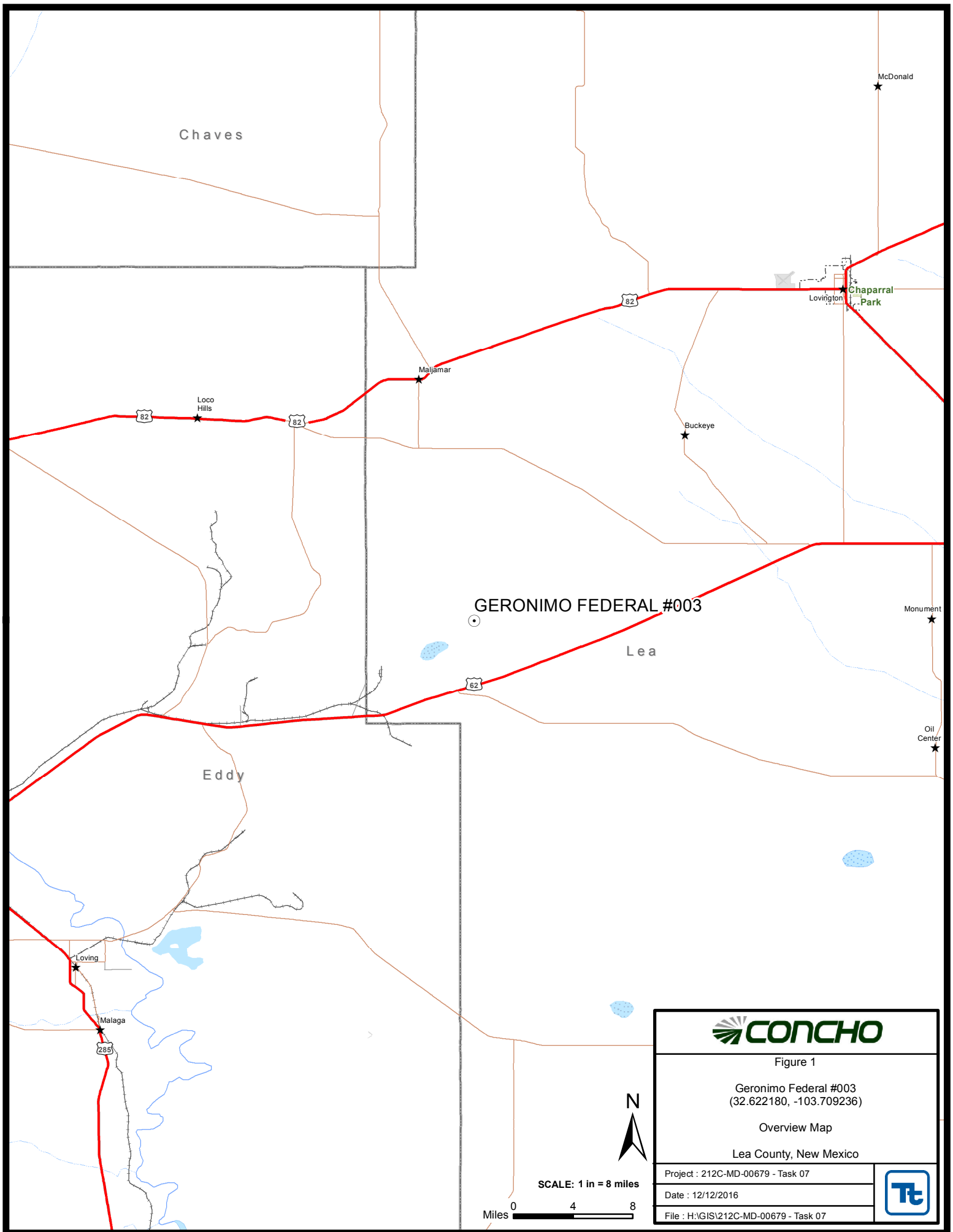


Figure 1

Geronimo Federal #003  
(32.622180, -103.709236)

Overview Map

Lea County, New Mexico

Project : 212C-MD-00679 - Task 07

Date : 12/12/2016

File : H:\GIS\212C-MD-00679 - Task 07







Figure 2

Geronimo Federal #003  
(32.622180, -103.709236)

Topo Map 1:24,000

Lea County, New Mexico

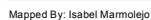
Project : 212C-MD-00679 - Task 07

Date : 12/12/2016

File : H:\GIS\212C-MD-00679 - Task 07







## Tables



**Table 1**  
**COG Operating LLC.**  
**Geronimo Federal #3**  
**Lea County, New Mexico**

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
T-1	12/1/2016	0-1	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	32.0
	"	2	X		-	-	-	-	-	-	-	-	<16.0
	"	3	X		-	-	-	-	-	-	-	-	<16.0
T-2	12/1/2016	0-1	X		423	2,180	2,600	<0.200	3.02	4.38	17.5	24.9	48.0
	"	2	X		-	-	-	-	-	-	-	-	48.0
	"	3	X		-	-	-	-	-	-	-	-	<16.0

## Appendix A

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action**

**OPERATOR**

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: GERONIMO FEDERAL #003	Facility Type: Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-31174
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**LOCATION OF RELEASE**

Unit Letter D	Section 31	Township 19S	Range 33E	Feet from the 660	North/South Line North	Feet from the 585	East/West Line West	County Lea
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32.6221809,-103.709236

**NATURE OF RELEASE**

Type of Release: Oil	Volume of Release: 38 bbls of Oil	Volume Recovered: 0 bbls of Oil
Source of Release: Oil Tank	Date and Hour of Occurrence: 10/17/2016 unknown	Date and Hour of Discovery: 10/17/2016 11:00 AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Kristen Lynch NMOCD/ Shelly Tucker BLM	
By Whom? Dakota Neel	Date and Hour: 10/19/2016 3:49 PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*


Describe Cause of Problem and Remedial Action Taken.\*

The release was caused by a hole in the oil tank. The tank has been taken out of production and the valves going to it have been closed. The contaminated gravel has been removed.

Describe Area Affected and Cleanup Action Taken.\*

This release was contained within bermed area of the facility. The contaminated soil within the berm has been removed and replaced with fresh material. Concho will have the spill site sampled for any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

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

Signature: 	<b>OIL CONSERVATION DIVISION</b>		
Printed Name: Dakota Neel	Approved by Environmental Specialist:		
Title: Environmental Coordinator	Approval Date:	Expiration Date:	
E-mail Address: dneel2@concho.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: October 25, 2016	Phone: 575-748-6933		

\* Attach Additional Sheets If Necessary

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 <b>COG Operating LLC</b>	Contact <b>Robert McNeil</b>
Address <b>600 West Illinois Ave., Midland, TX 79701</b>	Telephone No. <b>(432) 683-7443</b>
Facility Name <b>Geronimo Federal #003</b>	Facility Type <b>Battery</b>

Surface Owner: Federal	Mineral Owner	API No. 30-025-31174
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### LOCATION OF RELEASE

Unit Letter D	Section 31	Township 19S	Range 33E	Feet from the 660	North/South Line North	Feet from the 585	East/West Line West	County Lea
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Latitude N 32.62201° Longitude W 103.70961 °

### NATURE OF RELEASE

Type of Release: Oil	Volume of Release 38 bbls oil	Volume Recovered 0 bbls oil
Source of Release: Oil Tank	Date and Hour of Occurrence 10/17/16 unknown	Date and Hour of Discovery 10/17/16 11:00 am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? <b>Kristen Lynch NMOCD / Shelly Tucker BLM</b>	
By Whom? <b>Dakota Neel</b>	Date and Hour 10/19/16 3:49 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.*  N/A		

**APPROVED**

**By Olivia Yu at 10:18 am, Jul 06, 2017**



Describe Cause of Problem and Remedial Action Taken.\*

The release was caused by a hole in the oil tank. The tank has been taken out of production. The release was confined within the bermed area. The impacted area was scraped to remove the contaminated material, which was then hauled for proper disposal.

Describe Area Affected and Cleanup Action Taken.\*

Tetra Tech inspected site and collected samples to define spills extent. None of the samples collected showed impact above the RRAL's. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature: 		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Ike Tavarez (Agent for COG)		Approved by 	
Title: Project Manager		Approval Date: <b>7/6/2017</b>	Expiration Date: <b>xx/xx/xxxx</b>
E-mail Address: Ike.Tavarez@TetraTech.com		Conditions of Approval:	
Date: 12/15/16 Phone: (432) 682-4559		Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary

**1RP-4484**



## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - Geronimo Federal #3**  
**Lea County, New Mexico**

18 South			32 East		
6	5	4	65	3	2
7	460	8		9	10
82		17		16	15
18			84		14
19		20		21	22
	164			22	23
30	29	28		27	26
31	32	33		34	35
				34	36
				117	

18 South			33 East		
6	5	4		3	2
7		8	100	9	10
18		17		16	15
			62	46	140
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				177	

18 South			34 East		
6	5	4		3	2
130	105			87	102
7		8		9	10
83	148			148	110
18		17		16	15
				15	14
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				118	

19 South			32 East		
6	5	4		3	2
7		8		9	10
			365		13
18		17		16	15
					13
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				250	

19 South			33 East		
6	5	4		3	2
7		8		9	10
18		17		16	15
					14
19		20		21	22
					23
30	29	28	130	27	26
					25
31	32	33		34	35
				35	36
				85	

19 South			34 East		
6	5	4		3	2
244					100
7		8		9	10
				29	
18		17		16	15
					14
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				28	

20 South			32 East		
6	5	4		3	2
7		8		9	10
					11
18		17		16	15
					14
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				46	

20 South			33 East		
6	5	4		3	2
	325				
7		8		9	10
					11
18		17		16	15
					14
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				278	

20 South			34 East		
6	5	4		3	2
7		8		9	10
					11
18		17		16	15
					14
19		20		21	22
					23
30	29	28		27	26
31	32	33		34	35
				35	36
				82	

**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

**123** Tetra Tech installed temporary wells and field water level

**143** NMOCD Groundwater map well location



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water Column	Water
<a href="#">CP 00658</a>		LE		2	2	4	26	19S	33E	628857	3611125*	100		
<a href="#">CP 00805</a>		LE			3	1	18	19S	33E	621057	3614563*	450		
<a href="#">CP 00809</a>		LE		2	1	05		19S	33E	623048	3618206*	300		
<a href="#">CP 00810</a>		LE			3	3	08	19S	33E	622675	3615385*	110		
<a href="#">CP 00883</a>		LE			4	3	30	19S	33E	621517	3610545*	3305		
<a href="#">L 07023</a>	L	LE		2	3	3	32	19S	33E	622840	3609047*	262	185	77

Average Depth to Water: **185 feet**

Minimum Depth: **185 feet**

Maximum Depth: **185 feet**

Record Count: 6

PLSS Search:

Township: 19S

Range: 33E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

## Appendix C



December 06, 2016

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: COG / GERONIMO FEDERAL #3

Enclosed are the results of analyses for samples received by the laboratory on 12/01/16 14:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946Reported:  
06-Dec-16 16:19

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T-1 0-1	H602692-01	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-1 2	H602692-02	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-1 3	H602692-03	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 0-1	H602692-04	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 2	H602692-05	Soil	01-Dec-16 00:00	01-Dec-16 14:15
T-2 3	H602692-06	Soil	01-Dec-16 00:00	01-Dec-16 14:15

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705

Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946

Reported:  
06-Dec-16 16:19

### T-1 0-1 H602692-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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### Cardinal Laboratories

#### Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6120501	MS	05-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 118 % 73.6-140 6120501 MS 05-Dec-16 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6120204	MS	03-Dec-16	8015B	

Surrogate: 1-Chlorooctane 74.6 % 35-147 6120204 MS 03-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 70.9 % 28-171 6120204 MS 03-Dec-16 8015B

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946Reported:  
06-Dec-16 16:19**T-1 2****H602692-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946Reported:  
06-Dec-16 16:19**T-1 3****H602692-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705

Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946

Reported:  
06-Dec-16 16:19

### T-2 0-1 H602692-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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### Cardinal Laboratories

#### Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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#### Volatile Organic Compounds by EPA Method 8021

S-04

Benzene*	<0.200		0.200	mg/kg	200	6120501	MS	05-Dec-16	8021B	
Toluene*	3.02		0.200	mg/kg	200	6120501	MS	05-Dec-16	8021B	
Ethylbenzene*	4.38		0.200	mg/kg	200	6120501	MS	05-Dec-16	8021B	
Total Xylenes*	17.5		0.600	mg/kg	200	6120501	MS	05-Dec-16	8021B	
Total BTEX	24.9		1.20	mg/kg	200	6120501	MS	05-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			152 %		73.6-140	6120501	MS	05-Dec-16	8021B	
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#### Petroleum Hydrocarbons by GC FID

GRO C6-C10	423		50.0	mg/kg	5	6120204	MS	03-Dec-16	8015B	
DRO >C10-C28	2180		50.0	mg/kg	5	6120204	MS	03-Dec-16	8015B	

Surrogate: 1-Chlorooctane			93.3 %		35-147	6120204	MS	03-Dec-16	8015B	
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Surrogate: 1-Chlorooctadecane			73.2 %		28-171	6120204	MS	03-Dec-16	8015B	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946Reported:  
06-Dec-16 16:19**T-2 2****H602692-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946Reported:  
06-Dec-16 16:19**T-2 3****H602692-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	<16.0		16.0	mg/kg	4	6120504	AC	05-Dec-16	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 TETRA TECH  
 1910 N. BIG SPRING STREET  
 MIDLAND TX, 79705

 Project: COG / GERONIMO FEDERAL #3  
 Project Number: 212C-MD-00679.07  
 Project Manager: IKE TAVAREZ  
 Fax To: (432) 682-3946

 Reported:  
 06-Dec-16 16:19

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 6120504 - 1:4 DI Water</b>									
<b>Blank (6120504-BLK1)</b>					Prepared & Analyzed: 05-Dec-16				
Chloride	ND	16.0	mg/kg						
<b>LCS (6120504-BS1)</b>					Prepared & Analyzed: 05-Dec-16				
Chloride	416	16.0	mg/kg	400	104	80-120			
<b>LCS Dup (6120504-BSD1)</b>					Prepared & Analyzed: 05-Dec-16				
Chloride	400	16.0	mg/kg	400	100	80-120	3.92	20	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705

Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946

Reported:  
06-Dec-16 16:19

**Volatile Organic Compounds by EPA Method 8021 - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 6120501 - Volatiles**
**Blank (6120501-BLK1)**

Prepared &amp; Analyzed: 02-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0575		mg/kg	0.0500		115	73.6-140			

**LCS (6120501-BS1)**

Prepared &amp; Analyzed: 02-Dec-16

Benzene	2.02	0.050	mg/kg	2.00		101	82.6-122			
Toluene	2.06	0.050	mg/kg	2.00		103	72.9-122			
Ethylbenzene	2.01	0.050	mg/kg	2.00		101	65.4-131			
Total Xylenes	6.09	0.150	mg/kg	6.00		102	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0580		mg/kg	0.0500		116	73.6-140			

**LCS Dup (6120501-BSD1)**

Prepared &amp; Analyzed: 02-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122	3.18	8.23	
Toluene	2.13	0.050	mg/kg	2.00		106	72.9-122	3.09	8.71	
Ethylbenzene	2.07	0.050	mg/kg	2.00		104	65.4-131	3.08	9.46	
Total Xylenes	6.26	0.150	mg/kg	6.00		104	73.8-125	2.75	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0578		mg/kg	0.0500		116	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

TETRA TECH  
1910 N. BIG SPRING STREET  
MIDLAND TX, 79705

Project: COG / GERONIMO FEDERAL #3  
Project Number: 212C-MD-00679.07  
Project Manager: IKE TAVAREZ  
Fax To: (432) 682-3946

Reported:  
06-Dec-16 16:19

### Petroleum Hydrocarbons by GC FID - Quality Control

#### Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch 6120204 - General Prep - Organics

##### Blank (6120204-BLK1)

Prepared &amp; Analyzed: 02-Dec-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	39.0		mg/kg	50.0		78.1	35-147			
Surrogate: 1-Chlorooctadecane	39.4		mg/kg	50.0		78.7	28-171			

##### LCS (6120204-BS1)

Prepared &amp; Analyzed: 02-Dec-16

GRO C6-C10	182	10.0	mg/kg	200		90.9	76.7-115			
DRO >C10-C28	192	10.0	mg/kg	200		96.0	78.3-122			
Total TPH C6-C28	374	10.0	mg/kg	400		93.5	79.8-117			
Surrogate: 1-Chlorooctane	39.1		mg/kg	50.0		78.3	35-147			
Surrogate: 1-Chlorooctadecane	39.8		mg/kg	50.0		79.7	28-171			

##### LCS Dup (6120204-BSD1)

Prepared &amp; Analyzed: 02-Dec-16

GRO C6-C10	185	10.0	mg/kg	200		92.6	76.7-115	1.79	9.42	
DRO >C10-C28	197	10.0	mg/kg	200		98.4	78.3-122	2.43	13.2	
Total TPH C6-C28	382	10.0	mg/kg	400		95.5	79.8-117	2.12	10.7	
Surrogate: 1-Chlorooctane	40.0		mg/kg	50.0		80.0	35-147			
Surrogate: 1-Chlorooctadecane	40.8		mg/kg	50.0		81.6	28-171			

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

1910 N. Big Spring St.  
Midland, Texas 79705

(702) 882-4559 • Fax (432) 682-3946

006

## SALE MANAGER

PROJECT NAME:

PROJECT NAME:

Examination Federal #3

MATRI
COMP.
GRAB

### SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS	
----------------------	--

**FILTERED (Y/N)**

HCL

 $\text{HNO}_3$ 

ICE

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NONE

BTEX 8021B

TPH 8015 MOD. TX1005 /E:1.1.005

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg ...

TCLP Metals Ag As Ba Cd Cr Cu Pb Hg Se

### CLP Volatiles

CLP Semi Volatiles

RCI

C.MS Vol. 8240/8260/634

C.MS Semi. Vol. 8270/625

CB's 8080/608

est. 808/608

chloride

Gamma Spec

Alpha Beta (Air)

.M (Asbestos)

Major Anions/Cations, pH, TDS

OF:

ANALYSIS REQUEST  
(Circle or Specify Method No.)

Page 13 of 13

Date: _____	
Time: _____	
RAIRBILL #: _____	
OTHER: _____	
Results by: _____	
RUSH Charges	

**RUSH Charges**

9

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