

# STAGE 1 & 2 Abatement plan

# DATE: 12-07-2006

Page 1 of 2

2008

ABUJ

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# RICE Operating Company

122 West Taylor • Hobbs, NM 88240 Phone: (505) 393-9174 • Fax: (505) 397-1471

# CERTIFIED MAIL RETURN RECEIPT NO. 7007 2560 0003 0323 6857

May 7, 2008

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: BD Santa Rita EOL leak (AP-58) PUBLIC NOTIFICATION

Mr. Hansen:

In accordance with Rule 19 (Section 19.15.1.19 NMAC, Subsection G) Public Notice requirements, please accept the enclosed copies of proof that the appropriate individuals and entities were notified of the amended Stage 1 & 2 Abatement Plan submitted by Gilbert J. Van Deventer of Trident Environmental (Trident) for the Santa Rita leak site on April 24, 2008. In an e-mail dated February 13, 2008, the Oil Conservation Division (OCD) notified Rice Operating Company (ROC) that the Stage 1 & 2 Abatement Plan of December 7, 2006 was conditionally administratively complete and directed ROC to proceed with public notice. Trident addressed the technical deficiencies outlined by OCD in the communication and submitted an amended Stage 1 & 2 Abatement Plan for this site on April 24, 2008.

Notices were sent via certified mail to landowners within the prescribed radius and return receipts were received for all landowners, indicating that the mailing was received. Mailings were also sent to the Lea County Commission and the list of Interested Parties found on the OCD website. Three individuals on the Interested Parties list were notified via e-mail to the addresses provided on the list. Forty-three total notifications were sent and delivery was not confirmed for two individuals on the Interested Parties List. The notification to Mike Schultz of the International Technology Corp. (from the OCD Interested Parties list) was returned as "attempted—not known." Previous delivery attempts to this address have been refused. At the time of this submission, a return receipt for the State Parks & Recreation director has not been received.

As directed by OCD, the Stage 1 & 2 Abatement Plan notifications were published in the *Albuquerque Journal* and the *Hobbs News-Sun* newspapers on February 27, 2008. Affidavits for these publications are enclosed.

ROC requests that OCD consider public notice complete for this abatement plan. Should you have any further questions regarding this request, do not hesitate to contact me. Thank you for your consideration.

ROC is the service provider (agent) for the Blinebry-Drinkard (BD) SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

RICE OPERATING COMPANY

Knistin Famis Pope

Kristin Farris Pope Project Scientist

enclosures: summary table of notifications, newspaper affidavits, return receipt copies, e-mail copies

cc: MB, Trident, file, Daniel Sanchez (NMOCD)

#### STATE OF NEW MEXICO County of Bernalillo SS

NOTICE OF PUBLICATION

State of New Mexico Energy, Minerals and Natural -Resources Department Oll Conservation Division

antito New Mexico Oil Conserva-

Notice is hereby given that pursu-ant two New Mexico: Oils Conserva-tion Division Regulations, the fol-lowing Stage 1, and 27 Abatement Plan: Proposal hastbeen submitted to the Director of the JOI Conser-vation Division, 1220 S. St. Francis Dr., Santa Fie Xiew, Mexico 87505. Telephone (505) 476: 3440 Rice: Operating Company, Scott Curlis (General Manager, Tele-phone (505) 476: 3440 Rice: Operating Company, Scott Curlis (General Manager, Tele-phone (505) 476: 3440 Rice: Operating Company, Scott Curlis (General Manager, Tele-phone (505) 476: 3440 (Ag: 569) Abora srelease, from the pipeline junction at the BD Santa Rita: EOL (Jocated in Section 227 Township, 22) South, Range 37 east, Tea.County, New Mexico approximately 4 miles southeastol Eurice/New Mexico Rice Operat-ing Company, operates as atlwater.

ing Company operates a saltwater, disposal pipeline at the site. Soil impacts and groundwater samples at the site exhibit elevated chloride

concentrations. The Stage 1 and 2 Abatement Plan Proposal presents

Abatement Plan/Proposal, presents the following site soil and ground-water investigation activities ?(III) Define regional ground water flow, direction, spotential sources of chloride in ground water and am-bent ground water chemistry. (2) further idelineation of the vertical and lateral extent of soil, and groundwater impact (3) install an evapotransporation barrier in the upper vadose zone (13) install an evapotransporation barrier in the upper vadose zone (13) install an evapotransporation barrier in the upper vadose zone (13) install an evapotransporation barrier in the upper vadose zone (13) install and evapotransporation barrier in the upper vadose zone (13) install and evapotransporation barrier in the upper vadose zone (13) install and conservation Division and may submit written comments to the protection barrier in the off

Conservation Durision and may, Submit written; comments, to the Director of the Cill Conservation Division at the Cill Conservation Division at the Cill Conservation Division at the Cill Conservation dove. The Stage 11 and 2 Moate ment PlantRevision Proposal may be viewed at the above address or at the Coll Conservation Division District Office 1625 N. French Direc Hobbs: New Mexico 88240 Telephone (505), 393-6161; be tween Bob and 1400-pm, Monday through Finday Phor, to ruling on tany, proposed. Stage 1 and 2 Abatement Plan; the Direc tor of the Oil Conservation Division shall allow at least thinty. (30) days after the date of publication of this notice during which written are quests for a public hearing that in cludes treasons. Why: a hearing should be held and written tom.

should be held and written com-ments may be submitted to him Journal: February 29, 2008

Notice

is hereby given that pursu

Bill Tafoya, being duly sworn, declares and says that he is Classified Advertising Manager of The Albuquerque Journal, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3. Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for the Z day of the first publication, being on times, 20 And the subsequent consecutive publications on \_ 5 Fe , 20\_\_\_\_ ~ 0 Sworn and subscribed to before me, a Notary Public, in and for the County of Bernalillo and State of New Mexico this KP day of h \_ of 20 OFTICIAL SEAL live Sidane  $\mathcal{O}$ 6. PRICE 1.928 ALPR: M ELYX1 Statement to come at end of month.  $M_M$ Commission Expanse ACCOUNT NUMBER CS22

CLA-22-A (R-1/93)

#### AFFIDAVIT OF PUBLICATION

State of New Mexico. County of Lea.

#### I, KATHI BEARDEN

#### PUBLISHER

of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period.

1 of

weeks. Beginning with the issue dated

February 29 2008 and ending with the issue dated

> February 29 2008

PUBLISHER Sworn and subscribed to before

29th me this. day of

February 2008 Notary Public.

My Commission expires February 07. 2009 (Seal)



OFFICIAL SEAL DORA MONTZ NOTARY PUBLIC STATE OF NEW MEXICO My Commission Expires:

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

01104367000 02598562 **RICE OPERATING COMPANY** 122 WEST TAYLOR HOBBS, NM 88240

**EFGAL NOTICE** 

February 29, 2008

NOTICE OF PUBLICATION

Energy, Minerals and Natural Resources Department

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations the following Stage 1 and 2 Abatement Plan Proposal has been submitted to the Director

of the Oli Conservation Division, 1220 St.St. Francis Dr., Santa Fel New Mexico 87505,

Rice Operating Company, Scott Curtis, General Manager, Telephone (505) 393-9174/122 West Taylor, Hobbs, New Mexico 88240, has submitted a Stage 1 and 2 Abatement Plan Process (402:13)

Proposal (AP:58) for a release from the pipeline junction at the BD Santa Rita EOL local ed in Section 27. Township 22 south Range 37 east Lea County, New Mexico, approxi-mately 4 miles southeast of Eurice, New Mexico. Rice Operating Company operates a saltwater disposal pipeline at the site. Soil impacts and groundwater samples at the site

exhibit elevated chloride/concentrations. The Stage 1-and 2-Abatement Plan Proposal

presents the following site soil and groundwater investigation activities: ((1)) Define regional ground water flow direction, potential sources of chloride in ground water and ambient ground water chemistry. ((2) further delineation of the vertical and lateral extent of soil and groundwater impact. "(3) install an evapotransporation barrier in the upper vadose zone to

eliminate further, threat to groundwater impact; and (4) install a point of use groundwater

Any interested person may obtain further information from the Oil Conservation Division and imay submit written comments to the Director of the Oil Conservation Division at the address given above ... The Stage 1 and 2 Abatement Plan Revision Proposal may be

viewed at the above address or at the Oil Conservation Division District Office, 1625 N

French Drive, Hobbs, New México 88240, Telephone (505) 393-6161 between 8.00, a.m. and 4.00 p.m., Monday through Friday: Prior to ruling on any proposed Stage 1, and 2 Abatement Plan, the Director of the Oli Conservation Division shall allow at least thirty (30)

days after the date of publication of this notice during which written requests for a public hearing that includes reasons why a hearing should be held and written comments may be

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State of New Mexico

- Oil Conservation Division

Telephone (505) 476-3440:

treatment system.

submitted to him

#23872

# BD Santa Rita leak

Unit 'A', Sec. 27, T22S, R37E

Public Notice Mailings (3/3/2008) Stage 1 & 2 Abatement Plan (AP-58)

			Delivery S	tatus	
	Landowner or Interested Party	Delivered US Mail	Delivered E-mail	Not Delivered	Comments
1	Anadarko Petroleum Corporation Mariah Resources Inc P.O. Box 5562 Midland, TX 79704-5562	х			
2	Irvin Boyd P.O. Box 121 Eunice, NM 88231	Х			
3	Rosalio M. Ruiz P.O. Box 91 Eunice, NM 88231	Х			
4	George A Graham Jr. Janene G Jenike P.O. Box 1020 Artesia, NM 88210	х			
5	Leo Sims P.O. Box 186 Eunice, NM 88231	х			
6	William E Johnston P.O. Box 152 Monument, NM 88265	Х			
7	Chloe Sims P.O. Box 922 Eunice, NM 88231	Х			
8	Jay D. Martin P.O. Box 416 Eunice, NM 88231	х			
9	NM State Hwy & Trans. Dept. P.O. Box 1149 Santa Fe, NM 87504	х			
10	Northern Natural Gas Co. Property Tax Dept. P.O. Box 3330 Omaha, NE 68103-0333	х			
11	Versada Gas Processors KE Andrews & Co. Box 870849 Mesquite, TX 75187	х			
12	Millard Deck Est. #4193 Harding & Carbone Inc. 3903 Bellaire Blvd. Houston, TX 77025	х			

	State Land Office		1	1	1
	Thaddeus Kostrubala				
13	310 Old Santa Fe Trail	X			
	P.O. Box 1148				
	Santa Fe, NM 87504-1148				
	Anselmo Gayton				
14	P.O. Box 363	Х			
	Eunice, NM 88231				
	Vincente Reyna	-			
1.5	Dorotea Cadena	v			
15	Box 244	X			
	Eunice, NM 88231				
	Eunice, NM 88231 Missouri Pacific RR Co.				
	Union Pacific Corp.				
16	Property Tax Dept.	X			
10	1400 Douglas St. Stop 1640				
	Omaha, NE 68179-1640				
	Secretary				
	New Mexico Environment				
17	Department P.O. Box 26110	x			
17	Santa Fe, NM 87504				
	email: Cathy.Tyson@state.nm.us				
	Bruce S. Garber				
	Attorney at Law				
18	P.O. Box 0850	X			
10		А			
	Santa Fe, NM 87504-0850				
	Email: bsg@garbhall.com Ron Dutton				
	1				
10	Southwestern Public Service	37			
19	P.O. Box 1261	X			
	Amarillo, TX 79170				
	email: ron.dutton@xcelenergy.com		· · · ·		
	Gerald R. Zimmerman				
	Colorado River Board of Calif.				
20	770 Fairmont Ave., Ste.100	X		ļ	
	Glendale, CA 91203-1035		1		
	email: jcc_crb@pacbell.net		ļ		
	Regional Forester				
	USFS Regional Office	ļ			emailed
21	517 Gold Avenue SW		X		5/7/2008
	Albuquerque, NM 87102				5/7/2008
	email: cgarica@fs.fed.us				
	Chief				
ļ	Groundwater Bureau				-
22	Runnels Building	X			
	Santa Fe, NM 87504				
	email: Bill. Olson@state.nm.us				
	Jack A. Barnett				
	Colorado River Basin Ctrl. Forum				
23	106 West 500 South, Suite 101	X			
1	Bountiful, UT 84010				
	email: jbarnett@barnettwater.com				

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	Colin Adams	. г		T	1
24	Environmental Counsel Public Service Company of NM 414 Silver, Southwest Albuquerque, NM 87158 email: cadams@pnm.com		X		emailed 5/7/2008
25	Chief Hazardous Waste Bureau Runnels Building Santa Fe, NM 87504 email: James.Bearzi@state.nm.us	X	4		
26	Ned Kendrick Attorney at Law 325 Paseo de Peralta Santa Fe, NM 87501 email: ekendrick@montand.com	X			
27	Mike Schulz International Technology Corp. 5301 Central Avenue, N.E. Suite 700 Albuquerque, NM 87108 email: mschulz@theitgroup.com			x	Return to sender: attempted-not known; unable to forward
28	Ken Marsh email: ken@crihobbs.com Director		Х		This email address does not exist; emailed 5/7/2008 to info@crihobbs.com
29	Department of Game & Fish Villagra Building Santa Fe, NM 87503	Х			
30	Director State Parks & Recreation 1220 S. St. Francis Santa Fe, NM 87503			x	Return receipt has not been received as of 5/7/2008
31	Soil & Water Conservation Bureau, NM Dept. of Agriculture Ag. Programs & Resources Div. Box 30005/APR Las Cruces, New Mexico 88003	X			
32	William Turner, NM Trustee For Natural Resources C/O American Ground Water Consultants 610 Gold St. SW, Suite 111 Albuquerque, NM 87102	х			
33	State Engineer Water Resources Division Bataan Building Santa Fe, NM 87503	х			

	TOTALS	38	3	2	
	Lovington, NM 88260				
CF	100 N. Main Street, Suite 4				
43	Attn: Lue Ethridge	x			
	Lea County Administration Office				
	Email: lazarus@glorietageo.com	<u> </u>			
<del>ч</del> ∠	Santa Fe, NM 87502				
42	P.O. Box 5727	x			
	Jay Lazarus				
	Email: sricdon@earthlink.net				
	Albuquerque, NM 87106				
41	P.O. Box 4524	X			
	Center				
	Southwest Research & Information				
	Email: lwa@lwasf.com Chris Shuey				
	Santa Fe, NM 87501				
40	P.O. Box 931	X			
	Lee Wilson & Associates				
<u>.                                </u>	Email: r@rthickconsult.com				
	Albuquerque, NM 87104				
	Suite F-142				
39	901 Rio Grand Blvd. NW	X			
	Randy Hicks RT Hicks Consultants				
	Cuba, NM 87013				
38	P.O. Box 748	X			
	Dr. Harry Bishara				
	Santa Fe, NM 87503				
	Villa Rivera Room 101				
37	228 East Palace Avenue	X			
	State Historic Preservation Officer				
	Elmo Baca				
	Albuquerque, NM 87113-1001			·	
36	2105 Osuna Road, Northeast	X			
0.5	US Fish & Wildlife Service				
	Field Supervisor	<u> </u>	<u> </u>		
	Socorro, NM 87801				
55	NM Institute of Mining & Tech.				
35	Resources	X			
	NM Bureau of Mines & Mineral				
	Lynn Brandvold				
	Santa Fe, NM 87502-0115				
34	P.O. Box 27115	X			
	State Director Bureau of Land Management	-			

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# Kristin Pope

From: To:	"Kristin Pope" <kpope@riceswd.com> <cgarcia@fs.fed.us></cgarcia@fs.fed.us></kpope@riceswd.com>
Sent:	Wednesday, May 07, 2008 1:35 PM
Attach:	Santa Rita Stage 1 & 2 Public Notice amended.doc
Subject:	Public NoticeBD Santa Rita leak

**Regional Forester:** 

In accordance with the NMOCD Rule 19 Public Notice requirements, please find the attached public notification document. This document was originally mailed to you on March 3, 2008, but delivery was not confirmed.

Kristin Farris Pope, Project Scientist RICE Operating Company Hobbs, New Mexico (575) 393-9174

# Kristin Pope

From: To:	"Kristin Pope" <kpope@riceswd.com> <cadams@pnm.com></cadams@pnm.com></kpope@riceswd.com>
Sent:	Wednesday, May 07, 2008 1:37 PM
Attach:	Santa Rita Stage 1 & 2 Public Notice amended.doc
Subject:	Public NoticeBD Santa Rita leak

## Mr. Adams:

In accordance with the NMOCD Rule 19 Public Notice requirements, please find the attached public notification document. This document was originally mailed to you on March 3, 2008, but delivery was not confirmed.

Kristin Farris Pope, Project Scientist RICE Operating Company Hobbs, New Mexico (575) 393-9174

# Kristin Pope

From:	"Kristin Pope" <kpope@riceswd.com></kpope@riceswd.com>	
To:	<info@crihobbs.com></info@crihobbs.com>	
Sent:	Wednesday, May 07, 2008 1:55 PM	
Attach:	Santa Rita Stage 1 & 2 Public Notice amended.doc	
Subject:	Public NoticeBD Santa Rita leak	

The email below was not delivered because a mailbox for <u>ken@crihobbs.com</u> apparently does not exist. Please forward this notice to the appropriate personnel. Ken Marsh is located on the NMOCD Interested Parties list which makes notification to him mandatory.

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http://www.emnrd.state.nm.us/ocd/documents/noticelist.pdf

If his email address is incorrect or if he is no longer with CRI, or if CRI does not wish to receive these notices, please contact the NMOCD to be removed from the list or for corrections. Thanks.

----- Original Message -----From: <u>Kristin Pope</u> To: <u>ken@crihobbs.com</u> Sent: Wednesday, May 07, 2008 1:38 PM Subject: Public Notice--BD Santa Rita leak

Mr. Marsh:

In accordance with the NMOCD Rule 19 Public Notice requirements, please find the attached public notification document. This document was originally mailed to you on March 3, 2008, but delivery was not confirmed.

Kristin Farris Pope, Project Scientist RICE Operating Company Hobbs, New Mexico (575) 393-9174

<b>CIEFT COMPLEXATIVES SECTION</b> omplete items 1, 2, and 3. Also complete am 4 if Restricted Delivery is desired. int your name and address on the reverse that we can return the card to you. itach this card to the back of the malpiece, on the front if space permits. ticle Addressed to: Vincenter Reyna Dorotea Cadenta	A. Signature       A. Signature       A. Signature         X. Concernance       A. Signature       B. Agent         X. Concernance       Concernance       Concernance         B. Received by ( <i>Printed Name</i> )       C. Date of Delivery         D. is delivery address different from item 19, Co.       Yes         D. is delivery address different from item 19, Co.       No         If YES, enter delivery address below:       D No	<ul> <li>Sindiff to complete items 1, 2, and 3. Also complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Finit your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> <li>Article Addressed to:</li> <li>Millard Deck Est. #4193 Harding &amp; Carbone Inc.</li> </ul>	A. Signature A. Signature A. Signature B. Received by (Printed Name) B. Received by (Printed Name) D. is delivery address different from item 1? D. is delivery address different from item 1? D. is delivery address below: D. is delivery address below
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PS Form 3811, February 2004

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Ron Dutton Southwestern Public Service P.O. Box 1261 Amarillo, TX 79170 Fimail:ron.Dutton@xcelemergy.com	<ul> <li>3. Service Type</li> <li>3. Service Type</li> <li>1. Certified Mail</li> <li>1. Express Mail</li> <li>1. Registared</li> <li>1. Receipt for Merchandise</li> <li>1. Insured Mail</li> <li>1. C.O.D.</li> <li>4. Restricted Delivery'? (Extra Fee)</li> <li>1. Yes</li> </ul>	Chief Hazardous Waste Bureau Runnels Building Santa Fe, NM 87504 Email:James.Bearzi@state.nm.us	<ul> <li>3. Service Typa</li> <li>3. Service Typa</li> <li>3. Service Typa</li> <li>3. Cartified Mail</li> <li>1. Registered</li> <li>1. Registered</li> <li>1. Insured Mail</li> <li>1. C.O.D.</li> <li>4. Restricted Delivery? (Extra Fee)</li> </ul>
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AP-58 Stage | &2 Abatement Plan 12-7-06

# STAGE 1 & 2 ABATEMENT PLAN (AP-58)

RECEIVED

# DECEMBER 7, 2006

Ur 1 4 2006 Environmental Bureau Oil Conservation Division

# BD SANTA RITA EOL RELEASE SITEVisionT22S, R37E, SECTION 27, UNIT LETTER ALEA COUNTY, NEW MEXICO



Prepared by:



Prepared for:

# **RICE** Operating Company

**122 West Taylor** 

Hobbs, New Mexico 88240

P. O. Box 7624 Midland, Texas 79708

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# **1.0 EXECUTIVE SUMMARY**

The Santa Rita EOL Release site is operated by Rice Operating Company (ROC) and is located in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM. This Stage 1 and 2 Abatement Plan (AP-58) incorporates the preliminary findings from previous investigations and recommendations for additional assessment activities.

The discovery of a brine water release from a 2-inch PVC compression coupling occurred on November 22, 2003. Initial characterization of soil impacts were conducted at the site on November 26, 2003 using a backhoe. Vadose zone samples taken from trenches indicated a maximum chloride concentration of 3,284 mg/kg at a depth of 5-feet bgs directly adjacent to the release point. On January 6, 2004, ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites. After landowner access was granted, soil samples were collected at 16 locations to depths of 3 to 4 feet below ground surface (bgs) with a hand auger to determine the horizontal extent of the impacted soils on August 9. 2005. On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. Since September 2, 2005, the monitoring well has been sampled quarterly for analysis of major ions and benzene, toluene, ethylbenzene, and xylenes (BTEX). The chloride and total dissolved solids (TDS) concentrations in ground water at the on-site monitoring well are 2,100 milligrams per liter (mg/L) and 4,560 mg/L. respectively, based on analysis of samples obtained during the most recent sampling event on October 11, 2006. BTEX concentrations in groundwater have been below the method detection limit of 0.001 mg/L during each sampling event.

We propose the work elements described in detail in Section 7.0 to delineate the extent and magnitude of regulated constituents of concern (chlorides and TDS) in the vadose zone. Although existing data show that BTEX constituents are not present in the vadose zone or ground water, this proposal includes testing for these constituents. The purpose of these work elements is to assist ROC in selecting the soil and/or ground water remedy that is commensurate with any contribution from the Santa Rita EOL Release site to the regional ground water quality. The proposed work elements are summarized below:

- 1. Define regional ground water flow direction, potential sources of chloride in ground water and ambient ground water chemistry
- 2. Install additional soil borings and monitoring wells for evaluation of constituents of concern in the vadose zone and ground water.
- 3. Install a minimum 2-foot thick clay layer over chloride-impacted soils that exceed a field tested chloride concentration of 1,000 mg/kg threshold. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area.



- 4. Stockpiled soils with chloride concentrations less than 1,000 mg/kg will be placed above the clay layer such that a slight mound is constructed to direct excess precipitation from the spill area. If necessary, topsoil will be imported to complete the upper evapotranspiration layer.
- 5. Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth.
- 6. Groundwater pumping to recover the highly impacted fluid may be employed. This fluid would be used for routine line maintenance operations. If applicable, a point-of-use (cattle, wildlife, etc. watering) treatment system may be installed with reject fluid used for line maintenance or disposed into the BD SWD System.

When implementing any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

ROC is the service provider (agent) for the Blinebry-Drinkard (BD) saltwater disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner Authorization for Expenditure (AFE) approval and work begins as funds are received. In general, project funding is not forthcoming until OCD approves the work plan.



# 2.0 CHRONOLOGY OF EVENTS

- November 22, 2003 Release of approximately 50 barrels (bbls) discovered as a result of the failure of a compression fitting on the 2-inch PVC line. Approximately 40 bbls was recovered. The fitting was replaced and a new 10-ft joint of PVC was installed.
- November 26, 2003 Initial subsurface soil sampling activities were conducted with a backhoe at six locations. Soil samples were field tested for chloride and hydrocarbon levels. This investigation indicated chloride impact to the vadose zone.
- December 1, 2003 ROC submitted initial C-141 form to NMOCD.
- December 19, 2003 Confirmation samples taken at 12 feet bgs directly beneath the source and at 12 feet bgs at a point 5 feet east of the source were submitted to Cardinal Laboratories in Hobbs. The analysis indicated chloride concentrations of 2,495 mg/kg and 2,623 mg/kg, respectively.
- January 6, 2004 ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites.
- August 9, 2005Soil samples were collected at 16 locations to depths of 3 to<br/>4 feet bgs with a hand auger to determine the horizontal<br/>extent of the impacted soils.
- August 30, 2005 On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well. (MW-1).
- October 3, 2005 ROC notified the OCD office in Santa Fe that ground water impact was confirmed based on laboratory results of ground water samples analyzed from the on site monitoring well.





# **3.0 BACKGROUND**

### 3.1 Site Location and Land Use

The Santa Rita EOL Release site and release is located on land owner by Irwin Boyd in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM as shown on the attached Site Location Map (Plate 1). Produced water gathered by the BD SWD System in the site area is sent to the H-35 SWD well, which is located approximately 1.6 miles southeast of the Santa Rita EOL Release site. Land in the site area is primarily utilized for crude oil, gas production, and cattle ranching. Plate 2 is a recent aerial photograph at the same scale as Plate 1 showing the land use.

According to production data records from the OCD Online database, Moriah Resources Inc., Lewis B Burleson Inc., John H. Hendrix Corp., Arch Petroleum Inc., and Encore Operating LP, are the most active in crude oil and gas production in the area. Based on the OCD OnGuard database the oil and gas wells listed in Table 1 below are located within a half-mile of the site.

OPERATOR	WELL NAME	WELL TYPE
LAURA J MAY #001	ARCH PETROLEUM INC	OIL
HSOG #002	ENCORE OPERATING LP	OIL
SHIRLEY BOYD #001	JOHN H HENDRIX CORP	OIL
SANTA RITA #001	LEWIS B BURLESON INC	OIL
SANTA RITA #011	LEWIS B BURLESON INC	OIL
SANTA RITA #002	LEWIS B BURLESON INC	OIL
LANGLIE MATTIX PENROSE SAND UNIT #138	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #311	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #137	MORIAH RESOURCES, INC.	INJECTION
LANGLIE MATTIX PENROSE SAND UNIT #310	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #136	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #315	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #194	MORIAH RESOURCES, INC.	INJECTION
LANGLIE MATTIX PENROSE SAND UNIT #171	MORIAH RESOURCES, INC.	INJECTION
LANGLIE MATTIX PENROSE SAND UNIT #172	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #161	MORIAH RESOURCES, INC.	OIL
LANGLIE MATTIX PENROSE SAND UNIT #152	MORIAH RESOURCES, INC.	INJECTION

#### Table 1: Active Oil, Gas, and Injection Wells Within ½ mile of the Site

#### 3.2 Nature of Release and Summary of Previous Work

The BD Santa Rita EOL (end-of-line) site experienced an accidental discharge on November 22, 2003 due to the separation of a compression coupling on a 2-inch PVC pipeline. This discharge occurred on the pipeline 82 ft north of the BD Santa Rita EOL junction box. A C-



141 form (initial) was submitted to the NMOCD Hobbs District 1 office on December 1, 2003. Soil samples were collected for chloride delineation on November 26 and December 19, 2003 using a backhoe. ROC concluded that further characterization was warranted. On January 16, 2004, ROC disclosed this site to OCD as a potential for groundwater impact and the site was placed on a prioritized list of similar sites.

On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. The investigations indicated chloride impact to the vadose zone and groundwater, however no indication of hydrocarbon impact was evident based on field screening with a photoionization detector (all readings were less than 0.1 ppm). Soil sample results are depicted in Plate 3.

The monitoring well (MW-1) has been sampled and analyzed for BTEX, major ions, and TDS on a quarterly basis since September 2, 2005. On October 3, 2005, ROC notified the OCD office in Santa Fe that ground water impact was confirmed based on laboratory results of ground water samples analyzed from MW-1. The constituents of concern include chloride and TDS. No constituents of BTEX have been detected (less than the laboratory detection limit of 0.001 mg/L).

Photographs of the site are included in Appendix A.





# 4.0 GEOLOGY AND HYDROGEOLOGY

# 4.1 Regional and Local Geology

According to published information (Nicholson and Clebsch, 1961, Barnes, 1976, and Anderson, Jones, and Green, 1997) the site is underlain by Quaternary eolian and piedmont deposits composed of sand, silt, and gravel deposited by slopewash, and talus from the Ogallala Formation. The eolian and piedmont deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1- to 20-feet thick. The lithology of the eolian and piedmont deposits is very similar to that of the Ogallala since the Ogallala is the source of these re-deposited colluvial sediments. The nearest outcropping of the Ogallala Formation occurs approximately two miles east of the site along what is known as Rattlesnake Ridge. The thickness of the colluvium deposits and Ogallala Formation is estimated at 75-feet, however it varies locally as a result of significant paleo-topography at the top of the underlying Triassic Dockum Group. Since Cretaceous Age rocks in the region have been removed by pre-Tertiary erosion, the colluvial deposits and Ogallala Formation rest unconformably on the Triassic Dockum Group. Plate 4 displays the portion of the geologic map of southern Lea County southeast of Eunice, New Mexico (Nicholsen and Clebsch, 1961). The Ogallala Formation underlies the City of Eunice and the eastern boundary of the map. Quaternary erosion and deposition removed the Ogallala and deposited alluvium within the central part of Plate 4, which effectively outlines the active channel of Monument Draw. The Santa Rita EOL site is plotted on Plate 4 and is in the middle of the alluvium within Monument Draw.

Plate 4 also shows the elevation of the top of the red-bed surface, which occurs at approximately 130 feet below ground surface at the Santa Rita EOL site. The Dockum Group red beds are an aquiclude below the Ogallala and alluvial aquifers. In the area of the Santa Rita EOL site, the red bed elevation contours define a paleo-valley just west of and sub-parallel to Monument Draw. The elevation of the red-bed surface exerts controls on ground water flow. Where this surface is higher than the water table elevation, it obviously creates a barrier to flow. Where the red-bed surface is an expression of a paleo-valley, such as our area of interest, ground water may be directed toward the axis of this subsurface feature and the saturated thickness of the aquifer can increase as a result.

Plate 5 is the ground water map of southern Lea County (Nicholsen and Clebsch, 1961) covering the same area as Plate 4. This plate shows that the water table elevation mimics the red-bed elevation. At the Santa Rita EOL site site, ground water flows southeast towards the axis of Monument Draw. Nicholsen and Clebsch (1961) concluded, "The bulk of the water [in the sediments along Monument Draw and under the Eunice Plain] is derived by underground flow from the Laguna Valley [Monument] area." The red-bed surface map and the water table map support this hypothesis.

Based on the lithologic log description for the monitoring well on site (Appendix B) the subsurface soils are composed of light-brown sandy loam (0-2 ft), light-brown silty clayey





sand (2-6 ft), sandy caliche (6-25 ft), calcareous fine sand with intermittent hard streaks (25-35 ft), silty fine sand (35-45 ft), and fine sand (45-61 ft).

# 4.2 Regional and Local Hydrogeology

Potable ground water used in southern Lea County is derived primarily from the Ogallala Formation (including the colluvial deposits) and the Quaternary alluvium. Lower yields have also been provided by water bearing zones within the Triassic Dockum Group in a few scattered areas within southern Lea County. No potable water is known to be derived below the Triassic Dockum Group. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes.

Nicholsen and Clebsch (1961) found that the regional gradient of the Ogallala and interconnected colluvial aquifer in the site area generally flows toward the southeast and the hydraulic gradient varies from approximately 0.001 to 0.01 feet/feet. Recent data from ROC sites within two miles from the Santa Rita EOL site (E-15 junction box, Zachary Hinton EOL O-12) confirm a similar potentiometric surface.

Recharge to the Ogallala aquifer occurs primarily by infiltration of precipitation at a slow rate (typically one quarter to one half inch of water per year) due to the characteristically arid climate of southern Lea County (Nicholson and Clebsch, 1961).

Values for hydraulic conductivity are estimated to be between 2 to 200-feet per day for the Ogallala aquifer near the site area based on various published information (Office of the State Engineer, Musharrafieh and Chudnoff, 1999; Hart & McAda, 1985; and Myers, 1969).

Depth to ground water beneath the site area is approximately 51-feet below ground surface.

There are no natural surface water bodies located within a mile of the site.



# 5.0 VADOSE ZONE CHARACTERISTICS

ROC conducted initial upper vadose zone delineation field activities on November 26 and December 19, 2003. Investigation activities were conducted with a backhoe by trenching to 12-feet below ground surface (bgs) at 6 locations immediately adjacent to the source of the leak and in areas where pooling was observed (Plate 3). Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). Field chlorides ranged from a concentration of 1128 parts per million (ppm) at sample point TP-2 located 50 feet northwest of the release point and 2 feet deep to 5,530 ppm at the surface of sample point TP-1 located 45 feet northeast of the release point (Plate 3).

On August 9, 2005, soil samples were collected by ROC with a hand auger at 16 locations within a 25-foot grid spacing that encompassed the area where the spill had encroached. The hand augerred borings did not go further than 4 feet below ground surface due to encountering a hard caliche layer. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). Field chlorides ranged from a concentration of 41 ppm at sample point SP-3 located about 55 feet east of the release point and 3 feet deep to 851 ppm at the surface of sample point SP-5 located 85 feet east of the release point along the lease road (Plate 3).

On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well. The monitoring well (MW-1) was completed to a depth of 61-feet bgs and depth to groundwater was determined to be approximately 51 feet bgs. A duplicate of the sample collected at 45 feet bgs was submitted to the laboratory, which indicated a chloride concentration of 3,570 mg/kg. A more detailed description of the lithology, field chloride tests, and well construction is shown on the boring log in Appendix B.

Copies of the laboratory analytical reports and chain of custody forms are included in Appendix C.





# 6.0 GROUND WATER QUALITY

# 6.1 Groundwater Monitoring Program

Monitoring well (MW-1) has been sampled on a quarterly basis for major ions, TDS, and BTEX since September 9, 2005. A summary of historical analytical results and ground water elevations is listed in Table 2. Analytical results for the most recent sampling event conducted on July 19, 2006, are also depicted in graphical format in Figure 1. A copy of the laboratory analytical report and chain of custody form for the most recent ground water sampling event is included in Appendix C.

Sample Date	Depth to Groundwater (feet BTOC)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)
09/02/05	54.04	4,480	7,600	< 0.001	< 0.001	< 0.001	< 0.001
10/24/05	53.85	7,170	16,400	<0.001	< 0.001	<0.001	<0.001
01/23/06	53.98	7,450	14,300	<0.001	<0.001	<0.001	<0.001
04/24/06	54.07	7,100	14,300	<0.001	<0.001	<0.001	<0.001
07/19/06	54.08	6,180	14,000	<0.001	<0.001	<0.001	<0.001
10/11/06	53.99	2,100	4,560	< 0.001	< 0.001	<0.001	< 0.001
WQCC	Standards	250	1,000	0.01	0.75	0.75	0.62

## Table 2: Summary of Ground Water Monitoring Results (MW-1)

# 6.2 Hydrocarbons in Ground Water

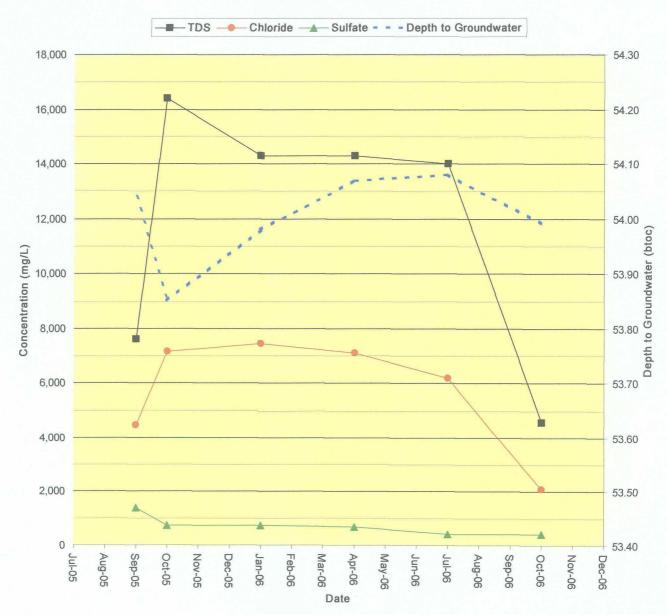
All BTEX concentrations in monitoring well MW-1 have been below the laboratory detection limit of 0.001 mg/L in every sampling event.

# 6.3 Other Constituents of Concern

- Although monitoring well MW-1 exceeded the WQCC standard of 250 mg/L for chloride concentration (2,100 mg/L) during the most recent sampling event in October 2006, levels have decreased by a factor of 3.5 since January 2006.
- The TDS concentration in monitoring well MW-1 (4,560 mg/L) exceeds the WQCC standard of 1,000 mg/L, but has decreased by a factor of 3.6 since October 2005.

Background and ambient concentrations of these compounds have not been established at this time. Chloride and TDS concentrations in MW-1 have consistently decreased since the initial sampling event. No correlations between chloride/TDS concentrations and changes in ground water levels are evident.





MW-1 Chloride, Sulfate, TDS Concentrations, and Water Table Elevation Versus Time Graph Santa Rita EOL Site





# 7.0 Stage 1 and 2 Abatement Plan

Additional lateral delineation of impact to the vadose zone and groundwater is necessary before the final remedies for the vadose zone and groundwater are implemented.

# 7.1 Evaluate Constituents of Concern in the Vadose Zone

Soil borings will be completed to delineate the lateral extent of impact to the vadose zone. We will field test each soil sample for chloride concentrations at a maximum of five-foot sampling intervals. Soil lithology and the presence of any observed staining or odor will be recorded. Samples will also be field screened for headspace analysis using an organic vapor meter (OVM) calibrated to assume a benzene response factor. Selected samples with headspace readings above 100 ppm will also be analyzed by a laboratory for the regulated constituents BTEX using EPA Method 8021B.

The number and placement of borings is dependent on the findings of the above-described criteria, however each boring will penetrate at least 30 feet of the vadose zone.

# 7.2 Define Regional Ground Water Flow Direction, Potential Sources of Chloride in Ground Water and Ambient Ground Water Chemistry

We plan to examine records at the OCD, NMED, Office of the State Engineer (OSE) and the US Geological Survey (USGS) for water quality and water level data. This file search will provide a better understanding of ground water flow and ambient (and possibly background) water chemistry. Plate 6 shows the locations of nearby water supply and monitoring wells obtained from ROC, OCD, NMED, OSE, and USGS databases. Further examination of data for these wells will assist us in understanding the contribution of the Santa Rita EOL site to the observed regional chemistry. Our characterization of ground water will include evaluation of monitoring data from other ground water investigation sites in the area, including the South Eunice gas plant. The water well inventory will also assist in identifying the location of potential water supply receptors (domestic, irrigation, or livestock wells).

# 7.3 Installation of Additional Monitoring Wells for Further Delineation

Soil boring samples and ground water samples from the existing monitoring well suggest that the release has contributed to chlorides and TDS into ground water. For further characterization as to the extent of the release from the line leak, we will construct a second monitoring well down gradient (south-southeast) from the existing monitoring well (MW-1). Since regional data is insufficient to determine the ambient, or background, chloride concentration in this area, we will also complete an up gradient monitoring well. We will complete these monitoring wells in accordance with OCD and industry standard methods with 5 feet of well screen above the water



table and a minimum of 10 feet of well screen below the water table. We plan to drill to the underlying Triassic red beds (Chinle Formation) for the up-gradient monitoring well to define the saturated thickness in the area.

## 7.4 Corrective Action/Closure

The information gathered from the results of the additional assessment actions described above will be evaluated and utilized to design the appropriate soil and ground water remedy. Upon completion of the Stage 1 tasks the findings will be evaluated to adjust the conceptual remedies outlined below. Any changes and refinements to the proposed remedies will be submitted to the NMOCD in a subsequent amendment to this Abatement Plan based on the findings of the field activities described herein.

The proposed conceptual remedy at this time is as follows:

## Vadose zone remedy

- A 2-foot thick clay layer will be selectively placed over chloride-impacted soils that exceed the 1,000 mg/kg threshold. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area, and further directed such that one clay barrier area does not direct water towards another.
- Stockpiled soils with chloride concentrations less than 1,000 mg/kg will be placed above the clay layer such that a slight mound is constructed to direct excess precipitation from the spill area. If necessary, topsoil will be imported to complete the upper evapotranspiration (ET) layer to aid in hosting and propagating native vegetation.
- Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth. The goal will be to re-vegetate the site to approximately 70% of the ground cover as observed in adjacent areas not affected by the release.

## Groundwater remedy

1

• Groundwater pumping to recover the highly impacted fluid may be employed. This fluid would be used for routine line maintenance operations. If applicable, a point-of-use (cattle, wildlife, etc. watering) treatment system may be installed with reject fluid used for line maintenance or disposed into the BD SWD System.



When evaluating any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

The remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. Such recommendations and findings will be presented to OCD in a subsequent amendment to this Abatement Plan.



# 8.0 QUALITY ASSURANCE / QUALITY CONTROL

Sampling and analytical procedures shall be performed in accordance with Title 20 NMAC 6.3107.B and Section 103 of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20 NMAC 6.1).

Soil samples will be screened in the field using a PID (QP-07) and field tested for chlorides (QP-03). Soil samples with a PID response of 100 ppm or greater will be submitted to the laboratory for analysis of BTEX. Ten percent (10%) of the soil samples will be submitted for laboratory analysis of chlorides as confirmation of our field analysis.

Ground water samples will be collected in accordance with procedures explained in QP-04 and QP-05, and analyzed for BTEX, major ions, and TDS.

Specific quality procedures for collecting and analyzing soil and ground water samples are included in Appendix D.



# 9.0 PROPOSED SCHEDULE OF ACTIVITIES

Within 45 days of approval of this Abatement Plan from the NMOCD initiate field activities. First we will seek groundwater data from surrounding wells (within a half-mile radius). We plan on using this information to determine the local groundwater gradient direction and ambient groundwater quality to determine the location of an upgradient and downgradient monitoring well on site to delineate and quantify the extent of the release at the Santa Rita EOL site. During the installation of the monitoring wells we will also perform soil borings for delineation of the vadose zone as described in section 7.1.

Upon completion of the Stage 1 tasks the findings will be evaluated to adjust the conceptual remedies outlined above. Any changes and refinements to the proposed remedies will be submitted to the NMOCD in a subsequent modification based on the findings of the field activities described herein. The remedies will be implemented upon approval by the OCD as proposed by ROC.

Completion dates for the tasks outlined in this Abatement Plan will be dependent access to area (off site) wells, contractor availability, weather conditions, and possibly other unforeseen considerations.

# **PLATES**

Plate 1: Site Location Map

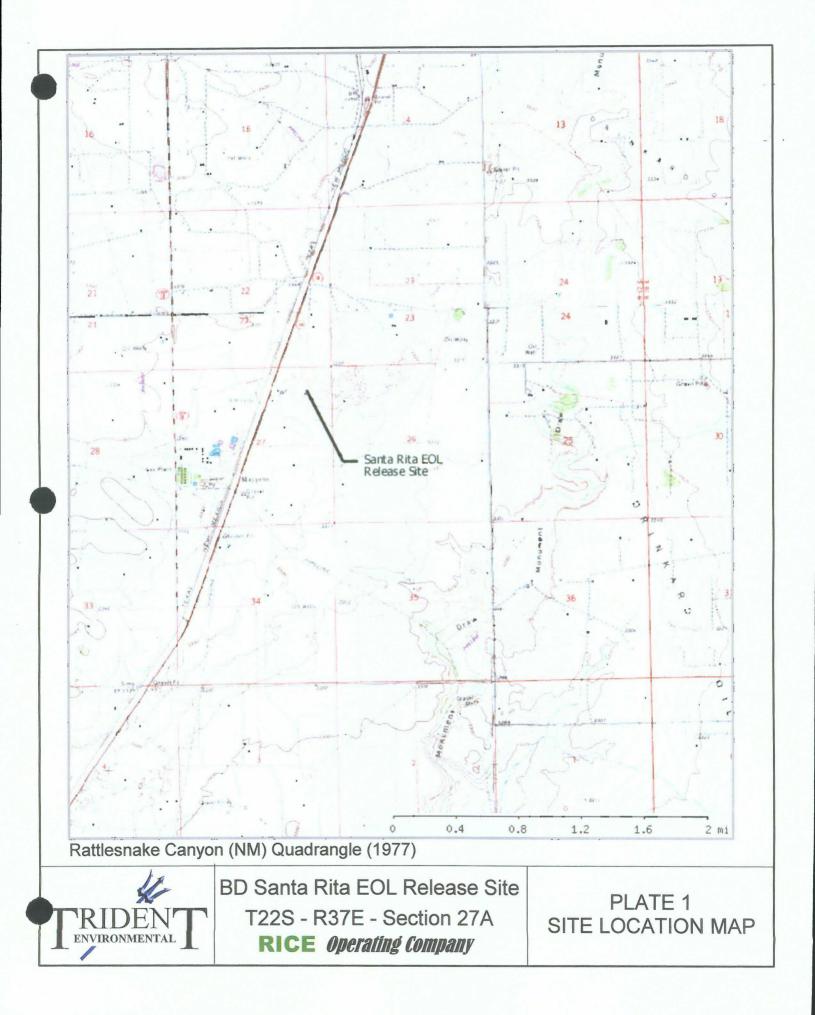
Plate 2: Aerial Photographic Map

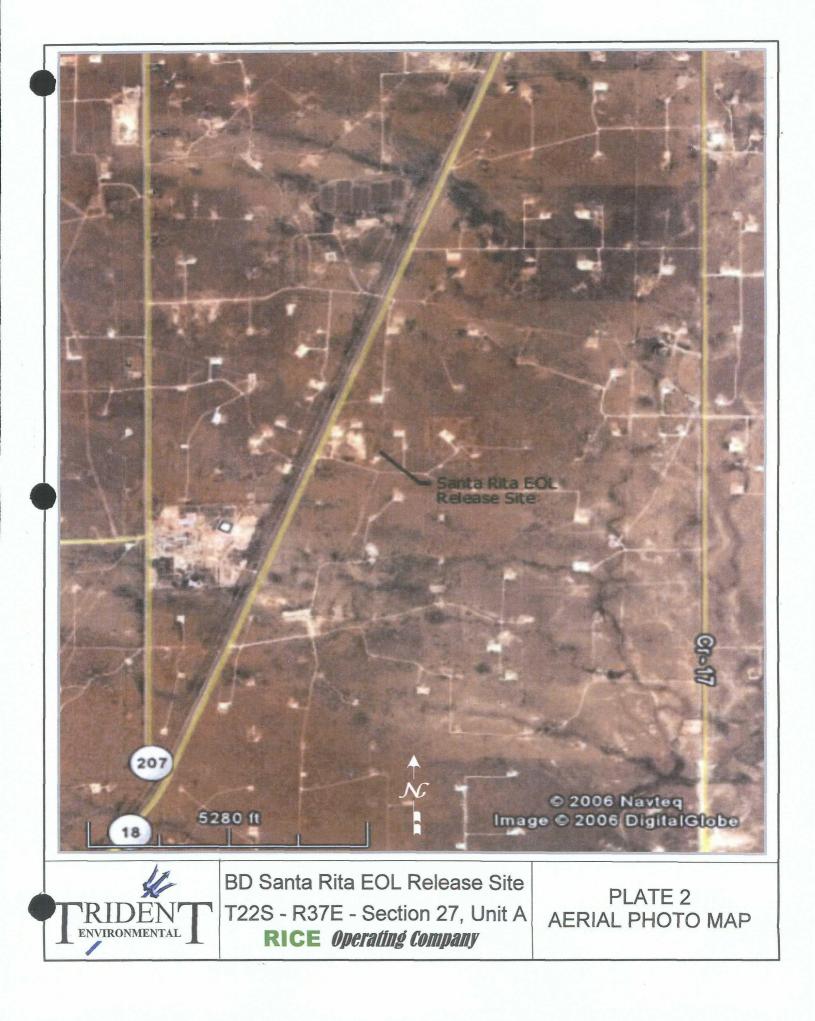
Plate 3: Preliminary Soil Sample Results

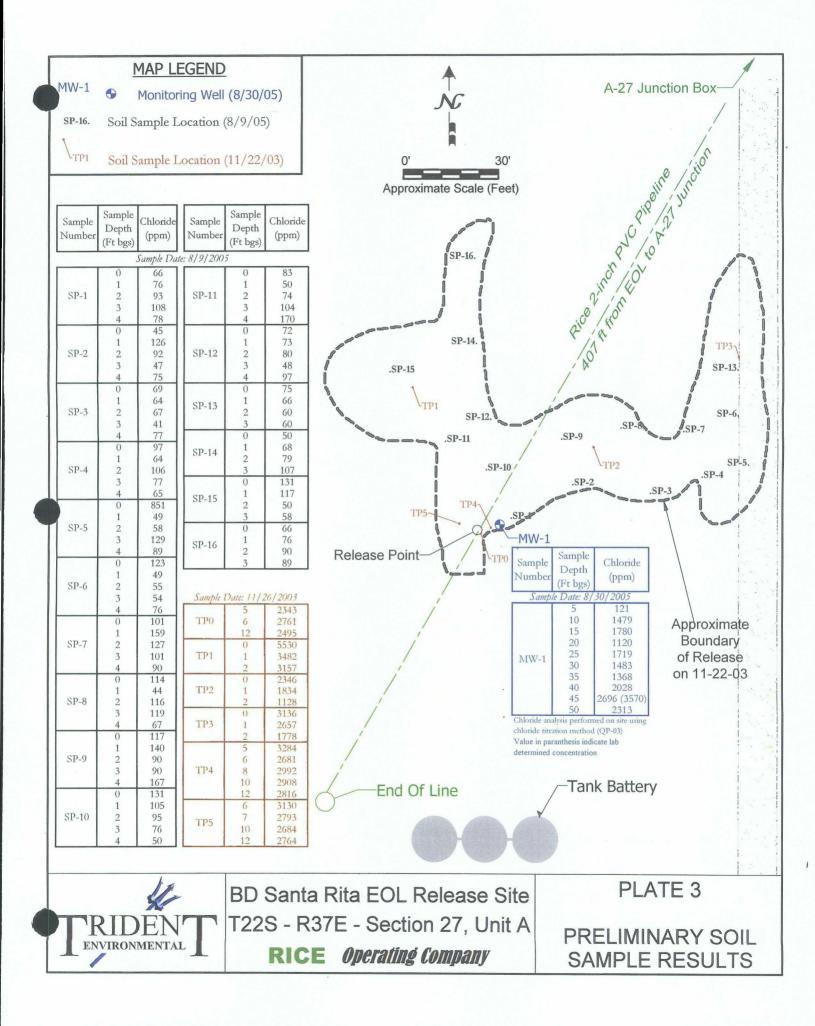
Plate 4: Geologic Map (Nicholson & Clebsch)

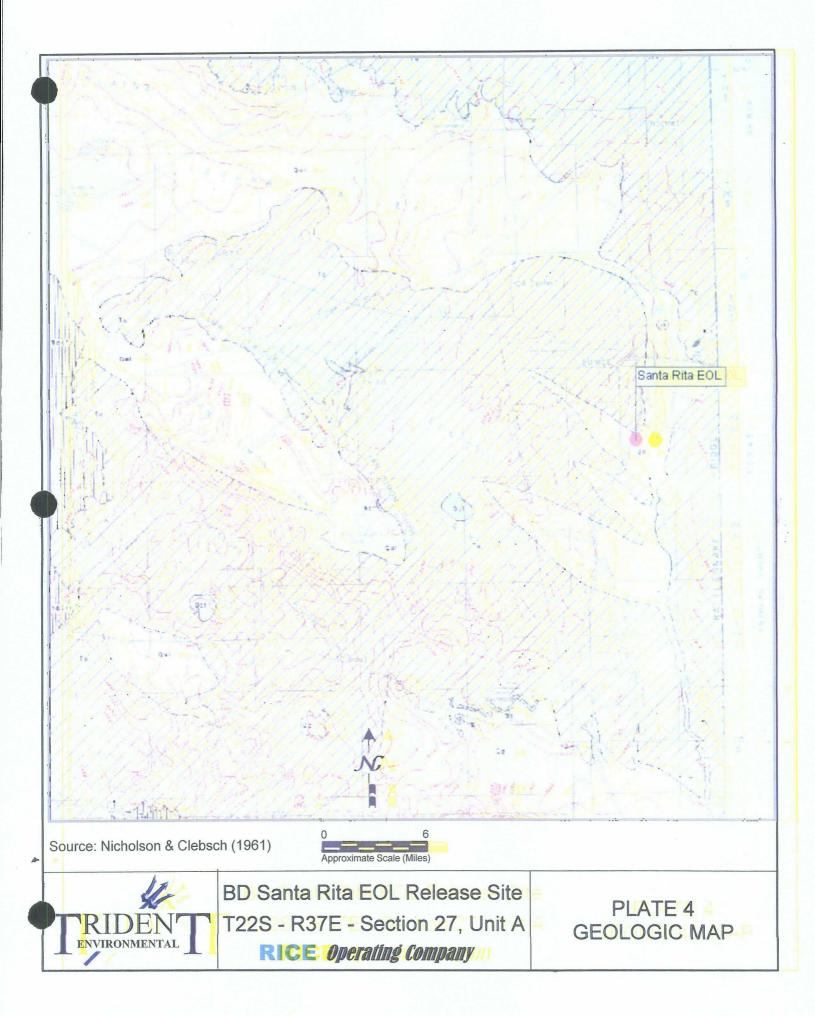
Plate 5: Ground Water Map (Nicholson & Clebsch)

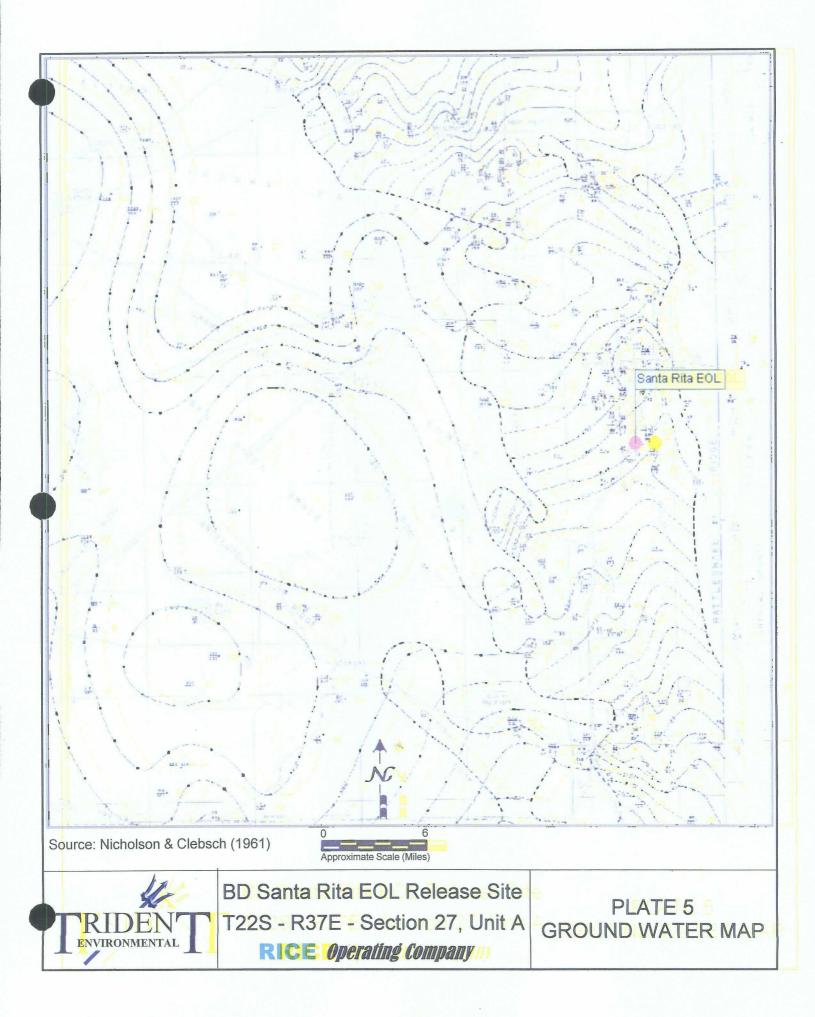
Plate 6: Water Well Map (NMSEO & USGS)

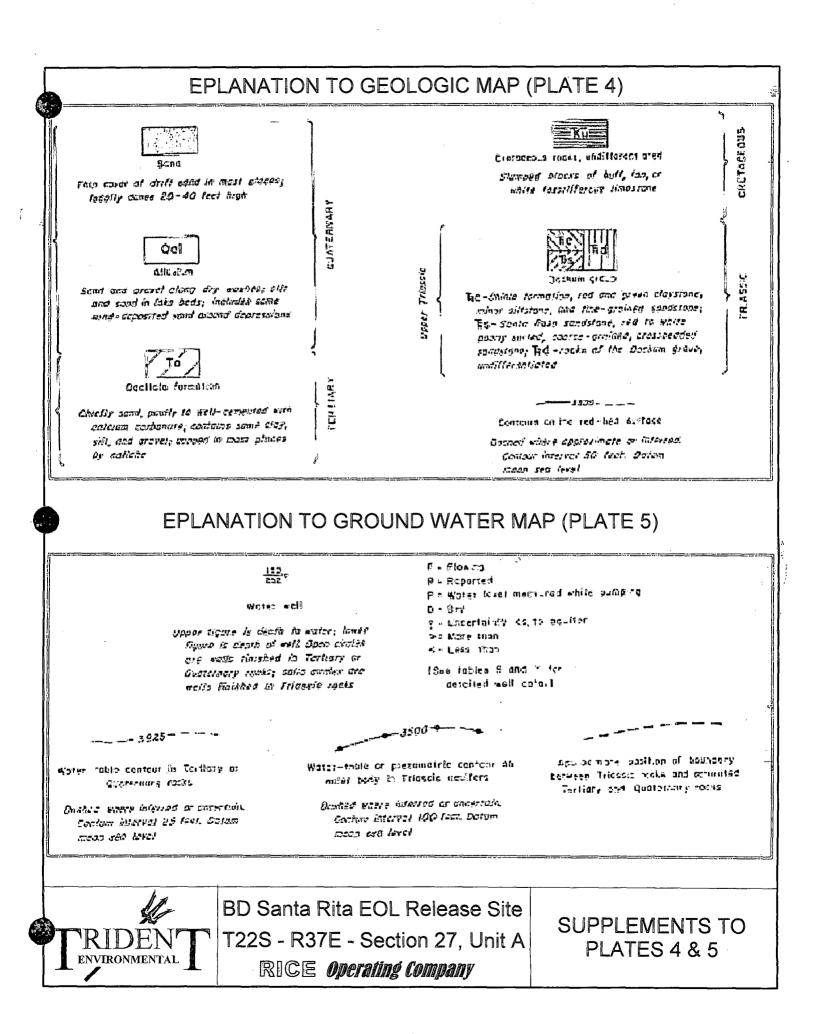


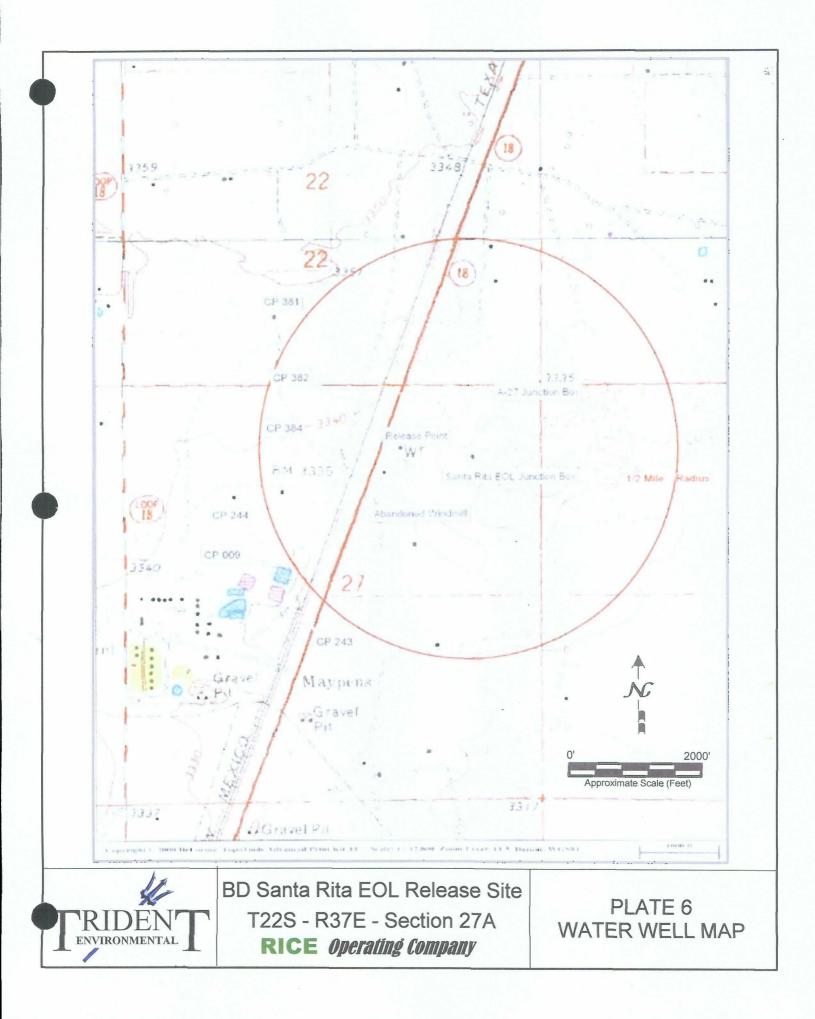












# **PHOTODOCUMENTATION**

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# **APPENDIX A**



View facing southwest showing drilling of monitoring well MW-1 located adjacent to release point at the Santa Rita EOL Site. (08-30-05)



View facing west showing chloride screening activities for soil samples obtained from monitoring well MW-1 at the Santa Rita EOL site (08-30-05)

# **APPENDIX B**

# LITHOLOGIC LOG

# AND

# WELL CONSTRUCTION DIAGRAM

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	Logger:	Gi	il Van Deventer; Jennifer Johnson	RICE Operating Com	ipany	Well ID:					
Drilling	Driller: Method:		Eades Drilling Air Rotary	Project Name:		-					
	tart Date:			08/30/05 Santa Rita leak							
E	End Date:		08/30/05	Location:		<b>MW</b> -1					
Notes:		82 ft nor	th of Santa Rita EOL junction box site	BD SWD System							
		= 61 ft	Groundwater = 54.04 ft (TOC)	unit 'A', Sec. 27, T22S, F	R37E	-1					
and the second second			The shares and the state of the	Lea County. NM							
Asiata Marka	cuttings co		an da weka di sa kasar nga di sa kasar nga sa sa sa kasar nga sa								
epth	chloride	PID	Description	Lithology Notes	Well	Construction					
feet)	(ppm)	(ppm)									
0.0			0 - 2 ft			)					
			SANDY LOAM light brown, medium-grained	and the second							
2.0			Ight brown, mediam-grained								
4.0			2-6ft								
	121	1.3	SILTY CLAYEY SAND light brown								
6.0											
8.0	1479	3.3									
10.0											
10.0			• • • • • • • • • • • • • • • • • • •		6 6						
12.0											
	1780	1.2									
14.0											
			6 - 25 ft								
16.0			SANDY CALICHE								
19.0	1120	0.5			Ø 2 Ø						
					asi 🕅	1					
20.0			1			3/8 inch					
						> bentonite chips					
22.0	1719	0.1				/ crupe					
24.0		0.1									
26.0					2-in. sch. 40 PVC casing						
28.0	1483	0.1									
20.0	1-100	U.1		and the second							
30.0			25 - 35 ft CALCAREOUS FINE SAND								
			with intermittent hard streaks			1					
32.0	1368	0.1									
34.0	1000	U. I									
36.0											
	2028	0.1									
38.0	2020	0.1									
40.0			35 - 45 ft SILTY FINE SAND								
			red			/					
42.0	2696	0.1			4 4	$\prec$					
14.0		2.1				)					
46.0				45 - 50 ft							
48.0	2313	0.1		sample							
				lab = 3570 ppm Cl <sup>-</sup>							
50.0				ppin of							
				water at		sand					
52.0			45 - 61 ft	~ 51 ft BGS		pack					
54.0			FINE SAND red								
56.0											
58.0						ł					
30.0											



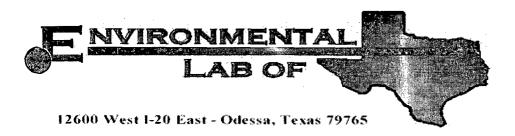
# CHAIN OF CUSTODY DOCUMENTATION

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# AND

# LABORATORY REPORTS

# **APPENDIX C**



# Analytical Report

# **Prepared for:**

Kristin Farris-Pope Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: BD System Santa Rita EOL Site Project Number: None Given Location: BD System Santa Rita EOL Site

Lab Order Number: 5I01023

Report Date: 09/06/05



Rice	e Operating Co.	Project:	BD System Santa Rita EOL Site	Fax: (505) 397-1471
122	W. Taylor	Project Number:	None Given	Reported:
Hob	bs NM, 88240	Project Manager:	Kristin Farris-Pope	09/06/05 11:43

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 (40'-45')	5101023-01	Soil	08/30/05 11:00	09/01/05 12:47

Rice Operating Co.	Project:	BD System Santa Rita EOL Site	Fax: (505) 397-1471
122 W. Taylor	Project Number:	None Given	Reported:
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	09/06/05 11:43

# General Chemistry Parameters by EPA / Standard Methods

### **Environmental Lab of Texas**

Analyte MW-1 (40'-45') (5I01023-01) Soit	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	3570	50.0	mg/kg	100	EI50206	09/02/05	09/02/05	EPA 300.0	
% Moisture	21.6	0.1	%	1	E150201	09/01/05	09/02/05	% calculation	



	Rice Operating Co.	Project: BD System Santa Rita EOL Site	Fax: (505) 397-1471
	122 W. Taylor	Project Number: None Given	Reported:
1.4.4	Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	09/06/05 11:43

## General Chemistry Parameters by EPA / Standard Methods - Quality Control

### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch E150201 - General Preparation (Prep)										
Blank (E150201-BLK1)				Prepared: (	09/01/05 A	nalyzed: 09	/02/05			
% Solids	100		%							
Duplicate (EI50201-DUP1)	Sou	rce: 5H31020-	01	Prepared: (	)9/01/05 A	nalyzed: 09	/02/05			
% Solids	91.1		%		90.3			0.882	20	
Duplicate (EI50201-DUP2)	Sou	rce: 5101027-0	2	Prepared: 09/01/05 Analyzed: 09/02/05						
% Solids	90.4		%		90.6			0.221	20	
Batch E150206 - Water Extraction	· · · · · · · · · · · · · · · · ·									
Blank (EI50206-BLK1)				Prepared &	Analyzed:	09/02/05				
Chloride	ND	0.500	mg/kg							
LCS (EI50206-BS1)				Prepared &	Analyzed:	09/02/05				
Chloride	8.55		mg/L	10.0		85.5	80-120			
Calibration Check (EI50206-CCV1)				Prepared &	Analyzed:	09/02/05				
	9.04		mg/L	10.0		90.4	80-120			
Chloride										
Chloride <b>Ruplicate (E150206-DUP1)</b>	Sou	rce: 5101023-0	1	Prepared &	z Analyzed:	09/02/05				



	Rice Operating Co.	Project: BD System Santa Rita EOL Site	Fax: (505) 397-1471
	122 W. Taylor	Project Number: None Given	Reported:
- 	Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	09/06/05 11:43

#### **Notes and Definitions**

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:

Raland K thick

9/6/2005

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

Date:

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-563-1800.



Invironmental Lab of Texas

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

60 nt:	Rice Operating	
Date/Time	: <u>9-01-05</u>	
Order #:	5101023	
Initials:	CR	· · ·

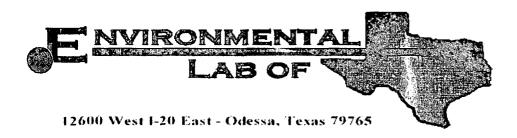
# Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	2.0 C
Shipping container/cooler in good condition?	Tes	No	
Custody Seals intact on shipping container/cooler?	Yes)	No	Not present
Custody Seals intact on sample bottles?	Nes	No	Not present
Chain of custody present?	Tes	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Tes)	No	
Chain of custody agrees with sample label(s)	Tes	No	
Container labels legible and intact?	(Tes)	No	
Sample Matrix and properties same as on chain of custody?	(Tes)	No	-
Samples in proper container/bottle?	1 des	No	
Samples properly preserved?	Cresk	No	
Sample bottles intact?	(Tes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
sufficient sample amount for indicated test?	Yes	No	
samples received within sufficient hold time?	(Tes)	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Contact Person: Regarding:	Variance Documentation: Date/Time:	_ Contacted by:
Corrective Action Taken:	·	
		· · · · · · · · · · · · · · · · · · ·

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# Analytical Report

# **Prepared for:**

Kristin Farris-Pope Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: BD Santa Rita Leak Project Number: None Given Location: T22S-R37E-Sec27A, Lea County, NM

Lab Order Number: 6J12014

Report Date: 10/25/06

	Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
	122 W. Taylor	Project Number: None Given	
and a state	Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6J12014-01	Water	10/11/06 09:40	10-12-2006 16:00



Rice Operating Co. 122 W. Taylor Hobbs NM, 88240 Project N

Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

### Organics by GC

### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6J12014-01) Water									
Benzene	ND	0.00100	mg/L	1	EJ61407	10/14/06	10/16/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	и	"	
Ethylbenzene	ND	0.00100	"	*	н		**		
Xylene (p/m)	ND	0.00100	"	"	н	"	**	"	
Xylene (o)	ND	0.00100	"	п	"	"	"		
Surrogate: a,a,a-Trifluorotoluene		84.2 %	80-12	0	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.8 %	80-12	0	"	"	"	"	





Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

## Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

## **General Chemistry Parameters by EPA / Standard Methods**

**Environmental Lab of Texas** 

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6J12014-01) Water									
Total Alkalinity	244	2.00	mg/L	1	EJ61311	10/13/06	10/13/06	EPA 310.1M	
Chloride	2100	50.0	H	100	EJ61403	10/19/06	10/19/06	EPA 300.0	
Total Dissolved Solids	4560	10.0	"	1	EJ61404	10/14/06	10/15/06	EPA 160.1	
Sulfate	408	50.0	**	100	EJ61403	10/19/06	10/19/06	EPA 300.0	



Environmental Lab of Texas



Project:BD Santa Rita LeakProject Number:None GivenProject Manager:Kristin Farris-Pope

## Total Metals by EPA / Standard Methods

### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6J12014-01) Water									
Calcium	327	4.05	mg/L	50	EJ61604	10/13/06	10/16/06	EPA 6010B	
Magnesium	191	1.80		"	н	"	"		
Potassium	15.4	3.00	"	"	n	"	н		
Sodium	894	10.8	"	250	"	*		н	



Environmental Lab of Texas



## **Organics by GC - Quality Control**

### **Environmental Lab of Texas**

		Reporting		Spike	Source	WREG	%REC	0.00	RPD	<b>N</b> L.(
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EJ61407 - EPA 5030C (GC)				<u>.</u>						
Blank (EJ61407-BLK1)				Prepared: 1	0/14/06 A	nalyzed: 10	/15/06			
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100								
Xylene (p/m)	ND	0.00100								
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	33.5		ug/l	40.0		83.8	80-120			
Surrogate: 4-Bromofluorobenzene	35.0		"	40.0		87.5	80-120			
LCS (EJ61407-BS1)				Prepared: 1	0/14/06 A	nalyzed: 10	/15/06			
Benzene	0.0451	0.00100	mg/L	0.0500		90.2	80-120			
Toluene	0.0430	0.00100		0.0500		86.0	80-120			
Ethylbenzene	0.0513	0.00100		0.0500		103	80-120			
Xylene (p/m)	0.0929	0.00100	"	0.100		92.9	80-120			
Xylene (0)	0.0423	0.00100	"	0.0500		84.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	34.4		ug/l	40.0		86.0	80-120			
Surrogate: 4-Bromofluorobenzene	43.8		"	40.0		110	80-120			
alibration Check (EJ61407-CCV1)				Prepared: 1	0/14/06 A	nalyzed: 10	/17/06			
Benzene	49.9		ug/l	50.0		99.8	80-120			
Toluene	43.1		"	50.0		86.2	80-120			
Ethylbenzene	42.0			50.0		84.0	80-120			
Xylene (p/m)	83.7		"	100		83.7	80-120			
Xylene (0)	41.2		"	50.0		82.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	36.1		"	40.0		90.2	80-120			
Surrogate: 4-Bromofluorobenzene	34.3		"	40.0		85.8	80-120			
Matrix Spike (EJ61407-MS1)	Sou	irce: 6J12015-0	01	Prepared: 1	0/14/06 Ai	nalyzed: 10	/17/06			
Benzene	0.0501	0.00100	mg/L	0.0500	ND	100	80-120			
Toluene	0.0440	0.00100	"	0.0500	ND	88.0	80-120			
Ethylbenzene	0.0416	0.00100	"	0.0500	ND	83.2	80-120			
Xylene (p/m)	0.0914	0.00100	н	0.100	ND	91.4	80-120			
Xylene (0)	0.0427	0.00100	n	0.0500	ND	85.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	35.5		ug/l	40.0		88.8	80-120			
Surrogate: 4-Bromofluorobenzene	40.2		"	40.0		100	80-120			



Environmental Lab of Texas



Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope Fax: (505) 397-1471

## **Organics by GC - Quality Control**

### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EJ61407 - EPA 5030C (GC)

Matrix Spike Dup (EJ61407-MSD1)	Sou	rce: 6J12015-(	01	Prepared: 1	0/14/06 A	nalyzed: 10	0/17/06		
Benzene	0.0502	0.00100	mg/L	0.0500	ND	100	80-120	0.00	20
Toluene	0.0442	0.00100	н	0.0500	ND	88.4	80-120	0.454	20
Ethylbenzene	0.0412	0.00100	н	0.0500	ND	82.4	80-120	0.966	20
Xylene (p/m)	0.0913	0.00100	"	0.100	ND	91.3	80-120	0.109	20
Xylene (o)	0.0437	0.00100	14	0.0500	ND	87.4	80-120	2.31	20
Surrogate: a,a,a-Trifluorotoluene	35.4		ug/l	40.0		88.5	80-120		
Surrogate: 4-Bromofluorobenzene	41.0		"	40.0		102	80-120		



Environmental Lab of Texas



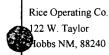
### General Chemistry Parameters by EPA / Standard Methods - Quality Control

### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61311 - General Preparation (N	VetChem)						····			
Blank (EJ61311-BLK1)				Prepared &	Analyzed:	10/13/06				
Total Alkalinity	ND	2.00	mg/L							
Carbonate Alkalinity	ND	0.100	"							
Bicarbonate Alkalinity	ND	2.00	**							
Jydroxide Alkalinity	ND	0.100	"							
LCS (EJ61311-BS1)				Prepared: 1	0/13/06 A	nalyzed: 10	/20/06			
Bicarbonate Alkalinity	196	2.00	mg/L	200		98.0	85-115			
Duplicate (EJ61311-DUP1)	Sour	·ce: 6J12011-(	01	Prepared &	Analyzed:	10/13/06				
Fotal Alkalinity	238	2.00	mg/L		242			1.67	20	
Reference (EJ61311-SRM1)				Prepared &	z Analyzed:	10/13/06				
Total Alkalinity	250		mg/L	250		100	90-110			
Batch EJ61403 - General Preparation (V	VetChem)									
Blank (EJ61403-BLK1)				Prepared &	Analyzed:	10/19/06				
Chloride	ND	0.500	mg/L							
fate	ND	0.500								
LCS (EJ61403-BS1)				Prepared &	Analyzed:	10/19/06				
Sulfate	9.55	0.500	mg/L	10.0		95.5	80-120			
Chloride	9.62	0.500	11	10.0		96.2	80-120			
				Prepared &	: Analyzed:	10/19/06				
Calibration Check (EJ61403-CCV1)										
Calibration Check (EJ61403-CCV1) Sulfate	10.1		mg/L	10.0		101	80-120			



Environmental Lab of Texas



### General Chemistry Parameters by EPA / Standard Methods - Quality Control

## **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61403 - General Preparation (We	etChem)								••••••••••••••••••••••••••••••••••••••	
Duplicate (EJ61403-DUP1)	Sour	rce: 6J12011-0	01	Prepared &	Analyzed:	10/19/06				
Sulfate	291	25.0	mg/L		308			5.68	20	
Chloride	1430	25.0	"		1430			0.00	20	
Duplicate (EJ61403-DUP2)	Sour	rce: 6J12016-0	02	Prepared &	z Analyzed:	10/19/06				
Sulfate	236	12.5	mg/L		237			0.423	20	
Chloride	690	12.5	"		692			0.289	20	
Matrix Spike (EJ61403-MS1)	Sour	rce: 6J12011-0	01	Prepared &	Analyzed:	10/19/06				
Chloride	2040	25.0	mg/L	500	1430	122	80-120			S-0
Sulfate	781	25.0	"	500	308	94.6	80-120			
Matrix Spike (EJ61403-MS2)	Sour	rce: 6J12016-(	)2	Prepared &	Analyzed:	10/19/06				
Sulfate	476	12.5	mg/L	250	237	95.6	80-120			
Chloride	979	12.5		250	692	115	80-120			
Batch EJ61404 - Filtration Preparation										
Blank (EJ61404-BLK1)				Prepared: 1	10/14/06 A	nalyzed: 10	/15/06			
tal Dissolved Solids	ND	10.0	mg/L							
Duplicate (EJ61404-DUP1)	Sour	rce: 6J12011-(	)1	Prepared: 1	10/14/06 A	nalyzed: 10	/15/06			
Total Dissolved Solids	3380	10.0	mg/L		3260			3.61	5	
Duplicate (EJ61404-DUP2)	Sour	rce: 6J12016-0	)2	Prepared: 1	0/14/06 Ai	nalyzed: 10	/15/06			
Total Dissolved Solids	1850	10.0	mg/L		1900			2.67	5	





Rice Operating Co. 22 W. Taylor lobbs NM, 88240

## Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

### Total Metals by EPA / Standard Methods - Quality Control

## **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61604 - 6010B/No Digestion										
Blank (EJ61604-BLK1)				Prepared: 1	0/13/06 A	nalyzed: 10	)/16/06			
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EJ61604-CCV1)				Prepared: 1	0/13/06 A	nalyzed: 10	/16/06			
Calcium	1.99		mg/L	2.00		99.5	85-115			
Magnesium	2.20		н	2.00		110	85-115			
Potassium	1.94		"	2.00		97.0	85-115			
Sodium	1.79		"	2.00		89.5	85-115			
Duplicate (EJ61604-DUP1)	Sou	rce: 6J12001-(	)4	Prepared: 1	0/13/06 A	nalyzed: 10	/16/06			
Calcium	0.426	0.0810	mg/L		0.427			0.234	20	
Magnesium	0.432	0.0360	н		0.422			2.34	20	
Potassium	0.596	0.0600	"		0.582			2.38	20	
Sodium	0.890	0.0430			0.866			2.73	20	



Environmental Lab of Texas



Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

#### **Notes and Definitions**

- S-07 Recovery outside Laboratory historical or method prescribed limits.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- LCS Laboratory Control Spike
- MS Matrix Spike
- Dup Duplicate

Raland Kesting Report Approved By:

Date:

10/25/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.



Environmental Lab of Texas

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ANAL YSIS RE	BD Santa Rita Leak		22S-R37E-					TOTAL		C * CO3* HC	ations (Cl, SOM MR / ESP / CE Odolies	¥ S ¥ ×				 			Sample Containers Intact? Labels on container? Cuetody Seale: Container? Temperature Upon Racelp	Laboratory Comments		
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CHAIN C					37-1471				Preservative	······································	H3204 M®CH HCII (S) 40 IIII 0 HMC <sup>3</sup>	2							pope@riceswd.com;			
					Fax No: (505) 397-147		2	L		ຣາອກ	istno 7 Contai ce	+					 		com; m			X
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	kpope@riceswd.com					9310		Land I	A SA	°	alqma2 ətaD	10/11/2006							<b>×</b>	Received by:		Received by ELOT:
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1b of Texas Phone: 432-663-1806 Fux: 432-663-1713	arris Pope	erating Co	aylor Stree	tew Mexic	3-9174	Johnson	Øvalornet.												ASE Emal rozann	Date	10/12/04	Date
ental La	Project Manager: Kristin Farris Pope	Company Name RICE Operating Company	company Address: 122 W. Taylor Street	city/state/zip: <u>Hobbs, New Mexico 88240</u>	Telephone No: (505) 393-9174	Bampler Signature: Rozanne Johnson (505) 631-9310	Emeil: rozanne@valornet.com				Ē	Monitor Well #1							bre )	<u>h</u>		
Enversionmental Lab of Texas 12600 West 1-20 East Phone: 432-663-1800 Odeena, Texae 78765	Project Ma	Company	Company Ad	CIty/8ta	Telepho	Bampler Sigr				H	رگر 148#	-01							Special instructions:	Reingedatuse by:	Rozenne Johnson	Relinquished by:
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# Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

nt:	Rive Op.
e/ Time:	10/12/de 4:00
ID # :	6512014
als:	U4

# Sample Receipt Checklist

			Client I	nitials
Temperature of container/ cooler?	Yes	No	2.0 °C	
Shipping container in good condition?	Afes	No		
Custody Seals intact on shipping container/ cooler?	Fes	No	Not Present	
Custody Seals intact on sample bottles/ container?	Xes	No	Not Present	
Chain of Custody present?	Yes	No		
Sample instructions complete of Chain of Custody?	X185	No		
Chain of Custody signed when relinquished/ received?	Ves	No		
Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
Container label(s) legible and intact?	Fes	No	Not Applicable	
0 Sample matrix/ properties agree with Chain of Custody?	Fes	No		
1 Containers supplied by ELOT?	Yes	No		
2 Samples in proper container/ bottle?	Yes	No	See Below	
3 Samples properly preserved?	Yes	No	See Below	
4 Sample bottles intact?	Yes	No		
15 Preservations documented on Chain of Custody?	Yes	No		
16 tainers documented on Chain of Custody?	YES	No		
17 Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
18 All samples received within sufficient hold time?	Yes	No	See Below	
19 VOC samples have zero headspace?	¥@ <b>\$</b>	No	Not Applicable	

# Variance Documentation

Contact:		Contacted by:		_ [	Date/ Time:	
tegarding:						······································
Corrective Action Taken	:			<u> </u>		
	······································					
	·			······		
Check all that Apply:	L	See attached e-mai	V fax			

Client understands and would like to proceed with analysis Cooling process had begun shortly after sampling event

# Multille Marce Analysis, Inc. Multille Multille

6701 Aberdeen Avenue, Suite 9 155 McCutcheon, Suite H Lubbock, Texas 79424 800•378•1296 El Paso, Texas 79932 888•588•3443 E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298 915•585•3443 FAX 915•585•4944

# **Analytical and Quality Control Report**

Kristen Farris-Pope Rice Operating Company 122 W Taylor Street Hobbs, NM, 88240

Report Date: August 17, 2006

Work Order: 6072145

Project Location:Lea County, New MexicoProject Name:BD Santa Rita LeakProject Number:BD Santa Rita Leak

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
96142	Monitor Well #1	water	2006-07-19	10:45	2006-07-21

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

This report consists of a total of 11 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director



Work Order: 6072145 BD Santa Rita Leak

# **Analytical Report**

#### Sample: 96142 - Monitor Well #1

QC Batch:	Alkalinity 28340 24777		Analytical Method: Date Analyzed: Sample Preparation:	SM 2320B 2006-07-26 2006-07-25	Prep Method: Analyzed By: Prepared By:	
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Hydroxide Al	kalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate All	kalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate A	Alkalinity		230	mg/L as CaCo3	1	4.00
Total Alkalini	ity		230	mg/L as CaCo3	1	4.00

# Sample: 96142 - Monitor Well #1

	Analysis: QC Batch: Prep Batch:	BTEX 28277 24759		Analytical M Date Analyz Sample Prep	ed:	S 8021B 2006-07-24 2006-07-24		Prep Meth Analyzed Prepared I	By:	S 5030B MT MT
				R	L					
	Parameter	Flag		Resu	lt	Units	]	Dilution		RL
_	Benzene			< 0.0010	0	mg/L		1		0.00100
	Toluene			< 0.0010	0	mg/L		1		0.00100
2	Ethylbenzene	;		< 0.0010	0	mg/L		1		0.00100
	Xylene			<0.0010	0	mg/L		11		0.00100
							Spike	Percent	I	Recovery
	Surrogate	,	Flag	Result	Units	Dilution	Amount	Recovery		Limits
	Trifluorotolue	ene (TFT)		0.0950	mg/L	1	0.100	95	66	5.2 - 127.7
	4-Bromofluor	robenzene (4-BFB)	1	0.0576	mg/L	1	0.100	58	70	).6 - 129.2

#### Sample: 96142 - Monitor Well #1

Analysis: Cations QC Batch: 28357 Prep Batch: 24749		Analytical Method: Date Analyzed: Sample Preparation:	S 6010B 2006-07-26 2006-07-24	Prep Method: Analyzed By: Prepared By:	
Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium	V	863	mg/L	10	0.500
Dissolved Potassium		67.3	mg/L	1	1.00
Dissolved Magnesium		438	mg/L	10	1.00
Dissolved Sodium		2180	mg/L	100	1.00

<sup>1</sup>BFB surrogate recovery outside normal limits. ICV/CCV and TFT surrogate recovery show the method to be in control.

# Sample: 96142 - Monitor Well #1

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	29104 <sup>a</sup>	Date Analyzed:	2006-08-16	Analyzed By:	WB
Prep Batch:	25429	Sample Preparation:	2006-08-15	Prepared By:	WB

<sup>a</sup>Matrix not reported %IA Cl is 124 and SO4 123 and RPD is 2 for CL and 2 for SO4.

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		6180	mg/L	500	0.500
Sulfate		412	mg/L	50	0.500

#### Sample: 96142 - Monitor Well #1

Analysis:	TDS		Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	29099 <sup>a</sup>		Date Analyzed:	2006-08-16	Analyzed By:	WB
Prep Batch:	25438		Sample Preparation:	2006-08-15	Prepared By:	WB
<sup>a</sup> duplicate no	t reported RPD is 6.		DI			
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Total Dissolv	ed Solids	2	14000	mg/L	20	10.00

# Method Blank (1) QC Batch: 28277

QC Batch:	28277	Date Analyzed:	2006-07-24	Analyzed By:	MT
Prep Batch:	24759	QC Preparation:	2006-07-24	Prepared By:	MT

Parameter	Flag	MDL Result	Unit	s	RL
Benzene		<0.000255	mg/	L	0.001
Toluene		<0.000210	mg/l		0.001
Ethylbenzene		< 0.000317	mg/		0.001
Xylene		<0.000603	mg/l	L	0.001
			Spike	Percent	Recovery

Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.0949	mg/L	1	0.100	95	76.1 - 117
4-Bromofluorobenzene (4-BFB)		0.0633	mg/L	1	0.100	63	58.5 - 118

# Method Blank (1) QC Batch: 28340

QC Batch:	28340	Date Analyzed:	2006-07-26	Analyzed By:	LJ
Prep Batch:	24777	QC Preparation:	2006-07-25	Prepared By:	LJ



<sup>2</sup>Reran out of hold time. •

Report Date: August 17, 2006	Work Order: 6072145	Page Number: 4 of 11
BD Santa Rita Leak	BD Santa Rita Leak	Lea County, New Mexico

		MDL		
Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity	····	<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	· 4
Total Alkalinity		<4.00	mg/L as CaCo3	4

# Method Blank (1) QC Batch: 28357

QC Batch: 28357	Date Analyzed:	2006-07-26		Analyzed By:	TP
Prep Batch: 24749	QC Preparation:	2006-07-24		Prepared By:	TS
		MDL			
Parameter	Flag	Result	Units		RL
Dissolved Calcium		0.132	mg/L		0.5
Dissolved Potassium		1.08	mg/L		· 1
Dissolved Magnesium		< 0.704	mg/L		1
Dissolved Sodium		0.836	mg/L		1

# Method Blank (1) QC Batch: 29099

QC Batch: 29099 Prep Batch: 25438		l: 2006-08-16 n: 2006-08-15		alyzed By: WB pared By: WB
		MDL		
Parameter	Flag	Result	Units	RL
Total Dissolved Solids		< 5.000	mg/L	10

# Method Blank (1) QC Batch: 29104

QC Batch: Prep Batch:			Date Analyzed: 2006-08-16 QC Preparation: 2006-08-15		Analyzed By: Prepared By:	
			MDL			
Parameter		Flag	Result	Units		RL
Chloride	· · · · · · · · · · · · · · · · · · ·	<u></u>	<0.0181	mg/L		0.5
Sulfate			<0.0485	mg/L		0.5

# Duplicates (1)

QC Batch:28340Prep Batch:24777		Date Analyzed: QC Preparation:	2006-07-26 2006-07-25		•	l By: LJ By: LJ
Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20

continued ...

						duplicate	continued
	Duplicate	Sample					RPD
Param	Result	Result		Units	Dilution	RPD	Limit
Bicarbonate Alkalinity	110	108	m	ig/L as CaCo3	1	2	12.6
Total Alkalinity	110	<b>U</b>		2	11.5		
Laboratory Control Spike (LCS-1)							
QC Batch: 28277		Date Analyzed:	2006-	-07-24		Analyz	ed By: MT
Prep Batch: 24759		QC Preparation	2006-	-07-24		Prepare	d By: MT
	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene	0.109	mg/L	1	0.100	< 0.000255	109	82.2 - 119
Toluene	0.108	mg/L	1	0.100	< 0.000210	108	81.2 - 119
Ethylbenzene	0.109	mg/L	1	0.100	< 0.000317	109	80 - 122
Xylene	0.322	mg/L	1	0.300	< 0.000603	107	81.3 - 122

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	0.104	mg/L	1	0.100	< 0.000255	109	82.2 - 119	5	20
Toluene	0.103	mg/L	1	0.100	< 0.000210	108	81.2 - 119	5	20
Ethylbenzene	0.101	mg/L	1	0.100	< 0.000317	109	80 - 122	8	20
Xylene	0.306	mg/L	1	0.300	< 0.000603	107	81.3 - 122	5	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.101	0.101	mg/L	1	0.100	101	101	81.8 - 114
4-Bromofluorobenzene (4-BFB)	0.112	0.111	mg/L	1	0.100	112	111	72.7 - 116

# Laboratory Control Spike (LCS-1)

QC Batch:	28357	Date Analyzed:	2006-07-26	Analyzed By:	ТР
Prep Batch:	24749	QC Preparation:	2006-07-24	Prepared By:	TS

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Calcium	51.7	mg/L	1	50.0	< 0.0950	103	85 - 115
Dissolved Potassium	50.8	mg/L	1	50.0	< 0.377	102	85 - 113
Dissolved Magnesium	51.5	mg/L	1	50.0	< 0.704	103	85 - 113
Dissolved Sodium	50.5	mg/L	1	50.0	<0.261	101	85 - 111

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Calcium	51.7	mg/L	1	50.0	< 0.0950	103	85 - 115	0	20
Dissolved Potassium	49.3	_mg/L	1	50.0	< 0.377	102	85 - 113	3	20
Dissolved Magnesium	49.8	mg/L	1	50.0	< 0.704	103	85 - 113	3	20

continued ....

control spikes continued		LCSD			Spike	Matrix	_	Rec.			RP
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit		PD	Lin
Dissolved Sodium		48.6	mg/L	1	50.0	< 0.261	101	85 - 11	1	4	20
Percent recovery is based of	on the spike	e result. RF	PD is bas	ed on the sp	pike and spi	ike duplicate	result.				
Laboratory Control Spik	e (LCS-1)										
QC Batch: 29104			Date	Analyzed:	2006-08-	-16			Analyze	ed By:	W
Prep Batch: 25429			QC F	reparation:	2006-08-	-15			Prepare	d By:	W
		LC	CS			Spike	Matr	ix			Rec.
Param		Res		Units	Dil.	Amount	Resu		Rec.		Limi
Chloride		11		mg/L	1	12.5	< 0.01		95		0 - 1
Sulfate		11		mg/L	1	12.5	< 0.04	185	90	9	0 - 1
Percent recovery is based of	on the spike	result. RF	PD is bas	ed on the sp	_	ike duplicate	result.				
		LCSD			Spike	Matrix		Rec.			
		Result	Units	Dil.	Amount	Result	Rec.	Limit		PD	Lin
Chloride Sulfate Percent recovery is based o	on the spike piked Samp	Result 11.6 11.3 result. RF	mg/L mg/L PD is bas	1	Amount 12.5 12.5	Result <0.0181 <0.0485	95 90		) .	PD 3 0	Lin 20
Chloride Sulfate Percent recovery is based o Matrix Spike (MS-1) S	-	Result 11.6 11.3 result. RF	mg/L mg/L PD is bas	1	Amount 12.5 12.5	Result <0.0181 <0.0485 ike duplicate r	95 90	Limit 90 - 110 90 - 110	) .	3	Lin 20 20
Chloride Sulfate Percent recovery is based o Matrix Spike (MS-1) S QC Batch: 28277	-	Result 11.6 11.3 result. RF	mg/L mg/L PD is bas Date	l l ed on the sp	Amount 12.5 12.5 bike and spi 2006-07-	Result           <0.0181           <0.0485           ike duplicate r           -24	95 90	Limit 90 - 11( 90 - 11(	) (	3 D ed By:	Lin 20 20
Chloride Sulfate Percent recovery is based o <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759	-	Result 11.6 11.3 result. RF	mg/L mg/L PD is bas Date QC F	l ed on the sp Analyzed: Preparation:	Amount 12.5 12.5 bike and spi 2006-07- 2006-07-	Result           <0.0181	95 90	Limit 90 - 11( 90 - 11(	) ( ) ( Analyze	3 0 ed By: d By:	Lin 20 20 M M
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param	-	Result 11.6 11.3 result. RF ole: 96149 MS Resu	mg/L mg/L PD is bas Date QC F	l ed on the sp Analyzed: Preparation: Units	Amount 12.5 12.5 bike and spi 2006-07- 2006-07- Dil.	Result <0.0181 <0.0485 ike duplicate n -24 -24 Spike Amount	95 90 result. Matrix Result	Limit 90 - 110 90 - 110	) ( ) ( Analyze Prepare Rec.	3 0 ed By: d By:	Lin 2( 2( M M M
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene	-	Result 11.6 11.3 result. RF ple: 96149 MS Resu 0.10'	mg/L mg/L PD is bas Date QC F	l l ed on the sp Analyzed: Preparation: Units mg/L	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- Dil. 1	Result <0.0181 <0.0485 ike duplicate n -24 -24 -24 Spike Amount 0.100	95 90 result. Matrix Result <0.00025	Limit 90 - 110 90 - 110 F55	Analyze Prepare Rec.	3 0 ed By: d By: I 1 70.	Lin 2( 2( 2( M M M Rec. Limit 9 - 12
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene	-	Result 11.6 11.3 result. RF ole: 96149 MS Resu 0.10 0.103	mg/L mg/L PD is bas Date QC F lt	l l ed on the sp Analyzed: Preparation: Units mg/L mg/L	Amount 12.5 12.5 bike and spi 2006-07- 2006-07- Dil.	Result           <0.0181	95 90 result. Matrix Result <0.00025 <0.00021	Limit 90 - 110 90 - 110 90 - 110 55	Analyze Prepare Rec. 107	3 50 ed By: d By: I 70. 70. 70.	Lin 20 20 M M M M Rec. Limit 9 - 12 8 - 12
QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene	-	Result 11.6 11.3 result. RF ole: 96149 MS Resu 0.10 0.10 0.100 0.100	mg/L mg/L PD is bas Date QC F It 5 1 6 1	l l ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- Dil. 1	Result           <0.0181	95 90 result. Matrix Result <0.00025 <0.00021 <0.00031	Limit 90 - 110 90 - 110	Analyze Prepare Rec. 107 105 106	3 0 ed By: d By: I 70. 70. 70. 74.	Lin 20 20 M M M Rec. .imit 9 - 12 8 - 12 8 - 12
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene	piked Samp	Result 11.6 11.3 result. RF ble: 96149 MS Resu 0.10 0.10 0.10 0.10 0.10 0.10	mg/L mg/L PD is bas Date QC F	l l ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L	Amount 12.5 12.5 Dike and spin 2006-07- 2006-07- Dil. 1 1 1 1 1 1	Result           <0.0181	95 90 result. Matrix Result <0.00021 <0.00021 <0.00031 <0.00060	Limit 90 - 110 90 - 110	Analyze Prepare Rec. 107	3 0 ed By: d By: I 70. 70. 70. 74.	Lin 20 20 M M M Rec. .imit 9 - 12 8 - 12 8 - 12
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene Percent recovery is based of	piked Samp	Result           11.6           11.3           result. RF           ole: 96149           MS           Result           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           0.10°           1.10°	mg/L mg/L PD is bas Date QC F QC F	i l ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L ed on the sp	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 5 Dike and spi Spike	Result           <0.0181	95 90 result. Matrix Result <0.00021 <0.00031 <0.00060 result.	Limit 90 - 110 90 - 100 90 - 1	) ( Analyze Prepare Rec. 107 105 106 104	3 0 ed By: d By: I 70. 74. 75.	Lin 20 20 M M M Rec. Limit 9 - 12 8 - 12 7 - 12 RP
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Param	piked Samp	Result 11.6 11.3 result. RF ole: 96149 MS Resu 0.10 0.10 0.10 0.10 0.31 result. RF MSD Result	mg/L mg/L PD is bas Date QC F lt 7 1 5 1 2 PD is bas Units	l l ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L ed on the sp Dil. A	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 Dike and spi Spike Amount	Result           <0.0181	95 90 result. Matrix Result <0.00021 <0.00031 <0.00060 result. Rec.	Limit 90 - 110 90 - 100 90 - 1	) ( ) ( ) ( ) Analyze Prepare Rec. 107 105 106 104 R	3 0 ed By: d By: I 70. 70. 74. 75. PD	Lin 20 20 M M M M Rec. Limit 9 - 12 8 - 12 8 - 12 7 - 12 RP Lim
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Param Benzene	piked Samp on the spike	Result           11.6           11.3           result. RF           ole: 96149           MS           Result           0.10'           0.100'           0.100'           0.101           0.102'           0.103           result. RF           MSD           Result           NA	mg/L mg/L PD is bas Date QC F lt 7 5 6 1 PD is bas Units mg/L	l l ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L ed on the sp Dil. A l	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 5 Dike and spi Spike Amount 0.100	Result           <0.0181	95 90 result. Matrix Result <0.00025 <0.00021 <0.00031 <0.00060 result. Rec. 0	Limit 90 - 110 90 - 110 90 - 110 10 55 10 17 03 Rec. Limit 70.9 - 12	Analyze           Prepare           Rec.           107           105           106           104           R1           6	a b b cd By: d By: I 70. 70. 74. 75. PD 00	Lim 20 20 M M M M M M M M M M M M M M M M M
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Param Benzene Toluene Ethylbenzene Xylene	piked Samp	Result           11.6           11.3           result. RF           ole: 96149           MS           Result           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           0.10'           10'           10'           10'           10'           10'           10'           10'           10'           10'           10'           10'  <	mg/L mg/L PD is bas Date QC F lt 7 1 2 D is bas Units mg/L mg/L	1 1 ed on the sp Analyzed: reparation: Units mg/L mg/L mg/L ed on the sp Dil. A 1 1	Amount 12.5 12.5 Dike and spires 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 Dike and spires Spike Amount 0.100 0.100	Result           <0.0181	95 90 result. Matrix Result <0.00021 <0.00021 <0.00060 result. Rec. 0 0	Limit 90 - 110 90 - 110 90 - 110 90 - 110 55 10 17 03 Rec. Limit 70.9 - 12 70.8 - 12	Analyze Prepare Rec. 107 105 106 104 R 104 R 105 106 104 20 5 20	3 2 2 2 3 3 2 3 3 2 3 3 2 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7	M <sup>7</sup> Rec. Limit 9 - 12 8 - 12 8 - 12 7 - 12 7 - 12 RPI Lim 20 20
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene Percent recovery is based of Param Benzene Toluene Ethylbenzene Toluene Ethylbenzene	piked Samp on the spike	Result 11.6 11.3 result. RF ole: 96149 MS Resul 0.10 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.100	mg/L mg/L PD is bas Date QC F lt 7 1 5 1 6 1 1 PD is bas mg/L mg/L mg/L	1 1 ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L ed on the sp Dil. A 1 1	Amount 12.5 12.5 Dike and spi 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 Dike and spi Spike Amount 0.100 0.100	Result           <0.0181	95 90 result. Matrix Result <0.00021 <0.00021 <0.00060 result. Rec. 0 0 0	Limit 90 - 110 90 - 110 90 - 110 90 - 110 90 - 110 55 10 17 03 Rec. Limit 70.9 - 12 70.8 - 12 70.8 - 12 74.8 - 12	Analyze Prepare Rec. 107 105 106 104 R 16 20 5 20 5 20	3 2 2 3 3 3 3 3 2 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7	Lim 20 20 M' M' M' M' M' M' M' M' M' M' N' N' 20 20 20 20
Chloride Sulfate Percent recovery is based of <b>Matrix Spike (MS-1)</b> S QC Batch: 28277 Prep Batch: 24759 Param Benzene Toluene Ethylbenzene Xylene	piked Samp on the spike	Result 11.6 11.3 result. RF ole: 96149 MS Resul 0.10 0.10 0.10 0.10 0.10 0.10 0.31 result. RF MSD Result NA NA NA NA	mg/L mg/L PD is bas Date QC F lt 1 PD is bas Units mg/L mg/L mg/L	1 1 ed on the sp Analyzed: Preparation: Units mg/L mg/L mg/L ed on the sp Dil. A 1 1 1 1	Amount 12.5 12.5 bike and spin 2006-07- 2006-07- 2006-07- Dil. 1 1 1 1 1 1 1 1 1 1 1 1 1	Result           <0.0181	95 90 result. Matrix Result <0.00025 <0.00021 <0.00031 <0.00060 result. Rec. 0 0 0 0 0	Limit 90 - 110 90 - 110 90 - 110 90 - 110 55 10 17 03 Rec. Limit 70.9 - 12 70.8 - 12	Analyze Prepare Rec. 107 105 106 104 R 16 20 5 20 5 20	3 2 2 2 3 3 2 3 3 2 3 3 2 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7	Lim 20 20 M' M' M' M' Rec. Limit 9 - 12 8 - 12 8 - 12 7 - 12 RPI Lim 20 20



<sup>3</sup>RPD is out of range because a matrix spike duplicate was not prepared.
 <sup>4</sup>RPD is out of range because a matrix spike duplicate was not prepared.
 <sup>5</sup>RPD is out of range because a matrix spike duplicate was not prepared.
 <sup>6</sup>RPD is out of range because a matrix spike duplicate was not prepared.

Report Date: August 17, 2006 BD Santa Rita Leak			Order: 6072 anta Rita Le				Page Number: 7 Lea County, New M			
matrix spikes continued										
	MS	MSD			Spike	MS	MSD	Rec.		
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit		
	MS	MSD			Spike	MS	MSD	Rec.		
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit		
Trifluorotoluene (TFT)	0.101	NA	mg/L	1	0.1	101	0	73.6 - 121		
4-Bromofluorobenzene (4-BFB)	<sup>8</sup> 0.110	NA	mg/L	1	0.1	110	0	81.8 - 114		
Matrix Spike (MS-1) Spiked Sam	ole: 96142									
QC Batch: 28357	Γ	Date Analyze	d: 2006-	07-26			Analy	zed By: TP		
Prep Batch: 24749		C Preparatio		07-24			•	red By: TS		
	MS			Sr	oike	Matrix		Rec.		
Param	Result	Units	Dil.	-	ount	Result	Rec.	Limit		
Dissolved Calcium 9	884	mg/L	1	5	0.0	863	42	68.4 - 138		

Dissolved Sodium	10	2200	mg/L	1	50.0	2180	
	.1		1 4		··· · · ·	1.	

mg/L

mg/L

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

110

496

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Calcium	11	884	mg/L	1	50.0	863	42	68.4 - 138	0	20
Dissolved Potassium		111	mg/L	1	50.0	67.3	87	82 - 129	1	20
Dissolved Magnesium		491	mg/L	1	50.0	438	106	61.2 - 135	1	20
Dissolved Sodium	12	2200	mg/L	1	50.0	2180	40	81.8 - 125	0	20

1

1

50.0

50.0

67.3

438

85

116 40 82 - 129 61.2 - 135

81.8 - 125

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

#### Standard (ICV-1)

**Dissolved Potassium** 

**Dissolved Magnesium** 

QC Batch: 282	77		Date Analy	zed: 2006-07-	24	Ana	llyzed By: MT
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/L	0.100	0.104	104	85 - 115	2006-07-24
Toluene		mg/L	0.100	0.104	104	85 - 115	2006-07-24
Ethylbenzene		mg/L	0.100	0.104	104	85 - 115	2006-07-24
Xylene		mg/L	0.300	0.314	105	85 - 115	2006-07-24

#### Standard (CCV-1)

QC Batch: 28277

Date Analyzed: 2006-07-24

Analyzed By: MT

<sup>7</sup>RPD is out of range because a matrix spike duplicate was not prepared.

<sup>9</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>10</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>11</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>12</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.



<sup>&</sup>lt;sup>8</sup>RPD is out of range because a matrix spike duplicate was not prepared.

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/L	0.100	0.107	107	85 - 115	2006-07-24
Toluene		mg/L	0.100	0.105	105	85 - 115	2006-07-24
Ethylbenzene		mg/L	0.100	0.106	106	85 - 115	2006-07-24
Xylene		mg/L	0.300	0.311	104	85 - 115	2006-07-24

# Standard (ICV-1)

11.

QC Batch: 28340		Da	te Analyzed:	2006-07-26		Ana	Analyzed By: LJ Percent		
			ICVs	ICVs	ICVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2006-07-26		

# Standard (CCV-1)

Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2006-07-26
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
			True	Found	Percent	Recovery	Date
			CCVs	CCVs	CCVs	Percent	
QC Batch: 28340		Da	te Analyzed:	2006-07-26		Ana	alyzed By: LJ

# Standard (ICV-1)

QC Batch: 28357		Date Analyzed:	2006-07-26		Ana	lyzed By: TP	
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Calcium		mg/L	50.0	50.7	101	90 - 110	2006-07-26
Dissolved Potassium		mg/L	50.0	52.0	104	90 - 110	2006-07-26
Dissolved Magnesium		mg/L	50.0	49.6	99	90 - 110	2006-07-26
Dissolved Sodium		mg/L	50.0	50.9	102	90 - 110	2006-07-26

# Standard (CCV-1)

QC Batch: 28357			Date Analyzed:	2006-07-26		Ana	lyzed By: TP
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Calcium		mg/L	50.0	48.7	97	90 - 110	2006-07-26
Dissolved Potassium		mg/L	50.0	47.4	95	90 - 110	2006-07-26
Dissolved Magnesium		mg/L	50.0	47.2	94	90 - 110	2006-07-26
Dissolved Sodium		mg/L	50.0	47.3	95	90 - 110	2006-07-26



BD Santa Rita Leak	·		BD San	ta Rita Leak	<u></u>	Lea Cou	nty, New Mex
Standard (ICV-1)							
QC Batch: 29099		Da	te Analyzed:	2006-08-16	,	Anal	yzed By: W
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyze
Total Dissolved Solids		mg/L	1000	1007	101	90 - 110	2006-08-
Standard (CCV-1)							
QC Batch: 29099		Da	te Analyzed:	2006-08-16	i	Anal	yzed By: W
			CCVs	CCVs	CCVs	Percent	
				Found	Percent	Recovery	Date
			True	1 Ound			
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyze
Total Dissolved Solids Standard (ICV-1)	Flag	mg/L	Conc. 1000	Conc. 1031	Recovery 103	Limits 90 - 110	Analyze 2006-08-
Total Dissolved Solids	Flag	mg/L	Conc. 1000	Conc.	103	Limits 90 - 110	2006-08-
Total Dissolved Solids Standard (ICV-1)	Flag	mg/L Da ICV	Conc. 1000 te Analyzed: s I0	Conc. 1031 2006-08-16 CVs	103	Limits 90 - 110	
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104		mg/L Da	Conc. 1000 te Analyzed: s I0	Conc. 1031 2006-08-16	103	Limits 90 - 110 Anal Percent Recovery	2006-08-
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104 Param Flag	Units	mg/L Da ICV True Cone	Conc. 1000 te Analyzed: s Id e Fo c. C	Conc. 1031 2006-08-16 CVs ound conc.	ICVs Percent Recovery	Limits 90 - 110 Anal Percent Recovery Limits	2006-08- yzed By: W Date Analyze
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104 Param Flag Chloride	Units mg/L	mg/L Da ICV True Cone 12.5	Conc. 1000 te Analyzed: s If e For c. C	Conc. 1031 2006-08-16 CVs ound conc. 12.5	ICVs Percent Recovery 100	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110	2006-08- yzed By: W Date Analyze 2006-08-
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104 Param Flag Chloride	Units	mg/L Da ICV True Cone	Conc. 1000 te Analyzed: s If e For c. C	Conc. 1031 2006-08-16 CVs ound conc.	ICVs Percent Recovery	Limits 90 - 110 Anal Percent Recovery Limits	2006-08- yzed By: W Date Analyze 2006-08-
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104 Param Flag	Units mg/L	mg/L Da ICV True Cone 12.5	Conc. 1000 te Analyzed: s If e For c. C	Conc. 1031 2006-08-16 CVs ound conc. 12.5	ICVs Percent Recovery 100	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110	2006-08- yzed By: W Date Analyze 2006-08-
Total Dissolved Solids Standard (ICV-1) QC Batch: 29104 Param Flag Chloride Sulfate	Units mg/L	mg/L Da ICV True Cone 12.5	Conc. 1000 te Analyzed: s Id e Fe c. C 5 1 5 1	Conc. 1031 2006-08-16 CVs ound conc. 12.5	ICVs Percent Recovery 100 98	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110 90 - 110	2006-08- yzed By: W Date Analyze 2006-08- 2006-08-
Total Dissolved Solids         Standard (ICV-1)         QC Batch: 29104         Param       Flag         Chloride         Sulfate         Standard (CCV-1)	Units mg/L	mg/L Da ICV True Cond 12.5 12.5 Da CCV	Conc. 1000 te Analyzed: s Id e Fo c. CC 5 1 5 1 te Analyzed: 's C	Conc. 1031 2006-08-16 CVs ound conc. 12.5 12.2 2006-08-16 CVs	ICVs Percent Recovery 100 98	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110 90 - 110 90 - 110 Anal Percent	2006-08- yzed By: W Date Analyze 2006-08- 2006-08-
Total Dissolved Solids         Standard (ICV-1)         QC Batch:       29104         Param       Flag         Chloride       Sulfate         Standard (CCV-1)       QC Batch:       29104	Units mg/L mg/L	mg/L Da ICV True Cond 12.5 12.5 Da CCV True	Conc. 1000 te Analyzed: s I( e Fo c. C 5 I te Analyzed: 's C e Fo	Conc. 1031 2006-08-16 CVs ound conc. 12.5 12.2 2006-08-16 CVs ound	ICVs Percent Recovery 100 98 CCVs Percent	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110 90 - 110 90 - 110 Anal Percent Recovery	2006-08- yzed By: W Date Analyze 2006-08- 2006-08- 2006-08- yzed By: W Date
Total Dissolved Solids         Standard (ICV-1)         QC Batch: 29104         Param       Flag         Chloride         Sulfate         Standard (CCV-1)         QC Batch: 29104         Param       Flag         Flag         QC Batch: 29104         Param       Flag         Flag         Standard (CCV-1)         QC Batch: 29104         Param       Flag	Units mg/L mg/L	mg/L Da ICV True Cond 12.5 12.5 Da CCV True Cond	Conc. 1000 te Analyzed: s I( e Fo c. C 5 I te Analyzed: (s C e Fo c. C	Conc. 1031 2006-08-16 CVs ound conc. 12.5 12.2 2006-08-16 CVs ound conc.	ICVs Percent Recovery 100 98 CCVs Percent Recovery	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110 90 - 110 Anal Percent Recovery Limits	2006-08- yzed By: W Date Analyze 2006-08- 2006-08- 2006-08- yzed By: W Date Analyze
Total Dissolved Solids         Standard (ICV-1)         QC Batch:       29104         Param       Flag         Chloride       Sulfate         Standard (CCV-1)       QC Batch:       29104	Units mg/L mg/L	mg/L Da ICV True Cond 12.5 12.5 Da CCV True	Conc. 1000 te Analyzed: s I( e Fo c. C 5 1 te Analyzed: (s C e Fo c. C 5 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Conc. 1031 2006-08-16 CVs ound conc. 12.5 12.2 2006-08-16 CVs ound	ICVs Percent Recovery 100 98 CCVs Percent	Limits 90 - 110 Anal Percent Recovery Limits 90 - 110 90 - 110 90 - 110 Anal Percent Recovery	2006-08- yzed By: W Date Analyze 2006-08- 2006-08- 2006-08- yzed By: W Date



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Report Date: August 17, 2006 BD Santa Rita Leak

Work Order: 6072145 BD Santa Rita Leak

Page Number: 11 of 11 Lea County, New Mexico

	Cation-A	Cation-Anion Balance Sheet	ance Sh	eet			
ш	Potassium	Alkalinity	Sulfate	Chloride	Nitrate	Fluoride	TDS
ε	mqq	mdd		mqq	bpm	bpm	bpm

8/16/2006

					Percentage	Error	6.5		0.77
	EC	μMHOs/cm		Total	Anions	in meq/L	187.52		needs to be 0.55-0.77
	TDS	bpm	14000	Total	Cations	in meq/L	175.66	TDS/Anion	0.75
	Fluoride	bpm			Fluoride	in meq/L	0.00	TDS/Cat	0.80
	Nitrate	udd			Nitrate	in meq/L	0.00	TDS/EC	
	Chloride	bpm	6180		Chloride	in meq/L	174.34		-
	Sulfate	bpm	412		Sulfate	in meq/L	8.58		0
	Alkalinity	bpm	230		Alkalinity	in meq/L	4.60		2
	Potassium	mqq	67.3		Potassium	in meq/L	1.72		0
	Sodium	mqq	2180		Sodium	in meq/L	94.83		range
	Calcium Magnesium Sodium	bpm	438		Magnesium	in meq/L	36.04	EC/Anion	
8/16/2006	Calcium	bpm	863		Calcium	in meq/L	43.06	EC/Cation	
DATE:	Sample #		96142		Sample #		96142		96142





# Analytical Report

# **Prepared for:**

Kristin Farris-Pope Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: BD Santa Rita Leak Project Number: None Given Location: Lea County

Lab Order Number: 6D27010

Report Date: 05/04/06

	Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
	122 W. Taylor	Project Number: None Given	Reported:
4.4	122 W. Taylor Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/04/06 15:31

# ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6D27010-01	Water	04/24/06 10:15	04/27/06 10:30

:	Rice Operating Co.
	a 122 W. Taylor
*	Hobbs NM, 88240

**Reported:** 05/04/06 15:31

# Organics by GC

Project Manager: Kristin Farris-Pope

Project Number: None Given

Project: BD Santa Rita Leak

#### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6D27010-01) Water									
Benzene	ND	0.00100	mg/L	1	ED62807	04/28/06	05/01/06	EPA 8021B	
Toluene	ND	0.00100	"	"					
Ethylbenzene	ND	0.00100	"	"	"	**	11	"	
Xylene (p/m)	ND	0.00100		"	"	11	n	"	
Xylene (o)	ND	0.00100	n	"	"	10	"	"	
Surrogate: a,a,a-Trifluorotoluene		98.2 %	80-12	0	<i>n</i>	n	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	80-12	)	"	"	"	"	



Environmental Lab of Texas



#### Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

Reported: 05/04/06 15:31

# General Chemistry Parameters by EPA / Standard Methods

#### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6D27010-01) Water									
Total Alkalinity	219	2.00	mg/L	1	EE60301	05/03/06	05/03/06	EPA 310.1M	
Chloride	7100	100	"	200	EE60116	05/01/06	05/01/06	EPA 300.0	
Total Dissolved Solids	14300	5.00	11	1	EE60115	04/27/06	04/28/06	EPA 160.1	
Sulfate	675	100	"	200	EE60116	05/01/06	05/01/06	EPA 300.0	



Environmental Lab of Texas



Rice Operating Co. 22 W. Taylor Hobbs NM, 88240

# Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

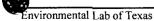
Fax: (505) 397-1471

**Reported:** 05/04/06 15:31

# Total Metals by EPA / Standard Methods

**Environmental Lab of Texas** 

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6D27010-01) Water									
Calcium	924	2.00	mg/L	200	ED62719	04/27/06	04/27/06	EPA 6010B	
Magnesium	491	0.200	"	"	"	"	"		
Potassium	35.7	2.50	**	50	"	"	"	"	
Sodium	2580	10.0	"	1000	"	11	"	"	



The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Page 4 of 10

Rice Operating Co. 122 W. Taylor		Pr Project Nu		D Santa Rita I one Given	Leak				Fax: (505) 397-1471 Reported:			
Hobbs NM, 88240				istin Farris-P	ope				05/04/06 15:31			
	0	rganics by	GC - Q	Quality Co	ontrol							
		Environm	ental I	Lab of Tex	kas							
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes		
Batch ED62807 - EPA 5030C (GC)												
Blank (ED62807-BLK1)				Prepared: (	)4/28/06 A	nalyzed: 04	/30/06					
Benzene	ND	ND 0.00100 mg/L										
Foluene	ND	0.00100	"									
Ethylbenzene	ND	0.00100	"									
Xylene (p/m)	ND	0.00100	"									
Xylene (0)	ND	0.00100	"									
Surrogate: a,a,a-Trifluorotoluene	42.7		ug/l	40.0		107	80-120					
Surrogate: 4-Bromofluorobenzene	42.2		"	40.0		106	80-120					
LCS (ED62807-BS1)	Prepared: 04/28/06 Analyzed: 04/30/06											
Benzene	0.0599	0.00100	mg/L	0.0500		120	80-120					
Toluene	0.0580	0.00100	"	0.0500		116	80-120					
Ethylbenzene	0.0551	0.00100	n	0.0500		110	80-120					
Xylene (p/m)	0.120	0.00100	n	0,100		120	80-120					
Xylene (0)	0.0596	0.00100	n	0.0500		119	80-120					
Surrogate: a,a,a-Trifluorotoluene	43.0		ug/l	40.0		108	80-120					
Surrogate: 4-Bromofluorobenzene	42.2		"	40.0		106	80-120					
libration Check (ED62807-CCV1)				Prepared: 0	04/28/06 A	nalyzed: 05	/01/06					
Benzene	55.0		ug/l	50.0		110	80-120					
Toluene	53.0			50.0		106	80-120					
Ethylbenzene	55.9			50.0		112	80-120					
Xylene (p/m)	110		"	100		110	80-120					
Xylene (0)	55.9		"	50.0		112	80-120					
Surrogate: a,a,a-Trifluorotoluene	39.0		"	40.0		97.5	80-120					
Surrogate: 4-Bromofluorobenzene	39.1		"	40.0		97.8	80-120					
Matrix Spike (ED6280'7-MS1)	Sou	rce: 6D27008-	01	Prepared: 0	4/28/06 A	nalyzed: 05	/01/06					
Benzene	0.0576	0.00100	mg/L	0.0500	ND	115	80-120					
Toluene	0.0568	0.00100	"	0.0500	ND	114	80-120					
Ethylbenzene	0.0587	0.00100	"	0.0500	ND	117	80-120					
Xylene (p/m)	0.120	0.00100	"	0.100	ND	120	80-120					
Xylene (0)	0.0600	0.00100		0.0500	ND	120	80-120					
Surrogate: a,a,a-Trifluorotoluene	41.7		ug/l	40.0		104	80-120					
Surrogate: 4-Bromofluorobenzene	47.5		"	40.0		119	80-120					



Environmental Lab of Texas

	Rice Operating Co.	Project:	BD Santa Rita Leak	Fax: (505) 397-1471
A	122 W. Taylor	Project Number:	None Given	Reported:
τų.	Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	05/04/06 15:31

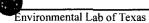
# **Organics by GC - Quality Control**

# **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
										***************************************

Batch ED62807 - EPA 5030C (GC)

Matrix Spike Dup (ED62807-MSD1)	Sou	rce: 6D27008-	01	Prepared: 0	4/28/06 A	5/01/06			
Benzene	0.0597	0.00100	mg/L	0.0500	ND	119	80-120	3.42	20
Toluene	0.0579	0.00100	и	0.0500	ND	116	80-120	1.74	20
Ethylbenzene	0.0585	0.00100	н	0.0500	ND	117	80-120	0.00	20
Xylene (p/m)	0.120	0.00100	н	0.100	ND	120	80-120	0.00	20
Xylene (o)	0.0598	0.00100	"	0.0500	ND	120	80-120	0.00	20
Surrogate: a,a,a-Trifluorotoluene	43.5		ug/l	40.0		109	80-120		
Surrogate: 4-Bromofluorobenzene	46.4		"	40.0		116	80-120		



Rice Operating Co.				O Santa Rita I	eak				Fax: (505) 397-1471		
122 W. Taylor		Project Nu							Reported:		
Hobbs NM, 88240		Project Mar	nager: Kr	istin Farris-Po	ope				05/04/0	6 15:31	
General C	hemistry Para	ameters by	EPA /	Standard	Method	ls - Qua	lity Con	trol			
Environmental Lab of Texas											
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch EE60115 - General Preparation (	(WetChem)										
Blank (EE60115-BLK1)				Prepared: 0	)4/27/06 Ar	nalyzed: 04	/28/06				
otal Dissolved Solids	ND	5.00	mg/L								
Duplicate (EE60115-DUP1)	Sou	rce: 6D27015-	01	Prepared: 0							
otal Dissolved Solids	3020	5.00	mg/L		3040			0.660	5		
Batch EE60116 - General Preparation (	(WetChem)										
Blank (EE60116-BLK1)				Prepared &	Analyzed:	05/01/06					
Chloride	ND	0.500	mg/L								
ulfate	ND	0.500	"								
LCS (EE60116-BS1)				Prepared &	Analyzed:	05/01/06					
ulfate	9,47	0.500	mg/L	10.0		94.7	80-120				
Chloride	9.71	0.500	"	10.0		97.1	80-120				
Calibration Check (EE60116-CCV1)				Prepared &	Analyzed:	05/01/06					
Chloride	9.86		mg/L	10.0		98.6	80-120				
ulfate	8.11		"	10.0		81.1	80-120				
uplicate (EE60116-DUP1)	Sou	rce: 6D27008-	01	Prepared &	: Analyzed:	05/01/06					
Sulfate	80.0	2.50	mg/L		79.2			1.01	20		
Chloride	49.3	2.50	и	-	49.0			0.610	20		
	WetChem)										
Batch EE60301 - General Preparation ( Blank (EE60301-BLK1)	WetChem)			Prepared &	Analyzed:	05/03/06					



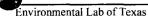
The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

	Rice Operating Co.	Project:	BD Santa Rita Leak	Fax: (505) 397-1471
140	122 W. Taylor Hobbs NM, 88240	Project Number:		<b>Reported:</b> 05/04/06 15:31
	10005 NM, 88240	Project Manager:	Kristin Farris-Pope	03/04/08 13.31

# General Chemistry Parameters by EPA / Standard Methods - Quality Control

# **Environmental Lab of Texas**

								· · · · · · · · · · · · · · · · · · ·		
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Nistaa
	Resun		Units	Level	Result	%KEC		RPD	211111	Notes
Batch EE60301 - General Preparation	(WetChem)									
LCS (EE60301-BS1)				Prepared &	Analyzed:	05/03/06				
Bicarbonate Alkalinity	214		mg/L	200		107	85-115			
Duplicate (EE60301-DUP1)	Sour	ce: 6D26006-	01	Prepared &	Analyzed:	05/03/06				
Total Alkalinity	29.0	2.00	mg/L		28.0			3.51	20	
Reference (EE60301-SRM1)				Prepared &	Analyzed:	05/03/06				
Fotal Alkalinity	96.0	······································	mg/L	100		96.0	90-110			



	Ric
2	122
	lot

Magnesium

Potassium

Sodium

e Operating Co. 2 W. Taylor bbs NM, 88240

# Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

**Reported:** 05/04/06 15:31

20

20

20

0.00

7.17

# Total Metals by EPA / Standard Methods - Quality Control

# **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ED62719 - 6010B/No Digestion										
Blank (ED62719-BLK1)				Prepared &	Analyzed:	04/27/06			_	
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	11							
Sodium	ND	0.0100	**							
Calibration Check (ED62719-CCV1)				Prepared &	Analyzed:	04/27/06				
Calcium	2.08		mg/L				85-115			
Magnesium	2.16						85-115			
Potassium	1.94		"				85-115			
Sodium	1.96		"				85-115			
Duplicate (ED62719-DUP1)	Sou	rce: 6D26006-	01	Prepared &	: Analyzed:	04/27/06				
Calcium	0.0366	0.0100	mg/L		0.0367			0.273	20	

ND

0.275

12.1

ND

0.275

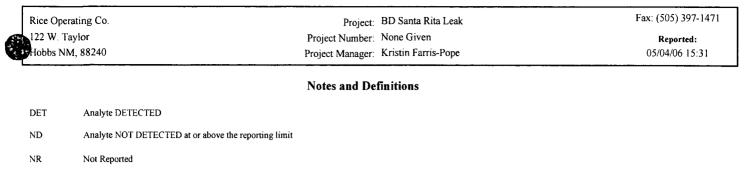
13.0

0,00100

0.0500

0.100

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	T 1		г
Environmental	Lab	OI .	lexas



- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- LCS Laboratory Control Spike
- MS Matrix Spike
- Dup Duplicate

Report Approved By:

Raland K Just 5/4/2006 Date:

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-563-1800.



CHAIN OF CUSTODY RECORD AND ANAL YSIS REQUEST	# Od	Analyze For: TCLP: TOTAL: X	Soil Coliner (Specify): Caltors (Ca, Mg, Na, K) Caltors (Ca, Mg, Na, K) Caltors (Ca, So4, CO3, HCO3) SAR / ESP / CEC Metals: Ka Ag Ba Cd Cr Pb Hg Yoletifes Semivolatiles Tolet Discorved Soilds RCI H O.R.M. Standard For Standard Soilds Standard TAT Standard TAT Standard TAT Standard TAT Standard TAT					COM Sample Containers Intact? A N Labels on container? N Custody Seals: Container? Confer Temperature Upon Receipt:	Date Time Laboratory Comments:	ite Time (10 D
Environmental Lab of Texas       Phone: 432-563-1800         12600 W. 20 East       Phone: 432-563-1800         0dessa, Texas 79765       Fax: 432-563-1713         Project Manager:       Eax: 432-563-1713         Project Manager:       Kristin Farris Pope         kinstin Farris Pope       kpope@riceswd.com         Company Name       RICE Operating Company         Company Address:       122 W. Taylor Street	сћу/state/Zip: <u>Hobbs, New Mexico 88240</u> теlерћопе No: <u>(505) 393-9174</u> Fax No: <u>(505) 397-1471</u>	sampler Signature: <u>Rozanne Johnson (505)</u> 631-9310 Email: <u>rozanne@valornet.com</u>	Visiter Date Sampled Mo. of Containers Huo <sub>3</sub> Mo. of Containers Huo <sub>3</sub> Huo <sub>3</sub> Huo <sub>3</sub> Huo <sub>3</sub> H	O         Monitor Well #1         4/24/2006         10:15         3         X         2         1         X				Special Instructions: PLEASE Email RESULTS TO: kpope@riceswd.com & mfranks@riceswd.com	Rentinguestreater Date Time Receivedby Date Date Time Receivedby Date 1/27/64 (1:00 ) 100 / 1/27/27/64 (1:00 ) 100 / 1/27/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/24 / 1/27/2	Late Time Received

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

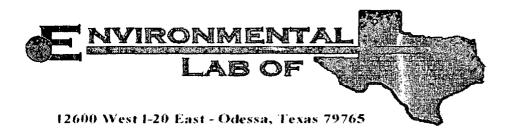
nt C	fice op.
E/Time:	- 4/27/00 10:30
er#:	602700
als:	CR

# Sample Receipt Checklist

perature of container/cooler?	Yes	No	2.0 C
ping container/cooler in good condition?	YES	No	
tody Seals intact on shipping container/cooler?	1 Alian	No	Not present
cody Seals intact on sample bottles?	1 235 1	No	Not present
in of custody present?	Ves 1	No	
tple Instructions complete on Chain of Custody?	Yes, I	No 1	······································
in of Custody signed when relinquished and received?	Xa	No	· · · · · · · · · · · · · · · · · · ·
in cr custody agrees with sample label(s)	225	No	
tainer labels legible and intact?	Yes	No	······································
ple Matrix and properties same as on chain of custody?	Yes	No	
noles in proper container/bottle?	1 725	No	· · ·
nples properly preserved?	YES	No	
nole bottles intact?	(3)	l No	
servations documented on Chain of Custody?	Ves	l No	
ttainers documented on Chain of Custody?	125	No	······································
ficie cample amount for indicated test?	1 Kes	No	
san received within sufficient hold time?	105	No	
C samples have zero headspace?	()	No	Not Acciloable

her observations:

ntaot Person: garding:	Variance Documentation: Date/Time:	_ Contacted by:	-
errective Action Taken:			
<b>A</b>			



# Analytical Report

# **Prepared for:**

Kristin Farris-Pope Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: BD Santa Rita Leak Project Number: None Given Location: Lea County

Lab Order Number: 6A25022

Report Date: 02/01/06

Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
122 W. Taylor Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/01/06 11:43

#### ANALYTICAL REPORT FOR SAMPLES

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Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6A25022-01	Water	01/23/06 10:40	01/25/06 13:25





# Project:BD Santa Rita LeakProject Number:None GivenProject Manager:Kristin Farris-Pope

**Reported:** 02/01/06 11:43

# Organics by GC

# **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6A25022-01) Water									
Benzene	ND	0.00100	mg/L	1	EA62618	01/26/06	01/27/06	EPA 8021B	
Toluene	ND	0.00100		"	"	н	"		
Ethylbenzene	ND	0.00100	"	н		и	H	19	
Xylene (p/m)	ND	0.00100	"	н	"	"	"	"	
Xylene (0)	ND	0.00100	n	"		••	"	"	
Surrogate: a,a.a-Trifluorotoluene		82.0 %	80-12	)	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.0 %	80-12	)	"	"	"	"	



Environmental Lab of Texas



# Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

**Reported:** 02/01/06 11:43

# General Chemistry Parameters by EPA / Standard Methods

# **Environmental Lab of Texas**

Analyte Monitor Well #1 (6A25022-01) Water	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Alkalinity	210	2.00	mg/L	1	EA62406	01/26/06	01/26/06	EPA 310.1M	
Chloride	7450	100	11	200	EA63004	01/30/06	01/30/06	EPA 300.0	
Total Dissolved Solids	14300	5.00	"	ł	EA63003	01/26/06	01/27/06	EPA 160.1	
Sulfate	723	100	"	200	EA63004	01/30/06	01/30/06	EPA 300.0	



Environmental Lab of Texas



#### Project: BD Santa Rita Leak Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

**Reported:** 02/01/06 11:43

# Total Metals by EPA / Standard Methods

# **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6A25022-01) Water									
Calcium	996	2.00	mg/L	200	EA62615	01/26/06	01/26/06	EPA 6010B	
Magnesium	535	0.200		n	"		"	"	
Potassium	46.1	0.500	"	10			11	"	
Sodium	3060	5.00	"	500	"	"		"	



nvironmental Lab of Texas

Organics by	nager: K	ristin Farris-Po	Source Result	%REC nalyzed: 01	%REC Limits /27/06	RPD	Repo 02/01/0 RPD Limit	rted: 6 11:43 Notes
Organics by           Environm           Reporting           Limit           D         0.00100           D         0.00100	GC - ( nentaì l Units mg/L	Quality Co Lab of Tes Spike Level	Source Result		Limits	RPD	RPD	
Environm Reporting Limit D 0.00100 D 0.00100 D 0.00100 D 0.00100 D 0.00100 5	Units mg/L	Lab of Tex Spike Level	Source Result		Limits	RPD		Note
Reporting Limit           D         0.00100	Units mg/L	Spike Level	Source Result		Limits	RPD		Notes
lt Limit D 0.00100 D 0.00100 D 0.00100 D 0.00100 D 0.00100 5	mg/L	Level	Result		Limits	RPD		Notes
D 0.00100 D 0.00100 D 0.00100 D 0.00100 5		Prepared: C	01/26/06 A	nalyzed: 01	/2 <b>7</b> /06			
D 0.00100 D 0.00100 D 0.00100 D 0.00100 5		Prepared: 0	01/26/06 A	nalyzed: 01	/27/06			
D 0.00100 D 0.00100 D 0.00100 D 0.00100 5								
D 0.00100 D 0.00100 D 0.00100 5	9 11 11 11							
D 0.00100 D 0.00100 5	11 11 12							
D 0.00100	11							
5	u							
4	ug/l	40.0		96.2	80-120			
	"	40.0		106	80-120			
		Prepared: 0	1/26/06 A	nalyzed: 01	/27/06			
6 0.00100	mg/L	0.0500		113	80-120			
7 0.00100	"	0.0500		111	80-120			
7 0.00100	"	0.0500		109	80-120			
2 0.00100	"	0.100		102	80-120			
8 0.00100		0.0500		108	80-120			
2	ug/l	40.0		103	80-120			
8	"	40.0		82.0	80-120			
		Prepared: 0	1/26/06 A	nalyzed: 01	/28/06			
3	ug/l	50.0		103	80-120			
5		50.0		105	80-120			
5	"	50.0		109	80-120			
1	"	100		101	80-120			
6	"	50.0		111	80-120			
3	"	40.0		85.8	80-120			
5	"	40.0		98.8	80-120			
Source: 6A24010	-01	Prepared: 0	1/26/06 A	nalyzed: 01	/27/06			
9 0.00100	mg/L	0.0500	ND	112	80-120			
8 0.00100	"	0.0500	ND	110	80-120			
	"							
	"							
			ND					
5								
	2 0.00100 8 0.00100 2 8 3 5 5 5 5 5 5 5 5 5 5 5 5 5	2 0.00100 " 8 0.00100 " 2 ug/l 3 ug/l 3 ug/l 5 " 5 " 5 " 5 " 5 " 5 " 5 " 5 "	2       0.00100       "       0.100         8       0.00100       "       0.0500         2       ug/l       40.0         8       "       40.0         8       "       40.0         9       ug/l       50.0         5       "       50.0         5       "       50.0         10       "       100         5       "       50.0         3       ug/l       50.0         1       "       100         5       "       40.0         5       "       40.0         5       "       40.0         5       "       40.0         5       "       40.0         5       0.00100       mg/L       0.0500         9       0.00100       "       0.0500         5       0.00100       "       0.0500         5       0.00100       "       0.0500         5       0.00100       "       0.0500         5       ug/l       40.0       100	2 $0.00100$ " $0.100$ 8 $0.00100$ " $0.0500$ 2 $ug/l$ $40.0$ 8       " $40.0$ 8       " $40.0$ 9 $ug/l$ $50.0$ 1       " $50.0$ 5       " $50.0$ 1       " $100$ 5       " $50.0$ 3       " $40.0$ 5       " $50.0$ 3       " $40.0$ 5       " $40.0$ 5       " $40.0$ 5       " $40.0$ 5       " $40.0$ 5 $0.00100$ mg/L $0.0500$ ND         8 $0.00100$ " $0.05500$ ND         5 $0.00100$ " $0.0500$ ND         5 $0.00100$ " $0.05500$ ND         5 $ug/l$ $40.0$ ND $0.0500$	2 $0.00100$ " $0.100$ 102         8 $0.00100$ " $0.0500$ 108         2 $ug/l$ $40.0$ $103$ 8       " $40.0$ $82.0$ Prepared: $01/26/06$ Analyzed: $01$ 3 $ug/l$ $50.0$ 103         5       " $50.0$ 103         5       " $50.0$ 109         1       "       100       101         5       " $50.0$ 111         3       " $40.0$ $85.8$ 5       " $40.0$ $85.8$ 5       " $40.0$ $98.8$ Source: $6A24010-01$ Prepared: $01/26/06$ Analyzed: $01$ 9 $0.00100$ mg/L $0.0500$ ND       112         9 $0.00100$ " $0.0500$ ND       112         9 $0.00100$ " $0.0500$ ND       103         5 $0.00100$ " $0.0500$ ND       102         6 $0.001$	2 $0.00100$ " $0.100$ $102$ $80-120$ 8 $0.00100$ " $0.0500$ $108$ $80-120$ 2 $ug/l$ $40.0$ $103$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ 9 $ug/l$ $50.0$ $103$ $80-120$ 5       " $50.0$ $105$ $80-120$ 5       " $50.0$ $109$ $80-120$ 10       " $100$ $101$ $80-120$ 5       " $50.0$ $109$ $80-120$ 6       " $50.0$ $111$ $80-120$ 5       " $40.0$ $85.8$ $80-120$ 5       " $40.0$ $98.8$ $80-120$ 5       0.00100       mg/L $0.0500$ ND $112$ $80-120$ 6 $0.00100$ " $0.0500$ ND <td< td=""><td>2       <math>0.00100</math>       "       <math>0.100</math>       102       <math>80-120</math>         8       <math>0.00100</math>       "       <math>0.0500</math>       108       <math>80-120</math>         2       <math>ug/l</math> <math>40.0</math> <math>l03</math> <math>80-120</math>         8       "       <math>40.0</math> <math>82.0</math> <math>80-120</math>         9       <math>ug/l</math> <math>50.0</math>       103       <math>80-120</math>         9       <math>ug/l</math> <math>50.0</math>       103       <math>80-120</math>         5       "       <math>50.0</math>       105       <math>80-120</math>         5       "       <math>50.0</math>       109       <math>80-120</math>         10       "       100       101       <math>80-120</math>         5       "       <math>50.0</math>       109       <math>80-120</math>         6       "       <math>50.0</math>       111       <math>80-120</math>         5       "       <math>40.0</math> <math>85.8</math> <math>80-120</math>         5       "       <math>40.0</math> <math>98.8</math> <math>80-120</math>         5       "       <math>40.0</math> <math>98.8</math> <math>80-120</math>         6       <math>0.00100</math>       "       <math>0.0500</math>       ND       112       <math>80-120</math>         6       <math>0.00100</math>       "       <math>0.0500</math>       ND       103       <td< td=""><td>2       <math>0.00100</math>       "       <math>0.100</math> <math>102</math> <math>80-120</math>         8       <math>0.00100</math>       "       <math>0.0500</math> <math>103</math> <math>80-120</math>         2       <math>ug/l</math> <math>40.0</math> <math>103</math> <math>80-120</math>         8       "       <math>40.0</math> <math>82.0</math> <math>80-120</math>         8       "       <math>40.0</math> <math>82.0</math> <math>80-120</math>         Prepared: <math>01/26/06</math>         3       <math>ug/l</math> <math>50.0</math> <math>103</math> <math>80-120</math>         5       "       <math>50.0</math> <math>105</math> <math>80-120</math>         5       "       <math>50.0</math> <math>109</math> <math>80-120</math>         6       "       <math>50.0</math> <math>101</math> <math>80-120</math>         5       "       <math>50.0</math> <math>111</math> <math>80-120</math>         6       "       <math>50.0</math> <math>111</math> <math>80-120</math>         5       "       <math>40.0</math> <math>98.8</math> <math>80-120</math>         Source: <math>6A24010-01</math>       Prepared: <math>01/26/06</math>       Analyzed: <math>01/27/06</math>         9       <math>0.00100</math> <math>mg/L</math> <math>0.0500</math>       ND       <math>112</math> <math>80-120</math>         5       <math>0.00100</math>       "       <math>0.0500</math>       ND       <math>110</math> <math>80-120</math><!--</td--></td></td<></td></td<>	2 $0.00100$ " $0.100$ 102 $80-120$ 8 $0.00100$ " $0.0500$ 108 $80-120$ 2 $ug/l$ $40.0$ $l03$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ 9 $ug/l$ $50.0$ 103 $80-120$ 9 $ug/l$ $50.0$ 103 $80-120$ 5       " $50.0$ 105 $80-120$ 5       " $50.0$ 109 $80-120$ 10       "       100       101 $80-120$ 5       " $50.0$ 109 $80-120$ 6       " $50.0$ 111 $80-120$ 5       " $40.0$ $85.8$ $80-120$ 5       " $40.0$ $98.8$ $80-120$ 5       " $40.0$ $98.8$ $80-120$ 6 $0.00100$ " $0.0500$ ND       112 $80-120$ 6 $0.00100$ " $0.0500$ ND       103 <td< td=""><td>2       <math>0.00100</math>       "       <math>0.100</math> <math>102</math> <math>80-120</math>         8       <math>0.00100</math>       "       <math>0.0500</math> <math>103</math> <math>80-120</math>         2       <math>ug/l</math> <math>40.0</math> <math>103</math> <math>80-120</math>         8       "       <math>40.0</math> <math>82.0</math> <math>80-120</math>         8       "       <math>40.0</math> <math>82.0</math> <math>80-120</math>         Prepared: <math>01/26/06</math>         3       <math>ug/l</math> <math>50.0</math> <math>103</math> <math>80-120</math>         5       "       <math>50.0</math> <math>105</math> <math>80-120</math>         5       "       <math>50.0</math> <math>109</math> <math>80-120</math>         6       "       <math>50.0</math> <math>101</math> <math>80-120</math>         5       "       <math>50.0</math> <math>111</math> <math>80-120</math>         6       "       <math>50.0</math> <math>111</math> <math>80-120</math>         5       "       <math>40.0</math> <math>98.8</math> <math>80-120</math>         Source: <math>6A24010-01</math>       Prepared: <math>01/26/06</math>       Analyzed: <math>01/27/06</math>         9       <math>0.00100</math> <math>mg/L</math> <math>0.0500</math>       ND       <math>112</math> <math>80-120</math>         5       <math>0.00100</math>       "       <math>0.0500</math>       ND       <math>110</math> <math>80-120</math><!--</td--></td></td<>	2 $0.00100$ " $0.100$ $102$ $80-120$ 8 $0.00100$ " $0.0500$ $103$ $80-120$ 2 $ug/l$ $40.0$ $103$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ 8       " $40.0$ $82.0$ $80-120$ Prepared: $01/26/06$ 3 $ug/l$ $50.0$ $103$ $80-120$ 5       " $50.0$ $105$ $80-120$ 5       " $50.0$ $109$ $80-120$ 6       " $50.0$ $101$ $80-120$ 5       " $50.0$ $111$ $80-120$ 6       " $50.0$ $111$ $80-120$ 5       " $40.0$ $98.8$ $80-120$ Source: $6A24010-01$ Prepared: $01/26/06$ Analyzed: $01/27/06$ 9 $0.00100$ $mg/L$ $0.0500$ ND $112$ $80-120$ 5 $0.00100$ " $0.0500$ ND $110$ $80-120$ </td



	Rice Operating Co.	Project: BD	Santa Rita Leak	Fax: (505) 397-1471
1	122 W. Taylor Hobbs NM, 88240	Project Number: Non	ne Given	Reported:
	Hobbs NM, 88240	Project Manager: Kris	stin Farris-Pope	02/01/06 11:43

# **Organics by GC - Quality Control**

#### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Matrix Spike Dup (EA62618-MSD1) Source: 6A24010-01 Prepared: 01/26/06 Analyzed: 01/28/06 Benzene 0.0482 0.00100 mg/L 0.0500 ND 96.4 80-120 15.0 20 Toluene 0.0484 0.00100 " 0.0500 ND 80-120 96.8 12.8 20 11 Ethylbenzene 0.0456 0.00100 0.0500 ND 91.2 80-120 12.2 20 Xylene (p/m) 0.0841 0.00100 11 0.100 ND 84.1 80-120 0.716 20 9 Xylene (o) 0.0448 0.00100 0.0500 ND 89.6 80-120 12.9 20 Surrogate: a,a,a-Trifluorotoluene 33.0 40.0 82.5 80-120 ug/l Surrogate: 4-Bromofluorobenzene 32.4 40.0 81.0 80-120 .



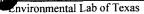
nvironmental Lab of Texas

Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
122 W. Taylor Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/01/06 11:43

# General Chemistry Parameters by EPA / Standard Methods - Quality Control

# **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EA62406 - General Preparatio	on (WetChem)									
Blank (EA62406-BLK1)				Prepared &	Analyzed:	01/26/06				
Total Alkalinity	ND	2.00	mg/L							
LCS (EA62406-BS1)				Prepared &	: Analyzed:	01/26/06				
Bicarbonate Alkalinity	220		mg/L	200		110	85-115			
Duplicate (EA62406-DUP1)	Sourc	ce: 6A19005-	01	Prepared &	Analyzed:					
Fotal Alkalinity	258	2.00	mg/L		256			0.77 <b>8</b>	20	
Reference (EA62406-SRM1)				Prepared &	: Analyzed:	01/26/06				
Total Alkalinity	97.0		mg/L	100		97.0	90-110			
Baten EA63003 - General Preparatio	on (WetChem)									
	on (WetChem)								<u> </u>	
Blank (EA63003-BLK1)		5.00		Prepared: (	01/26/06 Ar	nalyzed: 01	/27/06			
Batch EA63003 - General Preparation Blank (EA63003-BLK1) Fotal Dissolved Solids	ND	5.00	mg/L	Prepared: (	01/26/06 Ar	nalyzed: 01	/27/06			
Blank (EA63003-BLK1)	ND	5.00 <b>ce: 6A25018-</b>	-		01/26/06 Ar					
Blank (EA63003-BLK1)	ND		-					2.93	5	
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1) Fotal Dissolved Solids	ND Sourc 2020	ce: 6A25018-	01		1/26/06 Ar			2.93	5	
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1)	ND Sourc 2020	ce: 6A25018-	01	Prepared: C	1/26/06 Ar	nalyzed: 01		2.93	5	······································
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1) Fotal Dissolved Solids	ND Sourc 2020	ce: 6A25018-	01	Prepared: C	01/26/06 Ar 2080	nalyzed: 01		2.93	5	
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1) Fotal Dissolved Solids Titch EA63004 - General Preparation Blank (EA63004-BLK1) Sulfate	ND Sourc 2020 On (WetChem)	se: 6A25018- 5.00	<b>01</b> mg/L	Prepared: C	01/26/06 Ar 2080	nalyzed: 01		2.93	5	
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1) Fotal Dissolved Solids Fitch EA63004 - General Preparatic Blank (EA63004-BLK1) Sulfate Chloride	ND Sourc 2020 On (WetChem) ND	<b>ce: 6A25018-</b> 5.00 0.500	01 mg/L mg/L	Prepared: ( Prepared &	01/26/06 Ar 2080	nalyzed: 01		2.93	5	
Blank (EA63003-BLK1) Fotal Dissolved Solids Duplicate (EA63003-DUP1) Fotal Dissolved Solids Stitch EA63004 - General Preparation Blank (EA63004-BLK1)	ND Sourc 2020 On (WetChem) ND	<b>ce: 6A25018-</b> 5.00 0.500	01 mg/L mg/L	Prepared: ( Prepared &	01/26/06 Ar 2080 : Analyzed:	nalyzed: 01		2.93	5	

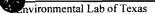


	Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
	122 W. Taylor	Project Number: None Given	Reported:
1 2 2 TH	122 W. Taylor Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/01/06 11:43

# General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

A Judo	Result	Reporting Limit	Units	Spike	Source	W REC	%REC	PPD	RPD Limit	Matas
Analyte	Result		Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EA63004 - General Preparation (	WetChem)									
Calibration Check (EA63004-CCV1)		Prepared &	Analyzed:	01/30/06						
Sulfate	9.82		mg/L	10.0		98.2	80-120			
Chloride	8.64		"	10.0		86.4	80-120			
Duplicate (EA63004-DUP1)	Source: 6A25018-01		Prepared & Analyzed: 01/30/06							
Sulfate	84.4	25.0	mg/L		88.2			4.40	20	
Chloride	879	25.0	"		886			0.793	20	



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**Reported:** 02/01/06 11:43

# Total Metals by EPA / Standard Methods - Quality Control

# **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EA62615 - 6010B/No Digestion										
Blank (EA62615-BLK1)	Prepared & Analyzed: 01/26/06									
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100								
Potassium	ND	0.0500	n							
Sodium	ND	0.0100	"							
Calibration Check (EA62615-CCV1)				Prepared &	Analyzed:	01/26/06				
Calcium	2.12		mg/L	2.00		106	85-115			
Magnesium	1.99		"	2.00		99.5	85-115			
Potassium	1.88		"	2.00		94.0	85-115			
Sodium	1.94		"	2.00		97.0	85-115			
Duplicate (EA62615-DUP1)	Source: 6A19005-01		Prepared &	z Analyzed:	01/26/06					
Calcium	224	0.500	mg/L		222			0.897	20	
Magnesium	115	0.0500	"		120			4.26	20	
Potassium	14.6	0.500	"		15.2			4.03	20	

...

313

2.26

20

306

0.500



Sodium

Environmental Lab of Texas



**Reported:** 02/01/06 11:43

#### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate



Report Approved By:

Raland K Junes Date:

2/1/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.



Invironmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

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) Of Texas hone: 422-563-1800 Fax: 432-563-1713		ompany	et	0 88240		(505) 631-9	> Loom															RESULTS TO		Time 1:25	e L
ab of Texas Phone: 432-563-1713 Fax: 432-563-1713	arris Pope	perating C	Taylor Stre	New Mexic	93-9174	ie Johnson	@valomet				FIELD CODE											SE Email F		+ 0ate	/ Date
ental	Project Manager: Kristin Farris Pope	company Name RICE Operating Company	Company Address: 122 W. Taylor Street	city/state/zip: Hobbs, New Mexico 88240	Теlернопе No: <u>(505) 393-9174</u>	sampler signature: Rozanne Johnson (505) 631-9348	Email: rozanne@valomet.com					Monitor Well #1										PLEA	$\mathcal{O}$		
Econironmental Lab of Texas 1260465511-20 East Phone: 432-563-1713 Detessa, Texas 79765	Project Mana	Company N	Company Addr	City/State	Telephone	Sampler Signat	ũ			e de la companya de l	se only)	1. 1. C										Special Instructions:		Relinguished by:	Relinquished by:
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# Environmental Lab of Texas Variance / Corrective Action Report – Sample Log-In

	Rice Op.
Date/Time:	1/25/06 13:26
Order #:	425022
Initials:	Cle

# Sample Receipt Checklist

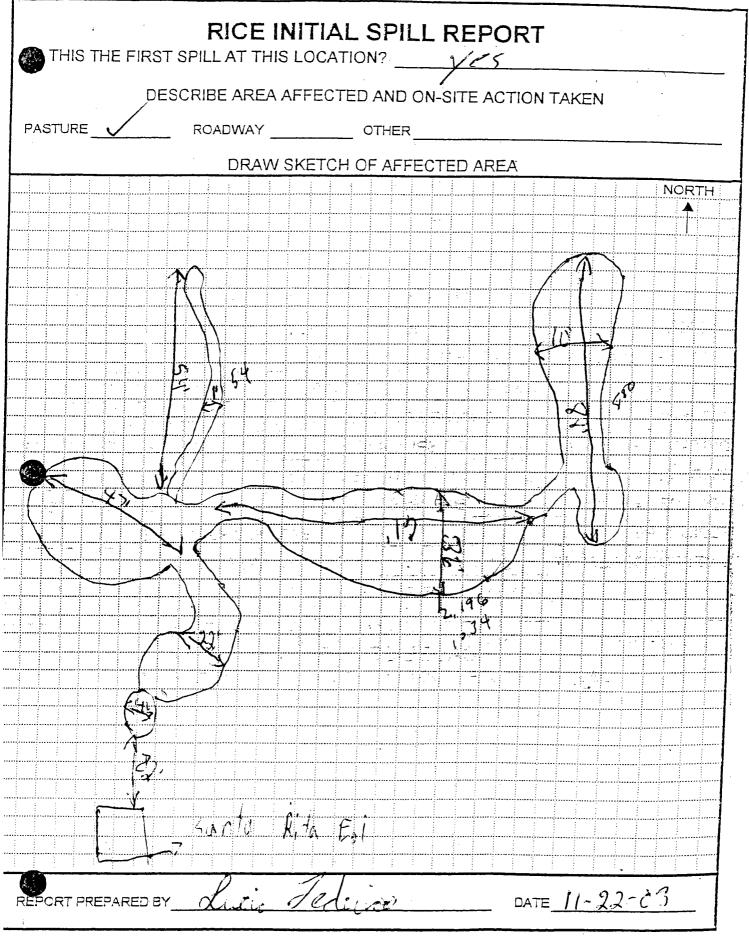
Temperature of container/cooler?	Yes	No	-2.5 CI
Shipping container/cooler in good condition?	1 200	No	
Custody Seals intact on shipping container/cooler?	855	No	Not present
Custody Seals intact on sample bottles?	1 Xes	No	Not present
Chain of custody present?	YES	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	1 7.75	No	
Chain of custody agrees with sample label(s)	Xes	No	
Container labels legicle and intact?	1 255	No	
Sample Matrix and procerties same as on chain of custody?	1 Xes	No	
Samples in proper container/cottle?	1 Ves	No	-
Samples properly preserved?	1 2=	No	
Sample bottles intact?	1 7:26	No	1
Preservations documented on Chain of Custody?	Xas	Na	1
Containers documented on Chain of Custody?	100	No	
Similar sample amount for indicated test?	1 YES	No	1
Anomales received within sufficient hold time?	YES	No	
VOC samples have zero headspace?	(B)	No	Not Applicable

\_\_\_\_\_

Other observations:

Contact Person:	Variance Documentation: Date/Time:	Contacted by:
Regarding:		
Corrective Action Taken:		
		· · · · · · · · · · · · · · · · · · ·

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# FIELD TESTS FOR INITIAL DELINEATION

TEST POINT NO. Background									
DEPTH	TPH	сг	Soil	H <sub>2</sub> O					
				+					
				+-1					
				+-+					
				$\square$					
				+-1					
LL									

TEST F		<b>10</b> . Ori	gin of Lea	ık
DEPTH	TPH	cr	Soil	H₂O
5lbry		2345		
516-2 6-16-2		2343		
3				

TEST F		NO. 1		
DEPTH	TPH	СГ	Soil	H <sub>2</sub> O
Sulfer		3570		
Sulfer:		3482		
200		7157		
ن 				

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			. <u> </u>							
DEPTH	TPH	cr	Soil	H₂O						
ې کې موجود ده		2.746								
1/100		1834								
		1133								
			<u>_</u>							

DEPTH	TPH	сг	Soil	H₂O
Simbore		313%	-	
11-		2657		
21 ro		1778		
Intre	I d	elumo.	tien	سرر

Г

TEST POINT NO. 5' East of Source										
DEPTH	TPH	сг	Soil	H <sub>z</sub> O						
5.150		7284								
5. 600 660		2481								
8 40		2992								
10 mg		2968								
12/4		23/4								
	-									

	TEST F	POINT	10.			,
	DEPTH	трн	сг	Soil	H₂O	
						•
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th p	100					,

TEST P	OINT	NO.		<u>.                                    </u>
DEPTH	TPH	Cr	Soil	H₂O

			4	
TEST		NO.L. est	ere les	win
DEPTH	TPH	cr	Soil	H₂O
6/20		3130		
740		2793		
10K		2684		
12:0		2764		

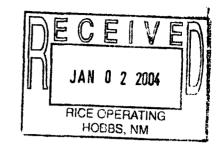
Shirty Boyd annual at 8.50, and we spill samples



PHONE (325) 673-7001 · 2111 BEECHWOOD · ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR RICE OPERATING CO. ATTN: JOE GATTS 122 W. TAYLOR HOBBS, NM 88240 FAX TO: (505) 397-1471



Analysis Date: 12/23/03 Sampling Date: 12/19/03 Sample Type: SOIL Sample Condition: COOL & INTACT Sample Received By: AH Analyzed By: HM

Receiving Date: 12/23/03 Reporting Date: 12/23/03 Project Number: NOT GIVEN Project Name: SANTA RITA EOL LEAK SITE Project Location: BD



LAB NUMBER	SAMPLE ID	Cl <sup>—</sup> (mg/Kg)
H8288-1	12' BGS @ SOURCE	2495
H8288-2	12' BGS @ 5' E OF	2623
· · · · · · · · · · · · · · · · · · ·	SOURCE	· · · · · · ·
Quality Control		040
Quality Control		940
True Value QC		1000
% Recovery		94.0
Relative Percent I	Difference	7.4

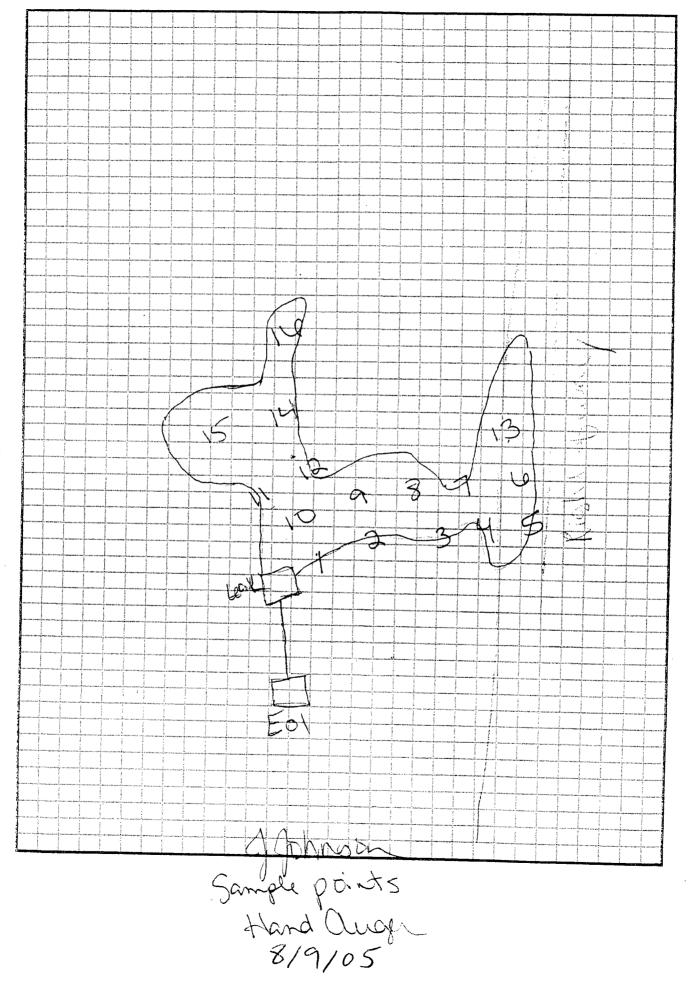
METHOD: Standard Methods4500-CIBNote: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

3E 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. ms, including those for negligence and 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 b. 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, is or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

company Name:	ame	247-2320 Lax (200) 393-2476	( ( 202) 393-24/6		
roject Manager.	time catto				
ddress: 122	<u>М</u> . Т		Company:		
Schot : Miles	State: NM	' ZIP: 88240	Attn:		
hone #.(505	393-9174 Fax # (505	397-1	Address:		
roject #:	Project Owner:	Ľ	Chy:		
roject Name:	SAWTA RITA EUl	I hak site	State: Zip:		
roject Location:	BD		Phone #:		
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L'NO BEN EVI VO,		MATRIX	PRESERV SAMPLING	Т	
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inter Relingui	and a service in survive by Car	and interests, but we iterations, but of us, or but of print after inperferent of whether such them is based your any of the	s fratred by client, these statist research		cellections, including attornary's fees.
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iquished By:	Checked 110	Received By: (Lab Staff)		REWARKS:	
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ardinal ci	ardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.	fax written changes to 50	5-393-2476.		





ppm chilorides 8/9/05 Santa Rita 3 2.31 Sad 1 30.0 10 2113 -03 64 Sud 21 30.3 2.23 <u>, 53 67</u> Sad 3 14.207 10++ SNO 41 31.4 2.57 · 03 17 SP#1 5 13.5 2.22 10 66 1' 31 2.55 1076 2/ 30.1 2.41 10 93 3 30.4 2.71 · <u>Du</u> 107 Ur 31.3 2.46 10378

5 30.1 5 30.1 13.3 2.26 10 45 11 311.2 3.16 10 120 ) 33,2 3,07 3 31.6 2.34 ·03,003=75 413222.53 SP# 84 S 123 2145 03- 003 - 6L 1 30.9 2.16 10- 20-1-10Lp ) 30.0 2.66 31 319 2.51 -03-003--65 ビー 31-1 2719

SPH 0 6 5 34:2 5 11:1 3:03 · <u>01</u>, 001-123 · 10,002 - 19 1 31.3 2.5 ,02,002-55 21 31.8 2.74 -02,002 - GU 3-31-2.75 <u>-03</u> 003 - 74 U1 325-2.55 20 30:6 2:30 ·<u>7</u> 851 1007 = LICI 1 121. 2.00 .02.002-58 21 32.3 2.43 3' 34.4 3,201 10001-1201 4 32.0 2 461 103,003-29

SP#7 5 32:0253 10 100-1-101  $\frac{100}{10}, \frac{1000}{10} = 159$ 1 33.0 3.20 232, 319 101 = 100, JUD, 3, 33.0 2.55 10,003-90 10 4 32.73.02 SP #8 S-13-2-57 ,02,002-LLL 1 30,5 2.24 - <u>DU DDLI = || |p</u> 2 31.3 2.92 3 328 2.48 · out . oout - 119 4 31. V 13. V .33-003--6-

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# **QUALITY PROCEDURES**

.

# APPENDIX D

## **Rice Operating Company**

#### **Quality Procedure**

P	rocedure for	Obtaining	
Soil Samples	for Transpo	rtation to a I	aboratory

#### 1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

#### 2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

#### **3.0 Preliminary**

- 3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.
- 3.2 If collecting TPH, BTEX, RCRA 8 metals, cation /anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container.

#### 4.0 Chain of Custody

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- 4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.
- 4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.
- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

#### 5.0 Sampling Procedure

- 5.1.Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination.
- 5.2.Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.
- 5.3 Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.
- 5.4.Place the sample directly on ice for transport to the laboratory if required.
- 5.5.Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

#### **6.0 Documentation**

- 6.1 The testing laboratory shall provide the following minimum information:
  - a. Project and sample name.
  - b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
  - c. Results of the requested analyses
  - d. Test Methods employed
  - e. Quality Control methods and results

# **Rice Operating Company**

#### QUALITY PROCEDURE

Sampling and Testing Protocol Chloride Titration Using 282 Normal Silver Nitrate Solution

#### 1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

#### 2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

#### **3.0 Sample Collection and Preparation**

- 3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

#### 4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.
- 4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

## 5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.
- 5.2 Add 2-3 drops potassium chromate ( $K_2CrO_4$ ) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide  $(H_2O_2)$  to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

#### 6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

<u>.282 X 35,450 X ml AgNO<sub>3</sub></u>	X	grams of water in mixture
ml water extract		grams of soil in mixture

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

# **Rice Operating Company**

Quality Procedure Development of Cased Water-Monitoring Wells

## 1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

#### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

#### 3.0 Sample Collection and Preparation

- 3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.
- 3.2 All measurements will be recorded within a field log notebook.
- 3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of crosscontamination. The volume of water in each well casing will be calculated.

## 4.0 Purging

- 4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.
- 4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

#### 5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

#### 6.0 Records

6.1 Rice Operating Company will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report. Quality Procedure

# Procedure for Obtaining Water Samples (Cased Wells) Using One Liter Bailer

## 1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

#### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

## 3.0 Preliminary

- 3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.
- 3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCI	7 days
TPH	1 liter	clear glass	Teflon Lined	HCI	28 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	clear glass	Teflon Lined	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO <sub>3</sub>	28 Days
TDS	300 ml	clear glass	Any Plastic	Ice	7 Days

### 4.0 Chain of Custody

- 4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.
- 4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.
- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

### 5.0 Bailing Procedure

- 5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.
- 5.2 Using a dedicated one liter Teflon bailer, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.
- 5.3 Take care to insure that the bailing device and string do not become cross-contaminated. A clean pair of rubber gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

#### 6.0 Sampling Procedure

- 6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.
- 6.2 Note the time of collection on the sample jar with a fine Sharpie.

- 6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.
- 6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

### 7.0 Documentation

- 7.1 The testing laboratory shall provide the following minimum information:
  - A. Project and sample name.
  - B. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
  - C. Results of the requested analyses
  - D. Test Methods employed
  - E. Quality Control methods and results

# Calculation for Determining the Minimum Bailing Volume for Monitor Wells Formula V= (πr<sup>2</sup>h) 2" well [V/231=gal] X 3 = Purge Volume

V=Volume

π--pi

r=inside radius of the well bore h=maximum height of well bore in water table

Example:

π	r <sup>2</sup>	h(in)	V(cu.in)	V(gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	>10 gal

# **Rice Operating Company**

QUALITY PROCEDURE Sampling and Testing Protocol for VOC in Soil

#### 1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

#### 2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

#### 3.0 Procedure

- 3.1 Sample Collection and Preparation
  - 3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).
  - 3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.
  - 3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77°F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.
  - 3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

- 3.2 Sampling Procedure
  - 3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.
  - 3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.
  - 3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.
  - 3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with QP-02 and QP-06. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.

#### 4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.

# **APPENDIX E**

**C-141 FORM** 

a.

District [ P.O. Box 1980, Hobbs, NM 85241-1980 District II 811 South First, Artesia, NM 88210 District III 1000 Rio Brazos, Aztec, NM 87410 District IV 2040 South Pacheco, Santa Fe, NM 87505

A

#### State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe, NM 87505 OPERATOR'S MONTHLY REPORT

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 D Final Report									
N			(	*****			(8)	Initial	Report 🖸	Final Report
Name Rice Operating Com	pany				Contact Joe Gatts					
Address 122 West Taylor	Telephone No. 505-393-9174									
Facility Name B-D	Pacifity Type SWD Disposal Line									
				A special distance of the special s		······································				
Surface Owner Irvin Boyd				Lease No.						
LOCATION OF RELEASE										
Unit Letter Section A 27	Township 22s	Range 37E	Feet from the	Feet from the North/So			an the	East/	West Line	County LEA
		J	NATURE	OF	RELEASE	ul		<u></u>		
Type of Release Volume of Re							Volume of Release Volume 1		Volume Recove	red [
Produced Water	55 bbls Date and Hour of Occurrence				40 bbls					
Source of Release Pipeline					Unknown 11/22/03 11:22 an					
Was Immediate Notice Give	If YES, To Whom? Buddy Hill and Donna ext. 115 voicemail									
By Whom? John Rampone	Date and Hour 11/22/03 2:00 p									
Was a Watercourse Reaches	,	If YES, Volume Impacting the Watercourse.								
If a Watercourse was Impacted, Describe Fully. (Attach Additional Sheets If Necessary)										
If a Watercourse was Impacted, Describe Fully. (Attach Additional Sheets If Necessary)										
Describe Cause of Problem 2 <sup>n</sup> PVC compression coupli					Necessary)					
Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets (FNecessary). The release consisted of 55 bbls, which affected 11,211 square feet. 40 bbls were recovered. ROC will remediate according to the Generic spill and leak plan or submit RBCA plan to NMOCD for approval.										
I hereby certify that the inform required to report and /or file C-141 report by the NMOCD contemination that post a thr- for compliance with any othe	certain release not marked as "Final at to ground wate	ifications an Report" dee r. human hei	nd perform corrective active active active actives not relieve the operator with or the environment.	ons for s of tiabil	releases which may lity should their ope	endanger p rations hav	public health we failed to a	n or the Idequat	environment. T ely investigate a	he acceptance of a nd remediate
Signature: Gene 2	ast					OIL CO	NSERVAT	ION D	IVISION	
Printed Name: Joe Gat					Approved by District Supervisor:					
Tille: Environmenta	I Technician		n genegene frestensen som en som en som en som en som som en s	Strength and a strength	Approval Date:	-		<del></del>	Expiration Da	lle:
Date: 12/1/03	Phone: 505	-393-9174		10	Conditions of Appr	oval:			Attached C	]



CERTIFIED MAIL RETURN RECIEPT NO. 7099 3400 0017 1737 1636

December 7, 2006

RECEIVED

DEC 1 4 2005 Environmental Bureau Oil Conservation Division

Mr. Wayne Price New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87504

# RE: Stage 1 and 2 Abatement Plan (AP-58) BD Santa Rita EOL Release Site T22S-R37E-Section 27, Unit Letter A

Dear Mr. Price

On behalf of Rice Operating Company (ROC), enclosed are the proposed Stage 1 and 2 Abatement Plan and Notice of Publication for the above-referenced site.

After approved by the Division, ROC will give written notice of the Stage 1 and 2 abatement plan to the following persons:

- (a) surface owners of record within one (1) mile of the perimeter of the site, as shown on the attached map,
- (b) the Lea County commissioner,
- (c) those persons, as identified by the Director, who have requested notification;
- (d) the New Mexico Trustee for Natural Resources, and any other local, state or federal governmental agency affected, as identified by the Director.

Upon your review, ROC will issue the approved public notice for publication in the Albuquerque Journal and the Hobbs News Sun pursuant to OCD Rule 19.G.(2). A copy of these publications and notice to owners and all interested parties will be provided.

If you have any questions please call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174.

Sincerely. but 1/an lent

Gilbert Van Deventer Trident Environmental

cc: Kristin Pope, Rice Operating Company Carolyn Haynes, Rice Operating Company



# **NOTICE OF PUBLICATION**

# State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following Stage 1 and 2 Abatement Plan Proposal has been submitted to the Director of the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

Rice Operating Company, Carolyn Doran Haynes, Engineering Manager, Telephone (505) 393-9174, 122 West Taylor, Hobbs, New Mexico 88240, has submitted a Stage 1 and 2 Abatement Plan Proposal (AP-58) for a release from the pipeline junction at the BD Santa Rita EOL, located in Section 27, Township 22 south, Range 37 east, Lea County, New Mexico, approximately 4 miles southeast of Eunice, New Mexico. Rice Operating Company operates a saltwater disposal pipeline at the site. Soil impacts and groundwater samples at the site exhibit elevated chloride concentrations. The Stage 1 and 2 Abatement Plan Proposal presents the following site soil and groundwater investigation activities: (1) Define regional ground water flow direction, potential sources of chloride in ground water and ambient ground water chemistry, (2) further delineation of the vertical and lateral extent of soil and groundwater impact, (3) install an evapotransporation barrier in the upper vadose zone to eliminate further threat to groundwater impact, and (4) install a point of use groundwater treatment system.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The Stage 1 and 2 Abatement Plan Revision Proposal may be viewed at the above address or at the Oil Conservation Division District Office, 1625 N. French Drive, Hobbs, New Mexico 88240, Telephone (505) 393-6161 between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed Stage 1 and 2 Abatement Plan, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which written comments may be submitted to him.

# Hansen, Edward J., EMNRD

From:	Gil Van Deventer	[gilbertvandeventer@cox.net]

Sent: Monday, December 11, 2006 10:51 AM

To: Hansen, Edward J., EMNRD; Price, Wayne, EMNRD

Cc: Scott Curtis; Caperton, Patricia, EMNRD; Carolyn Haynes; Kristin Pope

Subject: BD Santa Rita EOL Release Site (AP-58) - Stage 1&2 Abatement Plan

# Wayne

the seal

RE: BD Santa Rita EOL Release Site (AP-58) T22S-R37E-Section 27, Unit Letter A

On behalf of Rice Operating Company I am submitting the Stage 1 & 2 Abatement Plan (AP-58) and Notice of Publication to you for the above-referenced site. These documents will be sent Priority Mail to you today in both hard copy and on a compact disk in Adobe Reader (pdf) format. The Executive Summary for the above-referenced ICP is copied at the end of this email notification.

Upon your review, ROC will issue the approved public notice for publication in the Albuquerque Journal and the Hobbs News Sun pursuant to OCD Rule 19.G.(2). A copy of these publications and notice to owners and all interested parties will be provided.

After approved by the Division, ROC will give written notice of the Stage 1 and 2 abatement plan to the following persons:

(a) surface owners of record within one (1) mile of the perimeter of the site, as shown on the attached map,

(b) the Lea County commissioner,

(c) those persons, as identified by the Director, who have requested notification;

(d) the New Mexico Trustee for Natural Resources, and any other local, state or federal

governmental agency affected, as identified by the Director.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174, if you have any questions.

Thanks, Gil

Gilbert J. Van Deventer, PG, REM Trident Environmental www.trident-environmental.com Work/Mobile: 432-638-8740 Fax: 413-403-9968 Home: 432-682-0727

# 1.0 EXECUTIVE SUMMARY

The Santa Rita EOL Release site is operated by Rice Operating Company (ROC) and is located in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM. This Stage 1 and 2 Abatement Plan incorporates the preliminary findings from previous investigations and recommendations for additional assessment activities.

The discovery of a brine water release from a 2-inch PVC compression coupling occurred on November 22, 2003. Initial characterization of soil impacts were conducted at the site on November 26, 2003 using a backhoe. Vadose zone samples taken from trenches indicated a maximum chloride concentration of 3,284 mg/kg at a depth of 5-feet bgs directly adjacent to the release point. On January 6, 2004, ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites. After landowner access was granted, soil samples were collected at 16 locations to depths of 3 to 4 feet below ground surface (bgs) with a hand auger to determine the horizontal extent of the impacted soils on August 9, 2005. On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. Since September 2, 2005, the monitoring well has been sampled guarterly for analysis of major ions and benzene, toluene, ethylbenzene, and xylenes (BTEX). The chloride and total dissolved solids (TDS) concentrations in ground water at the on-site monitoring well are 2,100 milligrams per liter (mg/L) and 4,560 mg/L, respectively, based on analysis of samples obtained during the most recent sampling event on October 11, 2006. BTEX concentrations in groundwater have been below the method detection limit of 0.001 mg/L during each sampling event.

We propose the work elements described in detail in Section 7.0 to delineate the extent and magnitude of regulated constituents of concern (chlorides and TDS) in the vadose zone. Although existing data show that BTEX constituents are not present in the vadose zone or ground water, this proposal includes testing for these constituents. The purpose of these work elements is to assist ROC in selecting the soil and/or ground water remedy that is commensurate with any contribution from the Santa Rita EOL Release site to the regional ground water quality. The proposed work elements are summarized below:

1. Define regional ground water flow direction, potential sources of chloride in ground water and ambient ground water chemistry

2. Install additional soil borings and monitoring wells for evaluation of constituents of concern in the vadose zone and ground water.

3. Install a minimum 2-foot thick clay layer over chloride-impacted soils that exceed a field tested chloride concentration of 1,000 mg/kg threshold. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area.

4. Stockpiled soils with chloride concentrations less than 1,000 mg/kg will be placed above the clay layer such that a slight mound is constructed to direct excess precipitation from the spill area. If necessary, topsoil

will be imported to complete the upper evapotranspiration layer.

N.C.

5. Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth.

6. Groundwater pumping to recover the highly impacted fluid may be employed. This fluid would be used for routine line maintenance operations. If applicable, a point-of-use (cattle, wildlife, etc. watering) treatment system may be installed with reject fluid used for line maintenance or disposed into the BD SWD System.

When implementing any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

ROC is the service provider (agent) for the Blinebry-Drinkard (BD) saltwater disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner Authorization for Expenditure (AFE) approval and work begins as funds are received. In general, project funding is not forthcoming until OCD approves the work plan.

From: "Gil Van Deventer" <qilbertvandeventer@cox.net>

- To: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>; "Wayne Price" <wayne.price@state.nm.us>
- Cc: "Scott Curtis" <scurtis@riceswd.com>; "Pat Caperton" <patricia.caperton@state.nm.us>; "Carolyn Haynes" <chaynes@riceswd.com>; "Kristin Pope" <kpope@riceswd.com>

Subject: BD Santa Rita EOL Release Site (AP-58) - Stage 1&2 Abatement Plan

Date: Monday, December 11, 2006 11:50 AM

Wayne

RE: BD Santa Rita EOL Release Site (AP-58) T22S-R37E-Section 27, Unit Letter A

On behalf of Rice Operating Company I am submitting the Stage 1 & 2 Abatement Plan (AP-58) and Notice of Publication to you for the above-referenced site. These documents will be sent Priority Mail to you today in both hard copy and on a compact disk in Adobe Reader (pdf) format. The Executive Summary for the above-referenced ICP is copied at the end of this email notification.

Upon your review, ROC will issue the approved public notice for publication in the Albuquerque Journal and the Hobbs News Sun pursuant to OCD Rule 19.G.(2). A copy of these publications and notice to owners and all interested parties will be provided.

After approved by the Division, ROC will give written notice of the Stage 1 and 2 abatement plan to the following persons:

- (a) surface owners of record within one (1) mile of the perimeter of the site, as shown on the attached map,
- (b the Lea County commissioner,
- (c) those persons, as identified by the Director, who have requested notification;
- (d) the New Mexico Trustee for Natural Resources, and any other local, state or federal governmental agency affected, as identified by the Director.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174, if you have any questions.

Thanks,

Gil

Gilbert J. Van Deventer, PG, REM Trident Environmental www.trident-environmental.com Work/Mobile: 432-638-8740 Fax: 413-403-9968 Home: 432-682-0727

#### 1.0 EXECUTIVE SUMMARY

The Santa Rita EOL Release site is operated by Rice Operating Company (ROC) and is located in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM. This Stage 1 and 2 Abatement Plan incorporates the preliminary findings from previous investigations and recommendations for additional assessment activities.

The discovery of a brine water release from a 2-inch PVC compression coupling occurred on November 22, 2003. Initial characterization of soil impacts were conducted at the site on November 26, 2003 using a backhoe. Vadose zone samples taken from trenches indicated a maximum chloride concentration of 3,284 mg/kg at a depth of 5-feet bgs directly adjacent to the release point. On January 6, 2004, ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites. After landowner access was granted, soil samples were collected at 16 locations to depths of 3 to 4 feet below ground surface (bgs) with a hand auger to determine the horizontal extent of the impacted soils on August 9, 2005. On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. Since September 2, 2005, the monitoring well has been sampled guarterly for analysis of major ions and benzene, toluene, ethylbenzene, and xylenes (BTEX). The chloride and total dissolved solids (TDS) concentrations in ground water at the on-site monitoring well are 2,100 milligrams per liter (mg/L) and 4,560 mg/L, respectively, based on analysis of samples obtained during the most recent sampling event on October 11, 2006. BTEX concentrations in groundwater have been below the method detection limit of 0.001 mg/L during each sampling event.

We propose the work elements described in detail in Section 7.0 to delineate the extent and magnitude of regulated constituents of concern (chlorides and TDS) in the vadose zone. Although existing data show that BTEX constituents are not present in the vadose zone or ground water, this proposal includes testing for these constituents. The purpose of these work elements is to assist ROC in selecting the soil and/or ground water remedy that is commensurate with any contribution from the Santa Rita EOL Release site to the regional ground water quality. The proposed work elements are summarized below:

- 1. Define regional ground water flow direction, potential sources of chloride in ground water and ambient ground water chemistry
- 2. Install additional soil borings and monitoring wells for evaluation of constituents of concern in the vadose zone and ground water.
- 3. Install a minimum 2-foot thick clay layer over chloride-impacted soils that exceed a field tested chloride concentration of 1,000 mg/kg threshold. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area.

- 4. Stockpiled soils with chloride concentrations less than 1,000 mg/kg will be placed above the clay layer such that a slight mound is constructed to direct excess precipitation from the spill area. If necessary, topsoil will be imported to complete the upper evapotranspiration layer.
- 5. Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth.
- 6. Groundwater pumping to recover the highly impacted fluid may be employed. This fluid would be used for routine line maintenance operations. If applicable, a point-of-use (cattle, wildlife, etc. watering) treatment system may be installed with reject fluid used for line maintenance or disposed into the BD SWD System.

When implementing any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

ROC is the service provider (agent) for the Blinebry-Drinkard (BD) saltwater disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner Authorization for Expenditure (AFE) approval and work begins as funds are received. In general, project funding is not forthcoming until OCD approves the work plan.

**RICE** Operating Company

122 West Taylor • Hobbs, New Mexico 88240 Phone: (505)393-9174 • Fax: (505) 397-1471

# CERTIFIED MAIL RETURN RECEIPT NO. 7000 1530 0005 9895 4824

October 3, 2005

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

### RE: NOTIFICATION OF GROUNDWATER IMPACT BD Santa Rita Leak Unit 'A', Sec. 27, T22S, R37E Ap . 58

Mr. Anderson:

Rice Operating Company (ROC) notifies the Director of the New Mexico Oil Conservation Division (OCD), Environmental Bureau of groundwater impact at the above-referenced site in accordance with NM Rule 116. The remediation of this site may be subject to NM Rule 19 procedures.

The BD Santa Rita Leak site experienced an accidental discharge on November 22, 2003 due to the separation of a compression coupling on a 2-inch PVC pipeline. This discharge occurred on the pipeline 82 ft north of the BD Santa Rita EOL (end-of-line) junction box. A C-141 form (initial) was submitted to the Hobbs District 1 office on December 1, 2003. Soil samples were collected for chloride delineation on November 26 and December 19, 2003 using a backhoe. ROC concluded that further characterization was warranted. On January 16, 2004, ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites.

A delineation soil bore was initiated near the pipeline break on August 30, 2005 where groundwater was encountered at approximately 51 feet below ground surface and a 2-inch monitoring well was installed to a depth of approximately 61 feet as chloride impact was indicated by field tests. After appropriate development, the well was sampled pursuant to OCD guidelines by ROC on September 2, 2005. Environmental Lab of Texas

performed the analysis. Notably, Chloride, Total Dissolved Solids, and Sulfate exceed New Mexico Water Quality Control Commission standards. Hydrocarbon constituents (BTEX) were not detected. A third party will begin sampling the well on a quarterly basis beginning in November 2005. ROC has assigned this project to R.T. Hicks Consultants of Albuquerque with Gilbert Van Deventer as project manager. OCD may expect the submission of a Investigation & Characterization Plan (ICP) for this site soon.

ROC is the service provider (operator) for the BD Salt Water Disposal System and has no ownership of any portion of the pipelines, wells, or facilities. The BD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental remediation projects of this magnitude require System Partner AFE approval and work begins as funds are received.

Please accept this notification for the above-referenced site. Should you have any questions or concerns regarding this site, please do not hesitate to contact me.

RICE OPERATING COMPANY

Knistin James Pope

Kristin Farris Pope Project Scientist

enclosures: water analysis, well log, map

cc: LBG, CDH, GVD, file, Mr. Chris Williams NMOCD, District 1 Office 1625 N. French Drive Hobbs, NM 88240

·····	Logger: Driller:	(	Gil Van Deventer; Jennifer Johnson Eades Drilling	- RICE Oper	ating Con	tpany	M	/ell ID:
Drillin	g Method:		Air Rotary	Project Name:				
	Start Date:		8/30/2005	Santa	Rita leak			
	End Date:		8/30/2005	Location:				MW-1
Notes:	Approx. 8	32 ft no	orth of Santa Rita EOL junction box site		D System			
	TD =	61 ft	Groundwater = 54.04 ft (TOC)	unit 'A', Sec. 2 Lea Co	unty, NM	KJ/E		
1.25						and reasons	C and a	
Depth	cuttings con	nposite	Description	Lithology	Notes			onstruction
(feet)	chloride	PID	•		notes		774 -	onstruction
0.0			0 - 2 ft SANDY LOAM			0	Ø	\
2.0			light brown, medium-grained			0	Ø	
			0-6ft			0	0	
4.0						8	0	
	121	1.3	light brown			0		
6.0						0	0	
8.0	1479	3.3					$\emptyset$	
						0	$\mathcal{O}$	
10.0						8	0	
12.0						0	0	
12.0	1780	1.2				0	0	
14.0	.,					0	0	
			6 - 25 ft			Ø	Ø	
16.0			SANDY CALICHE			0	Ø	[
18.0	1120	0.5				D D	Ø	
10.0	+120	0.5				2-in. sch. 40 PVC casing	0	1
20.0						<sup>8</sup>	0	3/8 inch
							0	bentonite
22.0	4740	<b>0</b> 1					0	/ chips
24.0	1719	0.1				4	0	1
24.0						5	0	
26.0						Ë	0	
	4 400	~ ~				2-i	0	
28.0	1483	0.1				8	0	
30.0			25 - 35 ft			8	0	
			CALCAREOUS FINE SAND with intermittent hard streaks			8	0	
32.0			with Miterritident Haid Streaks				0	
34.0	1368	0.1				8	0	
							0	
36.0							0	
		• •					0	
38.0	2028	0.1				0	0	
40.0			35 - 45 ft				Ø	]
			SILTY FINE SAND red			0	0	/
42.0	2000		IEU				<b>/</b> /	/
44.0	2696	0.1						)
46.0				] [	45 - 50 ft			
48.0	2313	0.1			sample			ļ
48.0	2313	0.1			ab = 3570			
50.0					ppm Cl <sup>*</sup>			
					water at			sand
<u>5</u> 2.0			45 - 61 ft		~ 51 ft BGS			pack
54.0			FINE SAND					1
<u>5</u> 4.0			red					
56.0								
<u>58.0</u>								
60.0								
								/





# Analytical Report

#### **Prepared for:**

Kristin Farris-Pope Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: BD Santa Rita Leak Project Number: 802 Location: South of Eunice

Lab Order Number: 5I08011

Report Date: 09/15/05

Rice Operating Co.	Project: BD Santa Rita Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: 802	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	09/15/05 12:50

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	5108011-01	Water	09/02/05 13:38	09/08/05 14:15

Rice Operating Co.	Project:	BD Santa Rita Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number:	802	Reported:
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	09/15/05 12:50

#### Organics by GC

#### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5108011-01) Water	· · · · · · · · · · · · · · · · · · ·								<u> </u>
Benzene	ND	0.00100	mg/L	1	EI51213	09/12/05	09/13/05	EPA 8021B	
Toluene	ND	0.00100	"		n	п	n	н	
Ethylbenzene	ND	0.00100		"	"	u	u.	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	*	H	n	"	"	"	
Surrogate: a,a,a-Trifluorotoluene	· · · · · · · · · · · · · · · ·	96.4 %	80-120	)	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.1 %	80-12	)	"	"	"	"	

Environmental Lab of Texas

#### General Chemistry Parameters by EPA / Standard Methods

#### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5108011-01) Water									
Total Alkalinity	152	2.00	mg/L	1	EI51203	09/12/05	09/12/05	EPA 310.2M	
Chloride	4480	50.0	н	100	EI51313	09/13/05	09/13/05	EPA 300.0	
Total Dissolved Solids	7600	5.00	"	1	EI50902	09/08/05	09/08/05	EPA 160.1	
Sulfate	1380	50.0	"	100	EI51313	09/13/05	09/13/05	EPA 300.0	

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The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Page 3 of 10

#### Total Metals by EPA / Standard Methods

#### **Environmental Lab of Texas**

Analyte MW-1 (5108011-01) Water	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
									<u> </u>
Calcium	697	2.00	mg/L	200	EI51309	09/12/05	09/12/05	EPA 6010B	
Magnesium	384	0.200	"	"	"		n	17	
Potassium	34.2	0.500	H	10		н	"	n	
Sodium	1640	5.00	*	500	11	n	"	"	

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#### **Organics by GC - Quality Control**

#### **Environmental Lab of Texas**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch E151213 - EPA 5030C (GC)										
Blank (EI51213-BLK1)				Prepared: (	)9/12/05 A	nalyzed: 09	/13/05			
Benzene	ND	0.00100	mg/L				_			
Toluene	ND	0.00100	м							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	н							
Surrogate: a,a,a-Trifluorotoluene	85.1		ug/l	100		85.1	80-120			
Surrogate: 4-Bromofluorobenzene	80.9		"	100		80.9	80-120			
LCS (EI51213-BS1)				Prepared: (	)9/12/05 At	nalyzed: 09	/13/05			
Benzene	94.7		ug/l	100		94.7	80-120			
Toluene	96.0		n	100		96.0	80-120			
Ethylbenzene	107		"	100		107	80-120			
Xylene (p/m)	210		"	200		105	80-120			
Xylene (o)	109		"	100		109	80-120			
Surrogate: a,a,a-Trifluorotoluene	87.2		"	100		87.2	80-120			
Surrogate: 4-Bromofluorobenzene	82.9		"	100		82.9	80-120			
Calibration Check (EI51213-CCV1)				Prepared: 0	9/12/05 Ai	nalyzed: 09	/13/05			
Benzene	91.5		ug/l	100		91.5	80-120			
Toluene	93.5		"	100		93.5	80-120			
Ethylbenzene	106		"	100		106	80-120			
Xylene (p/m)	200		"	200		100	80-120			
Xylene (o)	109		n	100		109	80-120			
Surrogate: a, a, a-Trifluorotoluene	100		"	100		100	0-200			
Surrogate: 4-Bromofluorobenzene	99.5		"	100		99.5	0-200			
Matrix Spike (EI51213-MS1)	Sou	rce: 5108015-0	01	Prepared: 0	9/12/05 Ar	nalyzed: 09	/13/05			
Benzene	92.7		ug/l	100	ND	92.7	80-120			÷
Toluene	94.9		"	100	ND	94.9	80-120			
Ethylbenzene	110		T	100	ND	110	80-120			
Xylene (p/m)	211		"	200	ND	106	80-120			
Xylene (0)	113		n	100	ND	113	80-120			
Surrogate: a, a, a-Trifluorotoluene	101		"	100		101	80-120			
Surrogate: 4-Bromofluorobenzene	104		"	100		104	80-120			

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#### **Organics by GC - Quality Control**

#### **Environmental Lab of Texas**

Analyte	Result	Reporting Limit Unit:	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI51213 - EPA 5030C (GC)						1.			
Matrix Spike Dup (EI51213-MSD1)	Sour	ce: 5108015-01	Prepared:	09/12/05 A	nalyzed: 09	9/13/05			
Benzene	97.0	ug/l	100	ND	97.0	80-120	4.53	20	
Toluene	99.4		100	ND	99.4	80-120	4.63	20	
Ethylbenzene	117		100	ND	117	80-120	6.17	20	
Xylene (p/m)	220	"	200	ND	110	80-120	3.70	20	
Xylene (o)	118	'n	100	ND	118	80-120	4.33	20	
Surrogate: a,a,a-Trifluorotoluene	104	"	100		104	80-120			· .
Surrogate: 4-Bromofluorobenzene	107	"	100		107	80-120			

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#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

**Environmental Lab of Texas** 

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EI50902 - Filtration Preparat	ion									
Blank (EI50902-BLK1)	· · · · · · · · · · · · · · · · · · ·			Prepared &	Analyzed:	09/08/05				
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EI50902-DUP1)	Sour	ce: 5I08011-0	91	Prepared &	z Analyzed:	09/08/05				
Total Dissolved Solids	7650	5.00	mg/L		7600			0.656	5	
Batch EI51203 - General Preparatio	on (WetChem)									
Blank (EI51203-BLK1)				Prepared &	Analyzed:	09/12/05				
Total Alkalinity	ND	2.00	mg/L							
Duplicate (EI51203-DUP1)	Sour	ce: 5106002-0	)1	Prepared &	Analyzed:	09/12/05				
Total Alkalinity	191	2.00	mg/L		192			0.522	20	
Reference (EI51203-SRM1)				Prepared &	Analyzed:	09/12/05				
Bicarbonate Alkalinity	229		mg/L	200		114	80-120			
Batch EI51313 - General Preparatio	n (WetChem)							-		
Blank (E151313-BLK1)				Prepared &	Analyzed:	09/13/05				
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	H							
LCS (EI51313-BS1)				Prepared &	Analyzed:	09/13/05				
Chloride	8.51		mg/L	10.0		85.1	80-120			
Sulfate	9.08		я	10.0		90.8	80-120			

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#### General Chemistry Parameters by EPA / Standard Methods - Quality Control

#### **Environmental Lab of Texas**

A	Demak	Reporting	TT	Spike	Source	MARCA	%REC	DDD	RPD	N
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EI51313 - General Preparation (V	VetChem)	••• X · · · · · · · · · ·								
Calibration Check (EI51313-CCV1)				Prepared &	Analyzed:	09/13/05				
Sulfate	9.38		mg/L	10.0		93.8	80-120			
Chloride	8.81		n	10.0		88.1	80-120			
Duplicate (EI51313-DUP1)	Source	e: 5108011-0	)1	Prepared &	Analyzed:	09/13/05				
Chloride	4430	50.0	mg/L		4480			1.12	20	
Sulfate	1220	50.0	n		1380			12.3	20	

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#### Total Metals by EPA / Standard Methods - Quality Control

**Environmental Lab of Texas** 

	• • • •					····· ,				
		Reporting		Spike	Source	•	%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EI51309 - 6010B/No Digestion										
Blank (EI51309-BLK1)				Prepared &	Analyzed:	09/12/05				
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	п							
Potassium	ND	0.0500	#							
Sodium	ND	0.0100	۳							
Calibration Check (EI51309-CCV1)				Prepared &	z Analyzed:	09/12/05				
Calcium	2.21		mg/L	2.00		110	85-115	<b>.</b>		
Magnesium	2.22		"	2.00		111	85-115			
Potassium	1.85		п	2.00		92.5	85-115			
Sodium	2.13		"	2.00		106	85-115			
Duplicate (EI51309-DUP1)	Sou	rce: 5108011-(	)1	Prepared &	Analyzed:	09/12/05				
Calcium	673	2.00	mg/L		697			3.50	20	
Magnesium	373	0.200			384			2.91	20	
Potassium	33.3	0.500	0		34.2			2.67	20	
Sodium	1410	5.00	"		1640			15.1	20	

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#### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike

Dup Duplicate

Report Approved By:

Raland K Iwits

Date:

9/15/2005

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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Environmental Lab of Texas

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Page 10 of 10

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Environmental Lab of Texas 12600 West I-20 East Phone: 432-563-1500 Odessa, Texas 78766 Fax: 432-563-1713	Project Manager: Kristin Farris Pope	Company Name Rice Operating Company	Company Address: 122 West Taylor	city/state/zip: Hobbs, New Mexico 88240	Telephone No: 505-393-9174	Sampler Signature:				s				Т		-			:818	Ĵ	OB	
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# Environmental Lab of Texas Variance / Corrective Action Report – Sample Log-In

Client:	Vice op.		
, Date/Time:	9/8/05	2:15	
Order #:	5108011		
Initials:	Ck.		

1993 Y

# Sample Receipt Checklist

Yes	No	1,5 C
Yes	No	
Yes	No	Not present
Yes	No	Not present
Yes	No	
Yes	No	
Yes	No	
Yes	No	*
Yes	No	
Yes	No	Not Applicable
	Yes,           Yes,	Yes         No           Yes         No

Other observations:

\* VOA time @ 1344 and 1 LHDPE time @ 1338

Variance Documentation:

Contact Person:	يو. 	Date/Time:	 Contacted by:	
Regarding:	、		-	

v4 a

Corrective Action Taken:

