

1RP-1753

Groundwater Monitor Report

**DATE:
July 1, 2008**

Ocotillo ENVIRONMENTAL

Dirt Work • On-Site Remediation • Soil Testing • Excavation

July 1, 2008

Mr. Wayne Price
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RECEIVED
2008 JUL 3 PM 12 33

**RE: Groundwater Monitoring Report
Apache Corporation, Hawk A-5 #3 (1RP # 1753)
Unit Letter O (SW/4, SE/4), Sec. 5, T21S, R37E
Lea County, New Mexico**

Dear Mr. Price:

Attached please find a Groundwater Monitoring Report for the Apache Corporation, Hawk A-5 #3 site. Two additional monitoring wells have been installed at your request, and the report provides documentation of the groundwater monitoring activity.

If you have any questions or need additional information, please do not hesitate to call me at (505) 441-7244 or email me at Cindy.Crain@gmail.com.

Sincerely,
Ocotillo Environmental



Cindy K. Crain, P.G.
Environmental Manager

cc: Harold Swain, Apache
Natalie Gladden, Apache
Larry Johnson, NMOCD, Hobbs, NM

June 24, 2008

Mr. Wayne Price
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

**Re: Groundwater Monitoring Report
Apache Corporation, Hawk A-5 #3 (1RP #1753)
Unit Letter O (SW/4, SE/4), Section 5, Township 21 South, Range 37 East,
Lea County, New Mexico
(Latitude: N 32 deg. 30.095' / Longitude: W 103 deg. 10.932')**

Dear Mr. Price:

On behalf of Apache Corporation (Apache), Ocotillo Environmental, LLC (Ocotillo) began closure activities at the Hawk A-5 #3 drilling pit on January 25, 2007. The site is located in the southwest quarter (SW/4) of the southeast quarter (SE/4), Section 5, Township 21 South, Range 37 East, Lea County, New Mexico. Figure 1 shows the site location.

Following the collection of soil samples below the pit liner, the installation of soil borings inside and outside of the pit, and the installation of one (1) temporary monitoring well (MW-1) approximately fifteen feet southwest of the southwest corner of the pit, a Request for Approval was submitted via email to Larry Johnson on August 31, 2007, proposing the installation of a clay liner at the depth of the pit excavation (12' bgs), and backfilling of the remaining excavation in order to obtain closure of the pit, along with quarterly monitoring of the groundwater from well MW-1.

Mr. Johnson granted verbal approval of the pit closure on September 19, 2007, using a 40 mil plastic liner instead of clay. It was also agreed that the monitoring well MW-1 would be periodically pumped in order to draw any nearby impacted groundwater to the well, and sampled quarterly for four (4) consecutive quarters.

The pit was backfilled on October 10, 2007 and efforts were made to pump groundwater from monitoring well MW-1. Since the monitoring well was originally constructed as a temporary well and of two-inch casing, pumping efforts were unsuccessful. On November 28, 2007, a replacement well (MW-1R) was installed ten feet east of well MW-1, and constructed with four-inch casing. Pumping of the groundwater from well MW-1R commenced on December 3, 2007, and the first groundwater sample from that well was collected on December 7, 2007. Chloride concentrations in the groundwater sample were reported at 252 mg/L.

A final Pit or Below-Grade Tank Registration or Closure (Form C-144) and an initial Release Notification and Corrective Action (Form C-141) for the Hawk A-5 #3 site, was filed and approved by the NMOCD on January 23, 2008.

Following the December 7, 2007 groundwater monitoring event, approximately 150 gallons of water per week was pumped from the well and stored in an open-topped tank for livestock usage. Groundwater monitoring activities were conducted on March 7, 2007. Depth to groundwater in monitoring well MW-1R was measured at 95.3 feet bgs and the concentration of chloride was reported at 300 mg/L. Since the chloride concentration exceeded the New Mexico Water Quality Control Commission (NMWQCC) standard of 250 mg/L, notification was given to Mr. Johnson of the increased chloride concentration in groundwater at the site on March 27, 2008. At the request of Mr. Johnson, all site specific information was forwarded to your office at the time for a determination of further action.

On April 3, 2008, via email, you directed the installation of a down gradient and a side gradient monitoring well in order to determine if the contamination had moved off-site.

Monitoring Well Installations

On May 14 and 15, 2008, monitoring well MW-2 was installed approximately 260 feet southeast of well MW-1R, and well MW-3 was installed approximately 240 feet northeast of well MW-1R. The wells were installed by Scarborough Drilling of Lamesa, Texas, using an air-rotary drilling rig. Using a split-spoon sampling device, soil samples were collected at five-foot intervals, from a depth of approximately five (5) feet below ground surface (bgs) to a depth of approximately 40 feet bgs, and at ten-foot intervals from a depth of 50 feet bgs to 90 feet bgs. The samples were labeled and delivered to Environmental Lab of Texas (ELOT), where they were analyzed for chlorides using EPA method 300. Figure 2 shows the monitoring well locations. Table 1 presents a summary of drilling and completion details. Table 2 provides a summary of the laboratory analyses. Appendix A presents the boring logs and well construction diagrams and Appendix B provides the laboratory and chain of custody documentation.

Referring to Table 2, chloride concentrations in all soil samples collected from the installation of monitoring wells MW-2 and MW-3 were reported below 250 milligrams per kilogram (mg/kg).

Monitoring wells MW-2 and MW-3 were constructed with threaded 4-inch schedule 20 PVC well screen and riser. The well screens, approximately 20 feet in length, were placed above and below the groundwater level observed during drilling. Graded silica sand was placed around the well screen to approximately 3 feet above the screen. Approximately 3 feet of bentonite chips was placed above the sand, and hydrated with potable water. The remainder of the annulus was filled with cement and bentonite grout to about 2 feet BGS. Each well is secured with a locking above-grade cover, anchored in a concrete pad measuring approximately 3 x 3 feet. On June 5, 2008, Piper Surveying Company surveyed the wells for top-of-casing and ground elevations.

On May 16, 2008, the monitoring wells were developed by pumping with an electric submersible pump until groundwater was visibly clear of fine grained sediment.

Groundwater Monitoring

Depth to groundwater was measured in the monitoring wells on May 19, 2008, and ranged from 91.63 feet bgs at well MW-3, to 96.41 feet bgs at well MW-2. The groundwater

Mr. Wayne Price
Page 3
June 24, 2008

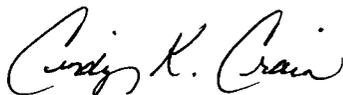
elevation ranged from 3410.66 feet above mean sea level (AMSL) at MW-1 to 3410.06 feet AMSL at MW-2. Groundwater flow was to the southeast at approximately 0.0026 feet per foot. Table 3 presents a summary of depth to groundwater measurements on May 19, 2008. Figure 3 presents a groundwater potentiometric surface map for May 19, 2008.

After purging the monitoring wells of three casing volumes, groundwater samples were collected using dedicated disposable polyethylene bailers. The samples were carefully poured into laboratory prepared containers, chilled in an ice chest and delivered under chain of custody control to Cardinal Laboratories (Cardinal), in Hobbs, New Mexico, where they were analyzed for chlorides by EPA method 4500. Table 3 presents a summary of the chloride analyses of groundwater samples. Appendix B presents the laboratory reports and chain of custody documentation.

Referring to Table 3, the chloride concentrations from samples collected at well MW-1R (116 mg/L), MW-2 (116 mg/L) and well MW-3 (92 mg/L) were all below the NMWQCC standard of 250 milligrams per liter (mg/L).

As chloride concentrations in groundwater at the site are well below 250 mg/L, Apache respectfully requests that closure of the site be granted by the NMOCD. If you have any questions or need additional information, please call Mr. Harold Swain at (432) 527-3311 or myself at (505) 441-7244. We may also be reached by email at Harold.Swain@usa.apachecorp.com or Cindy.Crain@gmail.com.

Sincerely,
Ocotillo Environmental, LLC



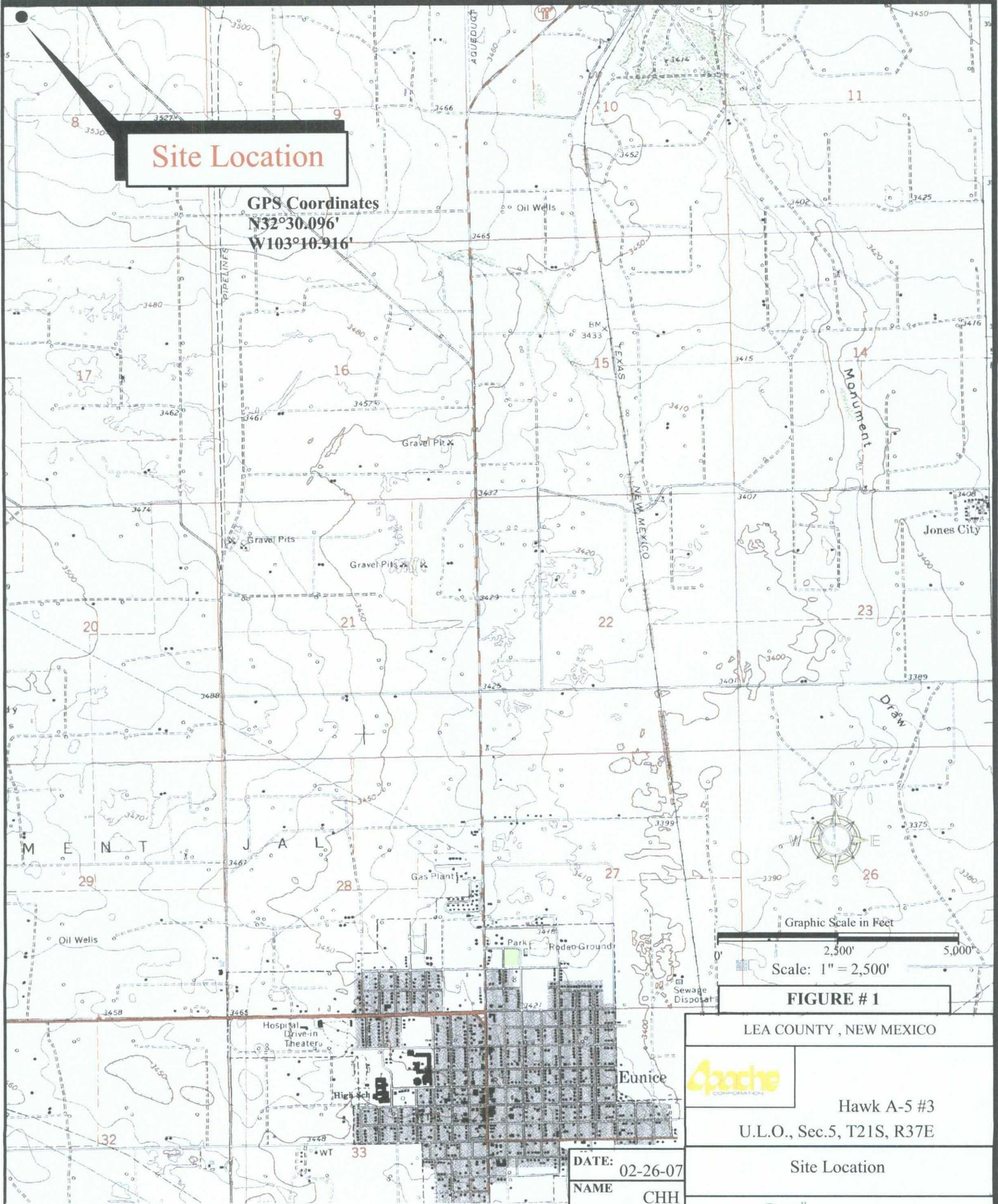
Cindy K. Crain, P.G.
Environmental Manager

cc: Harold Swain, Apache
Natalie Gladden, Apache

FIGURES

Site Location

GPS Coordinates
N32°30.096'
W103°10.916'



Graphic Scale in Feet
0' 2,500' 5,000'
Scale: 1" = 2,500'

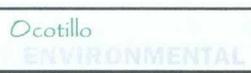
FIGURE # 1

LEA COUNTY, NEW MEXICO



Hawk A-5 #3
U.L.O., Sec.5, T21S, R37E

Site Location



Taken from U.S.G.S. Eunice Quad, NM 1969

DATE:	02-26-07
NAME	CHH
PROJECT NO.:	6-0824

MW-3



MW-1



Wellhead



MW-2

← Well Pad Boundary

Lease Road

Top of Casing and Concrete Elevations

Well	Top Casing	Concrete Elevation
MW-1	3505.74	3503.20
MW-2	3506.47	3504.55
MW-3	3502.28	3500.26

Legend

-  Monitoring Well
- MW-1
-  Hawk A-5 #3 Wellhead
- Wellhead

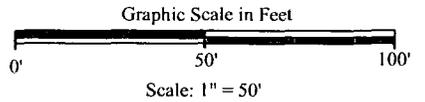


FIGURE # 2

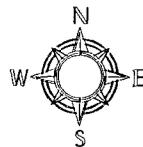
LEA COUNTY, NEW MEXICO



Apache Corporation

Hawk A-5 #3

UL-O, Sec. 5, T21S, R37E



DATE: 6-20-08

NAME: JTC

PROJECT NO.: 0807-046C

Site Drawing

Ocotillo ENVIRONMENTAL

Top of Casing and Concrete Elevations

Well	Top Casing	Concrete Elevation
MW-1	3505.74	3503.20
MW-2	3506.47	3504.55
MW-3	3502.28	3500.26

3410.65
92
MW-3

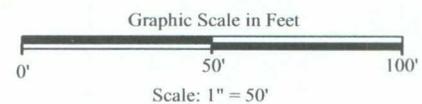
3410.66
116
MW-1

Hawk A-5 #3 Wellhead

3410.06
116
MW-2

Lease Road

Well Pad Boundary



Legend

3410.66
116
MW-1

Monitoring Well Location With Groundwater Potentiometric Surface Elevation (feet AMSL), 5/19/08, and Chloride Concentration in Groundwater (mg/l)

3410.0

Contour of Groundwater Potentiometric Surface Elevation (feet AMSL) 5/19/08

Groundwater Flow Direction



DATE: 6-20-08
NAME: JTC
PROJECT NO.: 0807-046C

FIGURE # 3

LEA COUNTY, NEW MEXICO



Apache Corporation

Hawk A-5 #3
UL-O, Sec. 5, T21S, R37E

Groundwater Potentiometric Surface Elevation Map (5/19/08)



TABLES

Table 1: Summary of Monitoring Well Drilling and Completion Details
Apache Hawk A-5 #3
Unit Letter O, Section 5, Township 21 South, Range 37 East
Lea County, New Mexico

Well Number	Date Drilled	Concrete Elevation (Feet AMSL)	Top of Casing Elevation (Feet AMSL)	Drilled Depth (Feet BGS)	Well Depth (Feet TOC)	Well Diameter (Inches)	Screen Interval (Feet BGS)	Depth to Groundwater 5-19-08 (Feet TOC)
MW-1R	11/28/2007	3503.20	3505.74	110.0	112.54	4	90-110	95.08
MW-2	5/14/2008	3504.55	3506.47	112.0	113.92	4	92-112	96.41
MW-3	5/15/2008	3500.26	3502.28	102.0	104.02	4	82-102	91.63

Notes: Wells installed by Scarborough Drilling, Inc., Lamesa, Texas

1. BGS: Depth in feet below ground surface
2. AMSL: Elevation in feet above mean sea level
3. TOC: Depth in feet below top-of-casing

**Table 2: Summary of Laboratory Analysis of Soil from Monitoring Wells
 Apache Hawk A-5 #3
 Unit Letter O, Section 5, Township 21 South, Range 37 East
 Lea County, New Mexico**

Sample Date	Soil Sample Number	Sample Depth (feet BGS)	Chloride (mg/kg)
WQCC Standard			250
4/3/07	MW-1	0-2	213.0
		5-7	160.0
		10-12	85.1
		15-17	85.1
		20-22	85.1
		25-27	117.0
		30-32	95.7
		35-37	117.0
		40-42	106.0
		45-47	234.0
		50-52	42.5
		55-57	42.5
		60-62	31.9
		65-67	21.3
		70-72	21.3
		75-77	<20
		5/14/08	MW-2
10-12	101.0		
15-17	69.0		
20-22	40.6		
25-27	62.7		
30-32	48.7		
35-37	48.8		
40-42	63.3		
50-52	25.7		
60-62	<5.0		
70-72	<5.0		
80-82	<5.0		
90-92	<5.0		

Sample Date	Soil Sample Number	Sample Depth (feet BGS)	Chloride (mg/kg)
WQCC Standard			250
5/15/08	MW-3	5-7	<5.0
		10-12	40.5
		15-17	30.6
		20-22	76.8
		25-27	72.4
		30-32	68.1
		35-37	47.0
		40-42	54.6
		50-52	81.5
		60-62	<25.0
		70-72	<25.0
		80-82	<25.0
		90-92	<25.0

Analysis conducted by Environmental Lab of Texas, Odessa, TX

Notes:

- 1. BGS: Depth in feet below ground surface
- 2. mg/kg: Milligrams per kilogram

**Table 3: Summary of Laboratory Analysis of Groundwater from Monitoring Wells
 Apache Hawk A-5 #3
 Unit Letter O, Section 5, Township 21 South, Range 37 East
 Lea County, New Mexico**

Sample Date	Well Name	Depth to Groundwater (feet btoc)	Chloride (mg/L)
WQCC Standard			250
4/11/07	MW-1	92.15	75
12/7/07	MW-1R	95.1	252.0
3/7/08		95.3	300.0
5/19/08		95.08	116.0
5/19/08	MW-2	96.41	116.0
5/19/08	MW-3	91.63	92.0

Analysis conducted by Cardinal Laboratories, Hobbs, NM

Notes:

1. btoc: Below top of casing
2. mg/L: Milligrams per liter

APPENDIX A

Soil Boring and Well Construction Diagrams

Client: Apache

Log: MW-1R

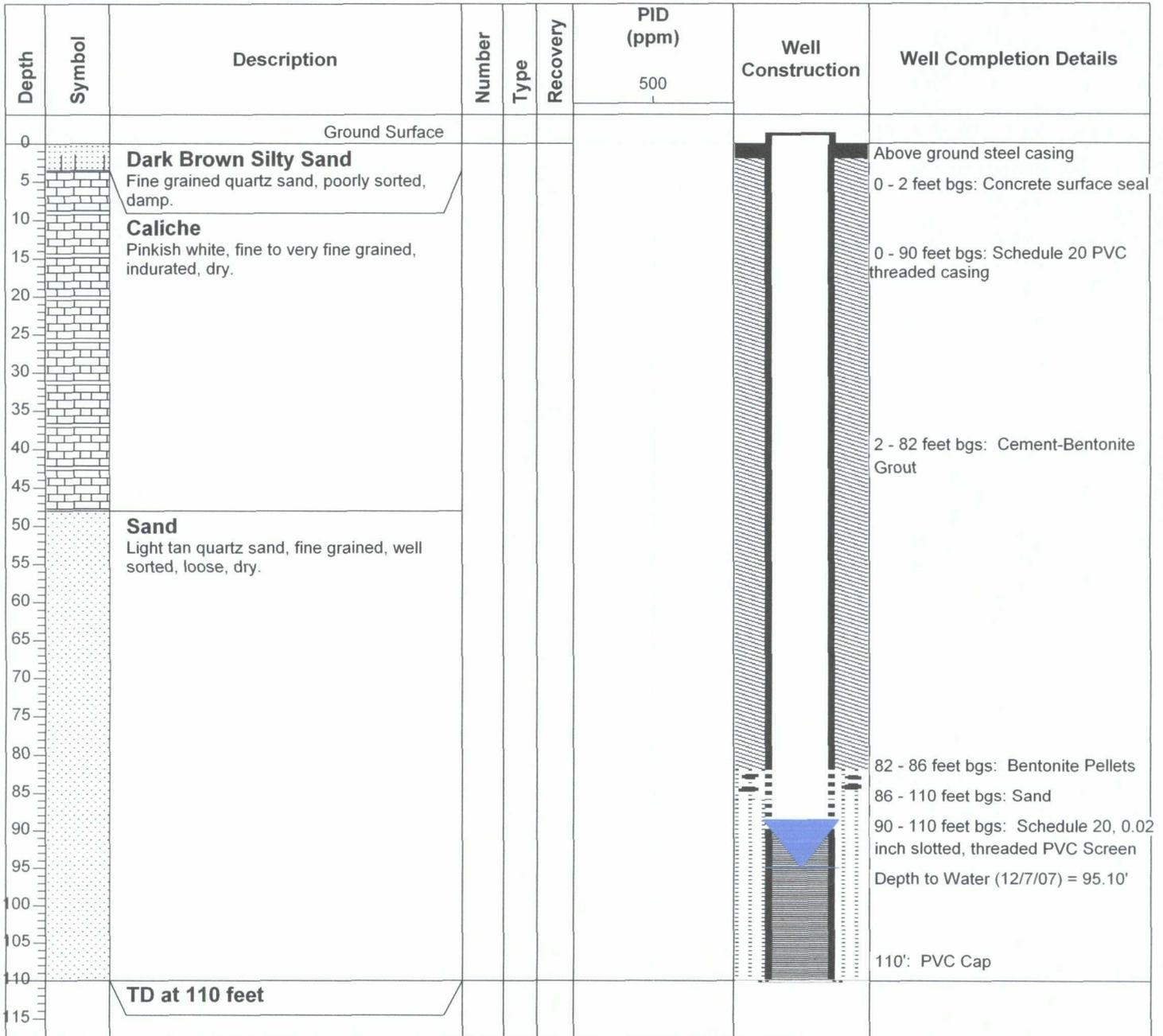
Project: Hawk A-5 #3

Page: 1 of 1

Project No.: 0807-046C

Location: Eunice, NM

Geologist: Cindy Crain



Ocotillo Environmental, LLC

2125 French Drive
Hobbs, New Mexico 88240
(505) 393-6371

Drill Method: Air Rotary

Elevation: NA 0

Drill Date: 11/28/07

Checked by: C. Crain

Well Size: 4"

Drilled by: Scarborough Drilling

Client: Apache

Log: MW-2

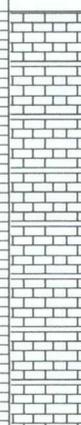
Project: Hawk A-5 #3

Page: 1 of 1

Project No.: 0807-046C

Location: Eunice, NM

Geologist: Cindy Crain

Depth	Symbol	Description	Number	Type	Recovery	PID (ppm)	Well Construction	Well Completion Details
						500		
0		Ground Surface						
0 - 45		Caliche Pinkish white, fine to very fine grained, indurated, dry.					Above ground steel casing	0 - 2 feet bgs: Concrete surface seal
45 - 50		Light Brown Sandstone Light brown poorly sorted quartz sand, fine to very fine grained, dry.						0 - 92 feet bgs: Schedule 20 PVC threaded casing
50 - 112		Sand Light reddish brown quartz sand, very fine grained, loose.						2 - 86 feet bgs: Cement-Bentonite Grout
86 - 89								86 - 89 feet bgs: Bentonite Pellets
89 - 112								92 - 112 feet bgs: Schedule 20, 0.02 inch slotted, threaded PVC Screen
								Depth to Water (5/19/08) = 96.41'
								89 - 112 feet bgs: Sand
								112': PVC Cap
112		TD at 112 feet						

Ocotillo Environmental, LLC

2125 French Drive
Hobbs, New Mexico 88240
(505) 393-6371

Drill Method: Air Rotary

Elevation: 3504.55

Drill Date: 5/14/08

Checked by: C. Crain

Well Size: 4"

Drilled by: Scarborough Drilling

Client: Apache

Log: MW-3

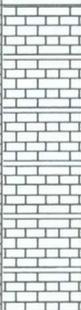
Project: Hawk A-5 #3

Page: 1 of 1

Project No.: 0807-046C

Location: Eunice, NM

Geologist: Cindy Crain

Depth	Symbol	Description	Number	Type	Recovery	PID (ppm)	Well Construction	Well Completion Details
						500		
0		Ground Surface						
0 - 30		Caliche Pinkish white, fine to very fine grained, indurated, dry.					Above ground steel casing 0 - 2 feet bgs: Concrete surface seal	
30 - 45		Sand Light tan, very fine grained quartz sand, very well sorted, dry.					0 - 82 feet bgs: Schedule 20 PVC threaded casing	
45 - 55		Sand and Sandstone Light brown to reddish brown sand and sandstone, very fine grained quartz sand, moderately well sorted, dry.					2 - 76 feet bgs: Cement-Bentonite Grout	
55 - 102		Sand Light brown quartz sand, very fine grained, well sorted, loose.					76 - 79 feet bgs: Bentonite Pellets 82 - 102 feet bgs: Schedule 20, 0.02 inch slotted, threaded PVC Screen Depth to Water (5/19/08) = 91.63' 79 - 102 feet bgs: Sand	
102		TD at 102 feet					102': PVC Cap	

Ocotillo Environmental, LLC

2125 French Drive
Hobbs, New Mexico 88240
(505) 393-6371

Drill Method: Air Rotary

Elevation: 3500.26

Drill Date: 5/15/08

Checked by: C. Crain

Well Size: 4"

Drilled by: Scarborough Drilling

APPENDIX B

Laboratory and Chain of Custody Documentation

Analytical Report 304034

for

Ocotillo Environmental, LLC

Project Manager: Cindy Crain

Apache Hawk A-5 # 3

0807-046C

20-MAY-08



12600 West I-20 East Odessa, Texas 79765

**Texas certification numbers:
Houston, TX T104704215**

**Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:
Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:
Norcross(Atlanta), GA 483**

**Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta**



20-MAY-08

Project Manager: Cindy Crain
Ocotillo Environmental, LLC
P.O. Box 1816
Hobbs, NM 88241

Reference: XENCO Report No: **304034**
Apache Hawk A-5 # 3
Project Address: Eunice, NM

Cindy Crain:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 304034. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 304034 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II

Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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Sample Cross Reference 304034



Ocotillo Environmental, LLC, Hobbs, NM
Apache Hawk A-5 # 3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2 (5-7')	S	May-14-08 09:40	5 - 7 ft	304034-001
MW-2 (10-12')	S	May-14-08 09:45	10 - 12 ft	304034-002
MW-2 (15-17')	S	May-14-08 09:50	15 - 17 ft	304034-003
MW-2 (20-22')	S	May-14-08 09:58	20 - 22 ft	304034-004
MW-2 (25-27')	S	May-14-08 10:03	25 - 27 ft	304034-005
MW-2 (30-32')	S	May-14-08 10:09	30 - 32 ft	304034-006
MW-2 (35-37')	S	May-14-08 10:15	35 - 37 ft	304034-007
MW-2 (40-42')	S	May-14-08 10:23	40 - 42 ft	304034-008
MW-2 (50-52')	S	May-14-08 10:29	50 - 52 ft	304034-009
MW-2 (60-62')	S	May-14-08 10:47	60 - 62 ft	304034-010
MW-2 (70-72')	S	May-14-08 13:26	70 - 72 ft	304034-011
MW-2 (80-82')	S	May-14-08 13:38	80 - 82 ft	304034-012
MW-2 (90-92')	S	May-14-08 14:20	90 - 92 ft	304034-013
MW-3 (5-7')	S	May-15-08 10:20	5 - 7 ft	304034-014
MW-3 (10-12')	S	May-15-08 10:25	10 - 12 ft	304034-015
MW-3 (15-17')	S	May-15-08 10:29	15 - 17 ft	304034-016
MW-3 (20-22')	S	May-15-08 10:37	20 - 22 ft	304034-017
MW-3 (25-27')	S	May-15-08 10:44	25 - 27 ft	304034-018
MW-3 (30-32')	S	May-15-08 10:50	30 - 32 ft	304034-019
MW-3 (35-37')	S	May-15-08 10:59	35 - 37 ft	304034-020
MW-3 (40-42')	S	May-15-08 11:03	40 - 42 ft	304034-021
MW-3 (50-52')	S	May-15-08 12:50	50 - 52 ft	304034-022
MW-3 (60-62')	S	May-15-08 12:59	60 - 62 ft	304034-023
MW-3 (70-72')	S	May-15-08 13:03	70 - 72 ft	304034-024
MW-3 (80-82')	S	May-15-08 13:23	80 - 82 ft	304034-025
MW-3 (90-92')	S	May-15-08 13:47	90 - 92 ft	304034-026



Certificate of Analysis Summary 304034

Ocotillo Environmental, LLC, Hobbs, NM

Project Id: 0807-046C
 Contact: Cindy Crain
 Project Location: Eunice, NM

Date Received in Lab: Fri May-16-08 03:08 pm
 Report Date: 20-MAY-08

Project Manager: Brent Barron, II

Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	304034-001	304034-002	304034-003	304034-004	304034-005	304034-006
					MW-2 (5-7') 5-7 ft SOIL May-14-08 09:40	MW-2 (10-12') 10-12 ft SOIL May-14-08 09:45	MW-2 (15-17') 15-17 ft SOIL May-14-08 09:50	MW-2 (20-22') 20-22 ft SOIL May-14-08 09:58	MW-2 (25-27') 25-27 ft SOIL May-14-08 10:03	MW-2 (30-32') 30-32 ft SOIL May-14-08 10:09
Analysis Requested										
Inorganic Anions by EPA 300										
Extracted:										
Analyzed:					May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42
Units/RL:					mg/kg RL 19.1 5.00	mg/kg RL 101 10.0	mg/kg RL 69.0 10.0	mg/kg RL 40.6 5.00	mg/kg RL 62.7 5.00	mg/kg RL 48.7 5.00
Chloride										

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi

Brent Barron
 Odessa Laboratory Director



Certificate of Analysis Summary 304034

Ocotillo Environmental, LLC, Hobbs, NM

Project Id: 0807-046C
 Contact: Cindy Crain
 Project Location: Eunice, NM

Date Received in Lab: Fri May-16-08 03:08 pm
 Report Date: 20-MAY-08

Project Manager: Brent Barron, II

Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	304034-007	304034-008	304034-009	304034-010	304034-011	304034-012
					MW-2 (35-37') 35-37 ft SOIL May-14-08 10:15	MW-2 (40-42') 40-42 ft SOIL May-14-08 10:23	MW-2 (50-52') 50-52 ft SOIL May-14-08 10:29	MW-2 (60-62') 60-62 ft SOIL May-14-08 10:47	MW-2 (70-72') 70-72 ft SOIL May-14-08 13:26	MW-2 (80-82') 80-82 ft SOIL May-14-08 13:38
Analysis Requested										
Inorganic Anions by EPA 300										
Extracted:										
Analyzed:					May-19-08 09:42					
Units/RL:					mg/kg RL 48.8 5.00	mg/kg RL 63.3 5.00	mg/kg RL 25.7 5.00	mg/kg RL ND 5.00	mg/kg RL ND 5.00	mg/kg RL ND 5.00
Chloride										

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 Brent Barron
 Odessa Laboratory Director



Certificate of Analysis Summary 304034

Ocotillo Environmental, LLC, Hobbs, NM

Project Id: 0807-046C
 Contact: Cindy Crain
 Project Location: Eunice, NM

Date Received in Lab: Fri May-16-08 03:08 pm
 Report Date: 20-MAY-08

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	304034-013	304034-014	304034-015	304034-016	304034-017	304034-018
	Field Id:	MW-2 (90-92)	MW-3 (5-7)	MW-3 (10-12)	MW-3 (15-17)	MW-3 (20-22)	MW-3 (25-27)
	Depth:	90-92 ft	5-7 ft	10-12 ft	15-17 ft	20-22 ft	25-27 ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	May-14-08 14:20	May-15-08 10:20	May-15-08 10:25	May-15-08 10:29	May-15-08 10:37	May-15-08 10:44
Inorganic Anions by EPA 300	Extracted:						
	Analyzed:	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42	May-19-08 09:42
	Units/RL:	ND 5.00	ND 5.00	mg/kg RL 40.5 5.00	mg/kg RL 30.6 5.00	mg/kg RL 76.8 5.00	mg/kg RL 72.4 5.00
Chloride							

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Brent Barron
 Odessa Laboratory Director



Certificate of Analysis Summary 304034

Ocotillo Environmental, LLC, Hobbs, NM

Project Id: 0807-046C
 Contact: Cindy Crain
 Project Location: Eunice, NM

Date Received in Lab: Fri May-16-08 03:08 pm
 Report Date: 20-MAY-08

Project Manager: Brent Barron, II

Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	304034-019	304034-020	304034-021	304034-022	304034-023	304034-024
					MW-3 (30-32') 30-32 ft SOIL May-15-08 10:50	MW-3 (35-37') 35-37 ft SOIL May-15-08 10:59	MW-3 (40-42') 40-42 ft SOIL May-15-08 11:03	MW-3 (50-52') 50-52 ft SOIL May-15-08 12:50	MW-3 (60-62') 60-62 ft SOIL May-15-08 12:59	MW-3 (70-72') 70-72 ft SOIL May-15-08 13:03
					May-19-08 09:42 mg/kg RL 5.00 68.1	May-19-08 09:42 mg/kg RL 5.00 47.0	May-19-08 18:15 mg/kg RL 5.00 54.6	May-19-08 18:15 mg/kg RL 25.0 81.5	May-19-08 18:15 mg/kg RL 25.0 ND	May-19-08 18:15 mg/kg RL 25.0 ND
Inorganic Anions by EPA 300										
Chloride										

Analysis Requested

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Brent Barron
 Odessa Laboratory Director



Certificate of Analysis Summary 304034

Ocotillo Environmental, LLC, Hobbs, NM

Project Id: 0807-046C
 Contact: Cindy Crain
 Project Location: Eunice, NM

Date Received in Lab: Fri May-16-08 03:08 pm
 Report Date: 20-MAY-08
 Project Manager: Brent Barron, II

Analysis Requested	Lab Id: 304034-025 Field Id: MW-3 (80-82) Depth: 80-82 ft Matrix: SOIL Sampled: May-15-08 13:23	304034-026 MW-3 (90-92) 90-92 ft SOIL May-15-08 13:47		
	Extracted: Analyzed: May-19-08 18:15 Units/RL: mg/kg RL 25.0 ND 25.0	May-19-08 18:15 mg/kg RL ND 25.0	May-19-08 18:15 mg/kg RL ND 25.0	
Chloride				

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 Brent Barron
 Odessa Laboratory Director



Flagging Criteria

- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- * Outside XENCO'S scope of NELAC Accreditation

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11381 Meadowglen Lane Suite L Houston, Tx 77082-2647	(281) 589-0692	(281) 589-0695
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, Suite 104, San Antonio, TX 78238	(210) 509-3334	(210) 509-3335
2505 N. Falkenburg Rd., Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
6017 Financial Dr., Norcross, GA 30071	(770) 449-8800	(770) 449-5477



Blank Spike Recovery



Project Name: Apache Hawk A-5 # 3

Work Order #: 304034

Project ID:

0807-046C

Lab Batch #: 723054

Sample: 723054-1-BKS

Matrix: Solid

Date Analyzed: 05/19/2008

Date Prepared: 05/19/2008

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	8.64	86	75-125	

Lab Batch #: 723058

Sample: 723058-1-BKS

Matrix: Solid

Date Analyzed: 05/19/2008

Date Prepared: 05/19/2008

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	8.75	88	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.



Form 3 - MS Recoveries



Project Name: Apache Hawk A-5 # 3

Work Order #: 304034

Project ID: 0807-046C

Lab Batch #: 723054

Date Prepared: 05/19/2008

Analyst: LATCOR

Date Analyzed: 05/19/2008

Batch #: 1

Matrix: Soil

QC- Sample ID: 304034-001 S

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	19.1	100	106	87	75-125	

Lab Batch #: 723058

Analyst: LATCOR

Date Analyzed: 05/19/2008

Date Prepared: 05/19/2008

QC- Sample ID: 304034-021 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	54.6	100	144	89	75-125	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Relative Percent Difference [E] = 200*(C-A)/(C+B)

All Results are based on MDL and Validated for QC Purposes



Sample Duplicate Recovery



Project Name: Apache Hawk A-5 # 3

Work Order #: 304034

Lab Batch #: 723054

Project ID: 0807-046C

Date Analyzed: 05/19/2008

Date Prepared: 05/19/2008

Analyst: LATCOR

QC- Sample ID: 304034-001 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	19.1	10.5	58	20	F

Lab Batch #: 723058

Date Analyzed: 05/19/2008

Date Prepared: 05/19/2008

Analyst: LATCOR

QC- Sample ID: 304034-021 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	54.6	53.9	1	20	

Spike Relative Difference RPD $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

Environmental Lab of Texas
 Variance/ Corrective Action Report- Sample Log-In

Client: Oatillo Env.
 Date/ Time: 5/16/08 15:08
 Lab ID #: 304034
 Initials: AL

Sample Receipt Checklist

			Client Initials
#1 Temperature of container/ cooler?	<u>(Yes)</u>	No	21.5 °C
#2 Shipping container in good condition?	<u>(Yes)</u>	No	
#3 Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present
#4 Custody Seals intact on sample bottles/ container?	Yes	No	Not Present
#5 Chain of Custody present?	<u>(Yes)</u>	No	
#6 Sample instructions complete of Chain of Custody?	<u>(Yes)</u>	No	
#7 Chain of Custody signed when relinquished/ received?	<u>(Yes)</u>	No	
#8 Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid
#9 Container label(s) legible and intact?	Yes	No	Not Applicable
#10 Sample matrix/ properties agree with Chain of Custody?	<u>(Yes)</u>	No	
#11 Containers supplied by ELOT?	<u>(Yes)</u>	No	
#12 Samples in proper container/ bottle?	<u>(Yes)</u>	No	See Below
#13 Samples properly preserved?	<u>(Yes)</u>	No	See Below
#14 Sample bottles intact?	<u>(Yes)</u>	No	
#15 Preservations documented on Chain of Custody?	<u>(Yes)</u>	No	
#16 Containers documented on Chain of Custody?	<u>(Yes)</u>	No	
#17 Sufficient sample amount for indicated test(s)?	<u>(Yes)</u>	No	See Below
#18 All samples received within sufficient hold time?	<u>(Yes)</u>	No	See Below
#19 Subcontract of sample(s)?	Yes	No	Not Applicable
#20 VOC samples have zero headspace?	Yes	No	Not Applicable

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

- Check all that Apply:
- See attached e-mail/ fax
 - Client understands and would like to proceed with analysis
 - Cooling process had begun shortly after sampling event



CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240
(505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Geotille Environmental LLC P.O. #: BILL TO ANALYSIS REQUEST

Project Manager: Cindy Grein Company: Geotille

Address: 2125 French Dr. Attn:

City: Hobbs State: NM zip: 88240 Address:

Phone #: 575-441-7244 Fax #: 432-272-0304 City: State: Zip:

Project #: 0807-0462 Project Owner: Apache

Project Name: Haulk A-5 #3 State: Zip:

Project Location: Lea Co. N.M. Phone #:

Sampler Name: Steve Gardner Fax #:

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.	SAMPLING	DATE	TIME	REMARKS
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
H14842-1	MU#1	G	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>		5-19-08	11:03	✓	Chloride				
	MU#2	G	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>		"	12:21	✓					
	MU#3	G	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>		"	2:17	✓					

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 the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, 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 services rendered by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Sampler Relinquished: Steve Gardner Date: 5-19-08 Received By: Mark DeBart

Relinquished By: Steve Gardner Date: 2:17 Received By:

Delivered By: (Circle One) Temp. Sample Condition Cool Intact Yes No Yes No CHECKED BY:

Sampler - UPS - Bus - Other:

Phone Result: Yes No Add'l Phone #:

Fax Result: Yes No Add'l Fax #:

REMARKS: Fax # 432-272-0304

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice and all costs of collections, including attorney's fees.

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.