1R - 2627

REPORTS

DATE:

7-30-13

Rice Environmental Consulting & Safety
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

RECEIVED OCD
2013 AUG -1 P 3:00

July 30th, 2013

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
NMGSAU 1631 (1R-2627): UL/J sec. 32 T19S R37E

Mr. Hansen:

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

Background and Previous Work

The site is located approximately 1 mile southwest of Monument at UL/J, Sec. 32, T19S, R37E in Lea County, NM (Figure 1). A leak was discovered at the site on September 28th, 2010. An unknown amount of produced water was released from the injection line collar. According to monitor well sampling data at the site, groundwater is located at approximately 14 ft below ground surface (bgs).

Excavation of the site began on September 28th, 2010. The site was excavated to 38 ft x 96 ft x 18 ft deep to remove the saturated soils to a NMOCD approved disposal facility. The depth of saturated soils reached 14 ft 8 inches bgs at which point the capillary fringe of the aquifer was encountered. On October 7th, 2010, three (3) soil bores were drilled at the site to determine the extent of impact. RECS personnel field tested the soil for chloride and tested for hydrocarbons using a photo-ionization detector (PID). Representative samples were submitted to a commercial laboratory for chloride and TPH analyses. The site was backfilled to 4.5 ft bgs, where a 20-mil, reinforced liner was installed with 6 inches of blow sand placed below and above the liner for padding.

On October 12th, 2010, the initial C-141 was submitted to NMOCD-District 1 and was approved. Subsequently, the remaining excavation at the site was backfilled with clean, imported soil, and the site was contoured to the surrounding landscape. On October 16th, 2010, amendments were incorporated into the soil surface, and the site was seeded.

On October 25th, 2010, MW-1 was installed 45 ft southeast of the line break. On December 21st, 2010, MW-2 was installed 56 ft NNW of the line break, and on April 13th, 2011, MW-3 was installed 199 ft SE of the line break (Figure 2). The monitor wells have been sampled quarterly since their installation (Appendix A).

On October 11th, 2011, a Corrective Action Plan (CAP) was submitted to NMOCD. The CAP was approved by NMOCD on October 17th, 2011. RECS recommended that a three month groundwater source removal and test pumping program be conducted to determine if groundwater remediation could be achieved quickly. The pumping program would also assist in the evaluation of groundwater restoration methods. Water retrieved from the existing 4-inch monitoring well (MW-1) would be used for production operations. Based on the program results, a remedy for the site would be determined.

On August 14th, 2012, a Corrective Action Plan for Groundwater was submitted to NMOCD. The CAP was approved by NMOCD on August 15th, 2012. RECS detailed the groundwater and chloride extraction totals of the test pumping program. RECS recommended that, as a groundwater remedy, the test pumping program remain in use until groundwater reaches near-background levels of chloride.

Since the groundwater source removal and pumping program began on April 10th, 2012, a total of 3,965 barrels of groundwater have been removed from the site. Given the most recent laboratory chloride readings 352 mg/L in MW-1, the volume of groundwater removal indicates that 221 kg of chloride have been removed. The pumping program will remain in operation until the winter months arrived. In order to maintain integrity of the system and avoid possible utility and/or environmental damages, the pumping system at the site will be shut in throughout the winter months and will resume in the spring of 2014. As stated in the CAP for Groundwater, approved in August 2012, Apache will continue the pumping program until the chloride concentrations decrease to near-background levels.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

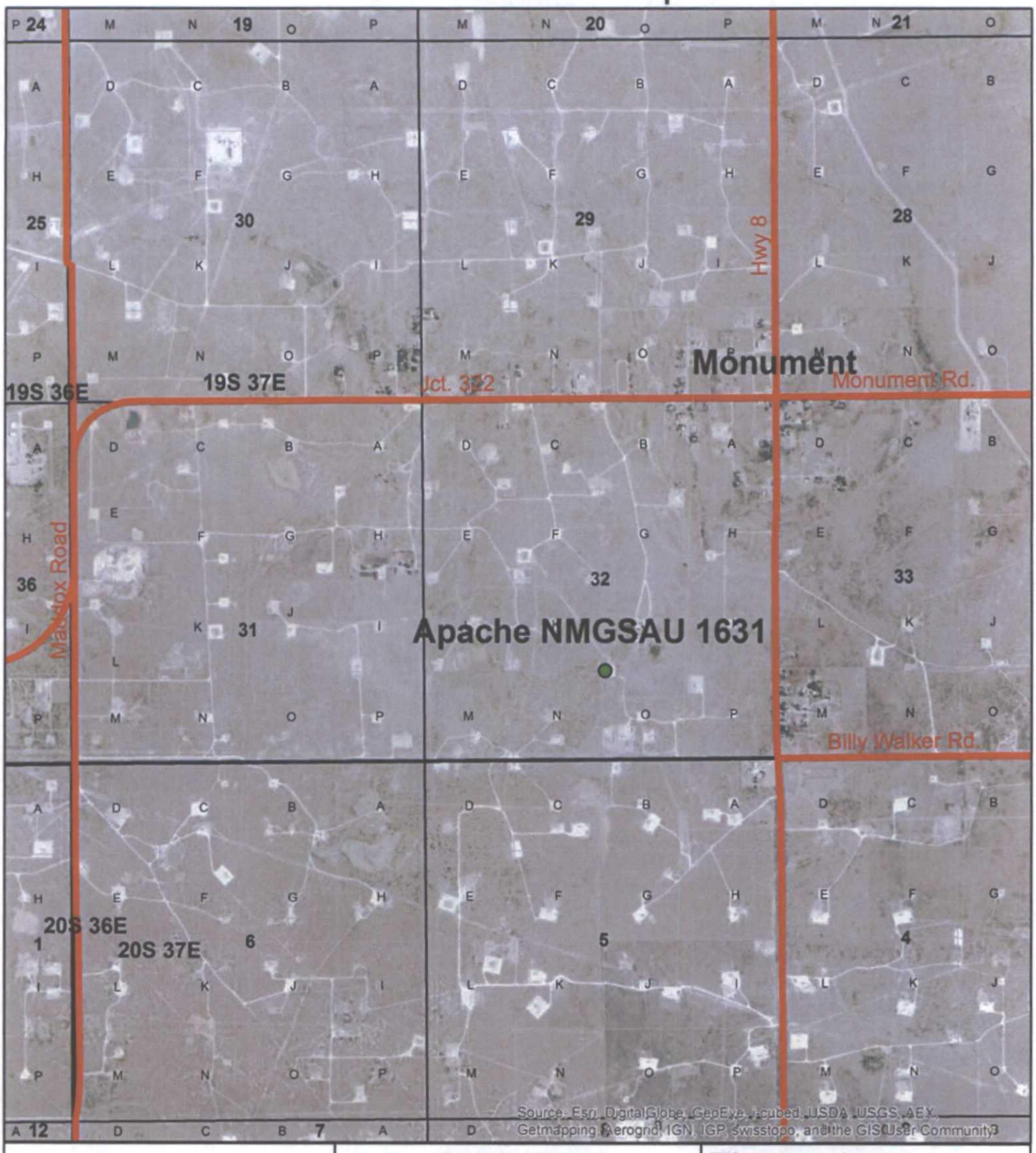
Attachments:

- Figure 1 – Site Map
- Figure 2 – Monitor Well Sampling Data
- Appendix A – Laboratory Analyses

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Site Location Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

APACHE NMGSAU 1631

LEGALS:UL/J sec. 32
T19S R37E

Case #: 1R-2627

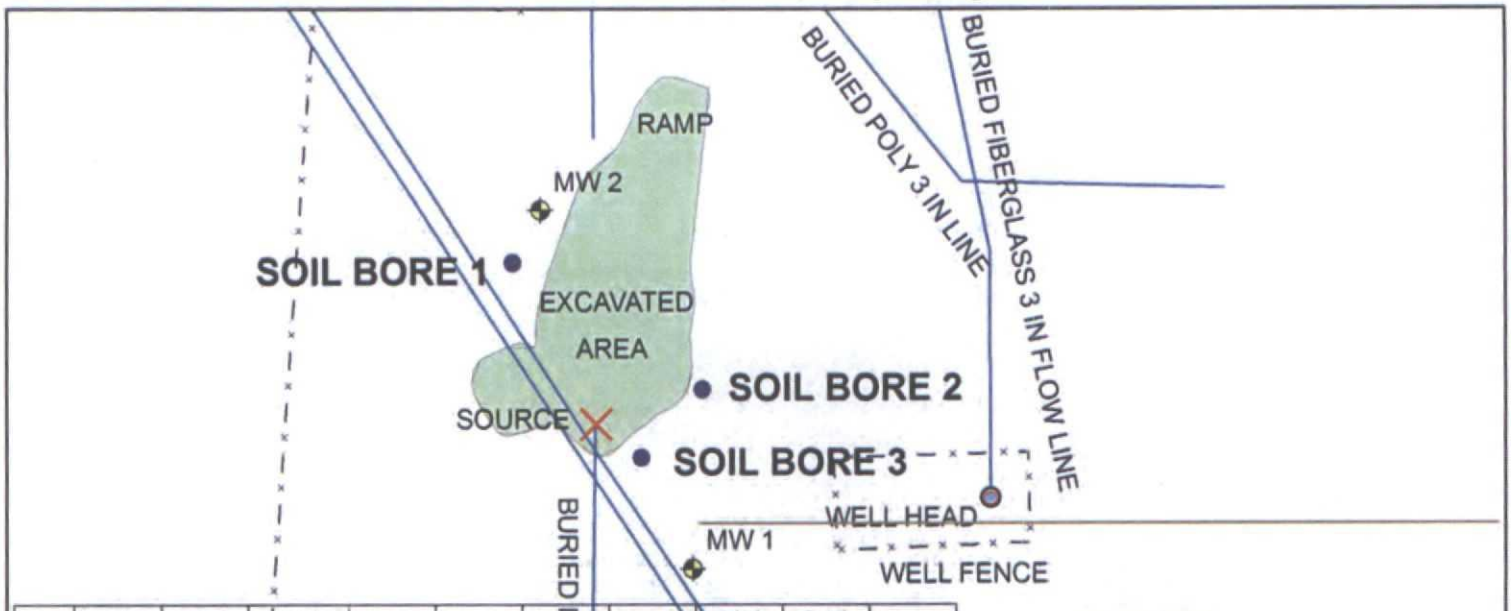
Figure 1

N W E S

0 0.25 0.5 Miles

Drawing date: 7/19/13
Drafted by: L. Weinheimer

Monitor Well Sampling Data



MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
1	13.84	50.35	11/3/2010	6400	12700	0.015	0.001	0.004	0.01	1120
	13.83	50.35	1/6/2011	3250	6600	0.007	<0.001	0.002	0.006	697
	13.86	50.36	5/19/2011	2420	4770	<0.001	<0.001	<0.001	<0.003	531
	13.81	50.35	9/1/2011	860	2060	<0.001	<0.001	<0.001	<0.003	232
	13.99	50.35	11/18/2011	1480	3150	<0.001	<0.001	<0.001	<0.003	344
	13.87	50.35	3/6/2012	1280	2730	<0.001	<0.001	<0.001	<0.003	363
	XXX	50.35	6/20/2012	540	1420	<0.001	<0.001	<0.001	<0.003	116
	XXX	50.35	9/25/2012	970	2190	<0.001	<0.001	<0.001	<0.003	190
	XXX	50.35	12/13/2012	1040	1970	<0.001	<0.001	<0.001	<0.003	223
	XXX	50.35	3/27/2013	480	1040	<0.001	<0.001	<0.001	<0.003	84
	XXX	50.35	6/26/2013	352	1010	<0.001	<0.001	<0.001	<0.003	81

XXX: Not gauged due to pump in well.

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
2	13.47	61.15	1/6/2011	320	878	<0.001	<0.001	<0.001	<0.003	81.1
	13.52	61.15	5/19/2011	296	907	<0.001	<0.001	<0.001	<0.003	67.1
	13.68	61.15	9/1/2011	284	785	<0.001	<0.001	<0.001	<0.003	75.7
	13.69	61.15	11/18/2011	308	860	<0.001	<0.001	<0.001	<0.003	64.1
	13.58	61.15	3/6/2012	280	907	<0.001	<0.001	<0.001	<0.003	68.8
	13.78	61.15	6/20/2012	280	920	<0.001	<0.001	<0.001	<0.003	64
	13.81	61.15	9/25/2012	268	853	<0.001	<0.001	<0.001	<0.003	63.8
	13.64	61.15	12/13/2012	280	847	<0.001	<0.001	<0.001	<0.003	57.7
	13.72	61.15	3/27/2013	264	854	<0.001	<0.001	<0.001	<0.003	67.8
	13.88	61.15	6/26/2013	268	868	<0.001	<0.001	<0.001	<0.003	69.7

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
3	18.69	30.05	5/19/2011	300	903	<0.001	<0.001	<0.001	<0.003	69.6
	18.7	30.05	9/1/2011	308	845	<0.001	<0.001	<0.001	<0.003	84.8
	17.93	30.05	11/18/2011	380	954	<0.001	<0.001	<0.001	<0.003	78.6
	18.06	30.05	3/6/2012	324	989	<0.001	<0.001	<0.001	<0.003	77.3
	18.43	30.05	6/20/2012	296	922	<0.001	<0.001	<0.001	<0.003	70
	18.58	30.05	9/25/2012	288	938	<0.001	<0.001	<0.001	<0.003	70.5
	18.26	30.05	12/13/2012	288	818	<0.001	<0.001	<0.001	<0.003	77
	18.26	30.05	3/27/2013	292	881	<0.001	<0.001	<0.001	<0.003	77.3
	18.57	30.05	6/26/2013	280	915	<0.001	<0.001	<0.001	<0.003	75.4

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

NMGSAU 1631

Legals: UL/J sec. 32
T19S R37E

Case #: 1R-2627

Figure 2

N W E S

0 35 70

Feet

Projection: NAD 83/STATE PLANE
Drawing date: 7/19/13
Drafted by: L. Weinheimer

Appendix A

Laboratory Analyses

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

CARDINAL Laboratories

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

July 05, 2013

HACK CONDER

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: APACHE NMGSAU 1631-ACCIDENTAL DISCHARGE

Enclosed are the results of analyses for samples received by the laboratory on 06/27/13 8:25.

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
HACK CONDER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	06/27/2013	Sampling Date:	06/26/2013
Reported:	07/05/2013	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H301519-01)

BTEX 8260B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/03/2013	ND	0.054	108	0.0500	0.922	
Toluene*	<0.001	0.001	07/03/2013	ND	0.050	99.6	0.0500	1.95	
Ethylbenzene*	<0.001	0.001	07/03/2013	ND	0.049	98.7	0.0500	3.68	
Total Xylenes*	<0.003	0.003	07/03/2013	ND	0.153	102	0.150	1.74	

Surrogate: Dibromofluoromethane	*97.7 %*	*59.8-161*
Surrogate: Toluene-d8	*97.2 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*106 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**352**	4.00	06/28/2013	ND	108	108	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**81.0**	25.0	07/05/2013	ND	21.0	105	20.0	7.55	

TDS 160.1 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**1010**	5.00	06/28/2013	ND	244	102	240	0.157	

Cardinal Laboratories

*=Accredited Analyte

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
HACK CONDER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	06/27/2013	Sampling Date:	06/26/2013
Reported:	07/05/2013	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI:	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H301519-02)

BTEX 8260B mg/L **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/03/2013	ND	0.054	108	0.0500	0.922	
Toluene*	<0.001	0.001	07/03/2013	ND	0.050	99.6	0.0500	1.95	
Ethylbenzene*	<0.001	0.001	07/03/2013	ND	0.049	98.7	0.0500	3.68	
Total Xylenes*	<0.003	0.003	07/03/2013	ND	0.153	102	0.150	1.74	

Surrogate: Dibromofluoromethane	*95.6 %*	*59.8-161*
Surrogate: Toluene-d8	*98.1 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*108 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**268**	4.00	06/28/2013	ND	108	108	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**69.7**	10.0	07/05/2013	ND	21.0	105	20.0	7.55	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**868**	5.00	07/03/2013	ND	244	102	240	0.157	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	06/27/2013	Sampling Date:	06/26/2013
Reported:	07/05/2013	Sampling Type:	Water
Project Name:	APACHE NMGSAU 1631-ACCIDENTAL DI	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC32 J-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H301519-03)

BTEX 8260B mg/L **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/03/2013	ND	0.054	108	0.0500	0.922	
Toluene*	<0.001	0.001	07/03/2013	ND	0.050	99.6	0.0500	1.95	
Ethylbenzene*	<0.001	0.001	07/03/2013	ND	0.049	98.7	0.0500	3.68	
Total Xylenes*	<0.003	0.003	07/03/2013	ND	0.153	102	0.150	1.74	

Surrogate: Dibromofluoromethane	*98.6 %*	*59.8-161*
Surrogate: Toluene-d8	*97.0 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*108 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**280**	4.00	06/28/2013	ND	108	108	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**75.4**	10.0	07/05/2013	ND	21.0	105	20.0	7.55	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**915**	5.00	07/03/2013	ND	244	102	240	0.157	

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
(575) 393-2326 Tel
(575) 393-2476 Fax

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 NMGSAU 1631-Accidental Discharge
Project Location: T19S-R37E-Sec32 J ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

LAB USE ONLY: H30159

LAB #	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 (2013)	TIME
1	Monitor Well #1	G	3	X				2				1		6/26	13:20
2	Monitor Well #2	G	3	X				2				1		6/26	12:05
3	Monitor Well #3	G	3	X				2				1		6/26	13:00

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	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 6/27/2013	Time: 4:01	Received by:
Relinquished by:	Date: 6/27/2013	Time: 8:27	Received By: (Laboratory Staff) Jodi Henson
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, tweinheimer@rice-ecs.com, rozanne@valornet.com

#54