1R - 2498

REPORTS

DATE:

12-3-12

Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECEIPT NO. 7008 1140 0001 3073 0582

December 3rd, 2012

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **CAP Report for Groundwater**
Apache Corporation
Walter Lynch Tank Battery (1R-2498): UL/F sec. 1 T22S R37E

Mr. Hansen:

Apache Corporation, Inc. (Apache) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

Background and Previous Work
This site is located approximately 2.5 miles south-east of Eunice, New Mexico at UL/F sec. 1 T22S R37E as shown on the Site Location Map (Figure 1). Monitor wells at the site indicate groundwater will be encountered at 54 +/- feet.

On August 26th, 2009, four soil bores were advanced at the site. Each soil bore was sampled every five feet and all samples were taken to a commercial laboratory for field test confirmation. SB-1 was drilled to a depth of 65 ft bgs and had laboratory chloride readings ranging from a high of 1,424 mg/kg at 35 ft bgs to a low of 96 mg/kg at 30 ft bgs. SB-2 was drilled to 65 ft bgs and had laboratory chloride readings ranging from a high of 1,860 mg/kg at 40 ft bgs to a low of 96 mg/kg at 55 ft bgs. SB-3 was drilled to a depth of 56 ft bgs and had laboratory chloride readings ranging from a high of 1,230 mg/kg at 25 ft bgs to a low of non-detect at 5 ft bgs. Finally, SB-4 was drilled to 56 ft bgs and had laboratory chloride readings ranging from a high of 672 mg/kg at 55 ft bgs to a low of 16 mg/kg at 5 ft bgs. BTEX, GRO, and DRO were all non-detect throughout all the bores and at all depths. All four soil bores were plugged and abandoned (P&A) on August 27th, 2009 in conformance with NMOCD Rules and Regulations.

On December 8-9th, 2009, three monitor wells were installed at the site. Two soil samples from each monitor well installation were sent to a commercial laboratory for verification of field numbers. From MW-1, samples from 10 ft bgs and 60 ft bgs were taken. The laboratory chloride reading from the 10 ft bgs sample was non-detect and from 60 ft bgs sample was 64 mg/kg. From MW-2, the 10 ft bgs and 60 ft bgs samples were taken for laboratory analysis. The chloride reading for 10 ft bgs sample was non-detect and the reading from 60 ft bgs sample was 96 mg/kg. From MW-3, the 10 ft bgs and 57 ft bgs

samples were taken for laboratory analysis. The chloride reading for the 10 ft bgs sample was 16 mg/kg and the chloride reading for 57 ft bgs sample was 96 mg/kg. BTEX, GRO, and DRO were non-detect in the soil samples for all the wells.

On January 20th, 2010, Apache submitted a Notice of Groundwater Impact to the NMOCD District 1 office.

On February 10th, 2010, Apache submitted a Remediation Proposal to the NMOCD District 1 office. In that report, Apache agreed that it would excavate the entire area to 4 ft bgs. The sidewalls would be excavated to whatever distance necessary to achieve chloride numbers at or below 250 mg/kg. Once the site was excavated, a 20 mil-polyethylene liner would be installed along the bottom and up the sidewalls to inhibit chloride migration through the vadose zone to groundwater. The site would then be backfilled to bring the excavation to surface level and seeded. The remediation proposal was approved by NMOCD and the soil work was subsequently completed.

On September 2nd, 2011, MW-2 was plugged and abandoned per NMOCD requirements with a 1 – 3% bentonite slurry and a 3 foot concrete cap. It was replaced with a 4 inch recovery well (RW-1) located approximately 7 ft northwest of the former MW-2.

The Walter Lynch Tank Battery site is located within a regionally impacted groundwater area. The up gradient monitor well (MW-1) shows chloride impacted water (570 mg/L) coming onto the site. However, it is apparent that although the up gradient groundwater is impaired before it moves across the site, it has also been affected by prior downward migration of residual soil chlorides from the vadose zone. The down gradient well (RW-1) showed evidence of these prior residual soil chlorides from the site with a laboratory chloride reading of 1,220 mg/L (Figure 2 and Appendix A). However, since Apache installed a 20 mil-polyethylene liner, the subsequent effects to groundwater from the vadose zone will have become negligible. The liner will have virtually stopped the downward migration of water and thus the downward movement of chlorides. Therefore, only the chloride mass in the groundwater has been taken into account.

As part of the Corrective Action Plan submitted to NMOCD of October 11th, 2011 and approved on October 18th, 2011, Apache proposed to remove a total chloride mass of 1,256 kg. Groundwater source removal at the site began on April 9th, 2012 and continued until October 25th, 2012, when the pump was shut in for winter. During the 2012 season, a total of 2,778 barrels of water were removed from the site. Given the most recent chloride concentration of 1,220 mg/L, this equates to 538 kgs of chloride removed from the site. As weather conditions have change and become more intemperate, Apache shut in the groundwater removal system at the site until the spring thaw. Once the weather is again conducive for pumping, Apache will begin the groundwater source removal for the year 2013.

Pumping activities will continue at the site until the calculated amount of chlorides is removed or until a significant reduction in chloride concentrations in the groundwater is achieved, whichever occurs later.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or Natalie Gladden (Apache) (575) 390-4186 if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

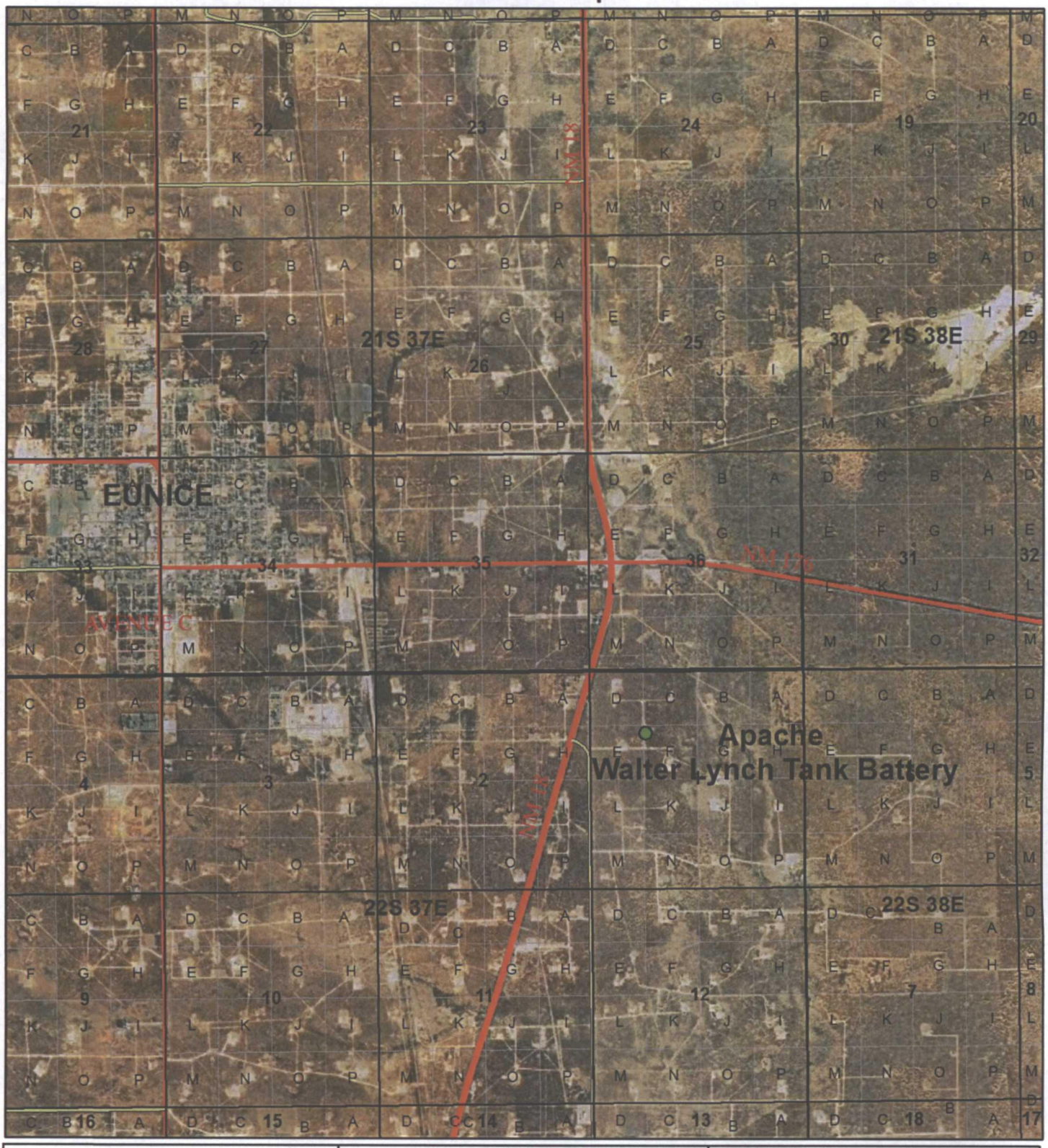
Attachments

Figure 1 – Site Location Map
Figure 2 – MW Sampling Data Map
Appendix A – MW Sampling Data Lab

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Site Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Apache Walter Lynch Tank Battery

Legals: UL/F sec. 1 T22S R37E

NMOCD Case #: 1R-2498

Figure 1

N W E S

0 0.25 0.5 1 Miles

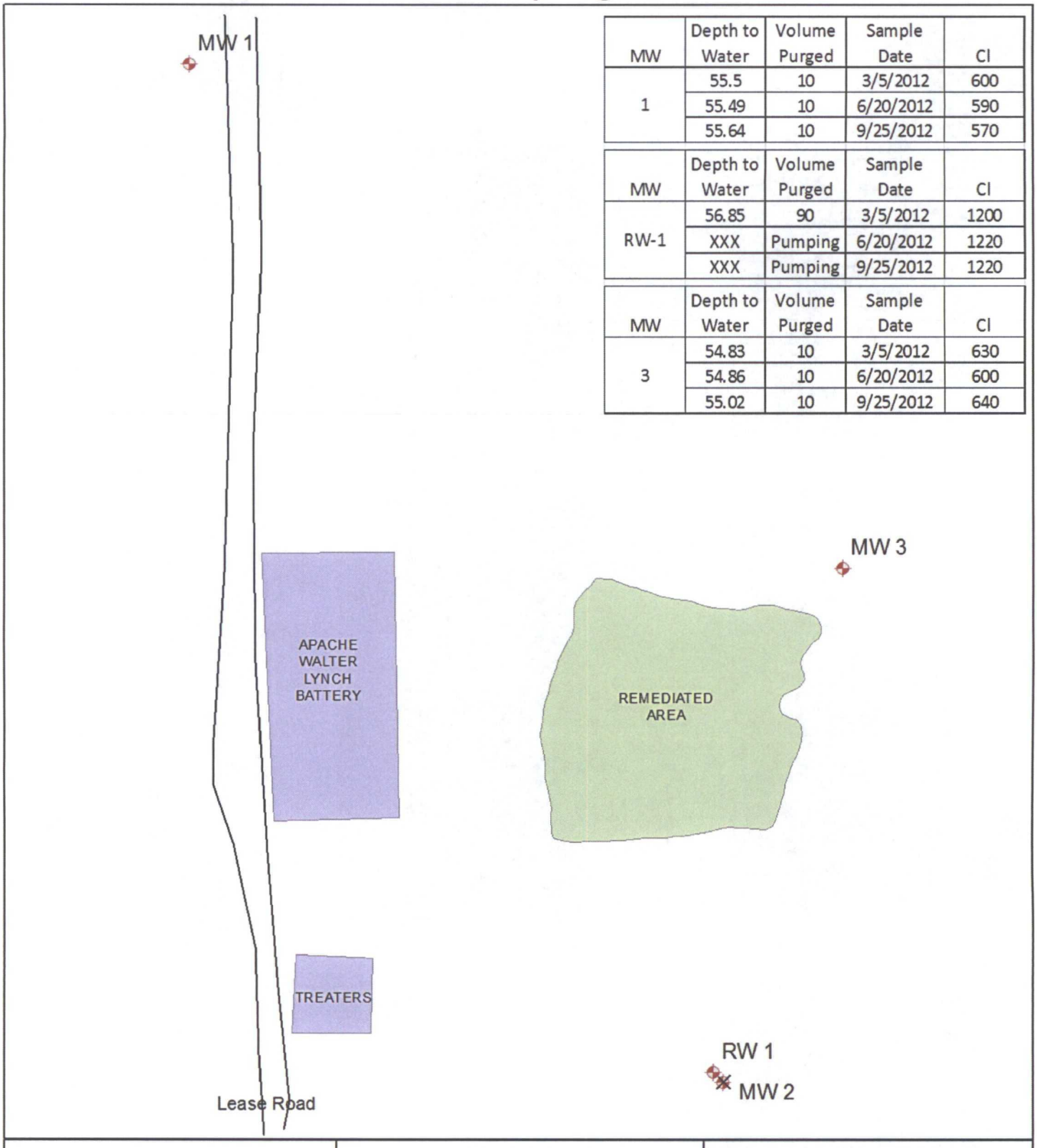
Drawing date: 2-9-10
Drafted by: L. Weinheimer

MW Sampling Data

MW	Depth to Water	Volume Purged	Sample Date	Cl
1	55.5	10	3/5/2012	600
	55.49	10	6/20/2012	590
	55.64	10	9/25/2012	570

MW	Depth to Water	Volume Purged	Sample Date	Cl
RW-1	56.85	90	3/5/2012	1200
	XXX	Pumping	6/20/2012	1220
	XXX	Pumping	9/25/2012	1220

MW	Depth to Water	Volume Purged	Sample Date	Cl
3	54.83	10	3/5/2012	630
	54.86	10	6/20/2012	600
	55.02	10	9/25/2012	640



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

APACHE WALTER LYNCH TANK BATTERY AREA

Legals: UL's C,D,E,F sec. 1
T-22-S R-37-E

NMOCD Case #: 1R-2498

Figure 2

N W E S

0 20 40 80
Feet

Drawing date: 11/21/12
Drafted by: L. Weinheimer

Appendix A

MW Sampling Data Lab

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 02, 2012

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: APACHE WALTER LYNCH TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 09/28/12 15:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	09/28/2012	Sampling Date:	09/25/2012
Reported:	10/02/2012	Sampling Type:	Water
Project Name:	APACHE WALTER LYNCH TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Amanda Ponce
Project Location:	T22S-R37E-SEC1 UL/F-LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H202376-01)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**570**	4.00	10/02/2012	ND	100	100	100	0.00	

Sample ID: MONITOR WELL #3 (H202376-02)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**640**	4.00	10/02/2012	ND	100	100	100	0.00	

Sample ID: RECOVERY WELL #1 (H202376-03)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**1220**	4.00	10/02/2012	ND	100	100	100	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

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

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: Apache	BILL TO Company: Apache — PO#
Project Manager: Hack Conder, Rice Env Consulting Safety	Address: (Street, City, Zip)
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: Fax#:
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Apache Walter Lynch Tank Battery
Project Location: T22S-R37E-Sec1 UL/F ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2012)	TIME
H30237-1	Monitor Well #1	G	1	X								1		9-25	8:15
2	Monitor Well #3	G	1	X								1		9-25	9:15
3	Recovery Well #1	G	1	X								1		9-25	9:25

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
																				X	
																				X	
																				X	

Relinquished by: Rozanne Johnson	Date: 9-28-2012	Time: 15:02	Received by:
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) Date: 9/28/12 Time: 15:03
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / No; Intact: Yes / No		CHECKED BY: (Initials)

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

REMARKS:

Email Results to: hconder@riceswd.com
kjones@riceswd.com
lweinheimer@rice-ecs.com
rozanne@valornet.com