

## **GW MONITORING REPORT**

# DATE: 9/7/1

RECEIVE 102001 OIL CONSERVATIC DIVISION

R C E Operating Company

AP-64 Gw Mon. Report 9-7-01

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

CERTIFIED MAIL RETURN RECEIPT NO.

7099 3220 0001 9928 4591

September 7, 2001

Mr. Wayne Price NM Energy and Minerals Dept. OCD Environmental Bureau 1220 S. St. Francis Drive Santa Fe, NM 87504

> Re: SWD F-29 Facility – Groundwater Monitoring NW/4, Unit Letter F, Sec. 29, T18S, R38E Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the groundwater monitoring at the F-29 SWD Facility.

A brief background review: this facility operated with below-grade redwood tanks and an emergency overflow pit until 1999 when the facility was upgraded with fiberglass tanks and the overflow pit was closed. Site vertical delineation revealed that salt impact was arrested at 40' BGS at the west-redwood tank and 30' BGS at the east-redwood tank. The initial water analysis indicated no saltwater impact to the groundwater. ROC agreed to sample the monitor well for two years because an unexplained TPH pocket was found 40' BGS at the west-redwood location. (A full report of the delineation and closure activities was submitted to NMOCD June 25, 1999.)

A quarterly monitoring schedule was initiated and MW-1 was discovered to be full of sand, and the water analysis indicated an elevated chloride concentration. ROC received permission to complete an alternate well, MW-2, which also exhibited elevated chloride concentration. ROC verbally notified the NMOCD Santa Fe Office of this occurrence on August 1, 2000 and through email on September 11, 2000. After discussion on August 1, it was suggested that ROC drill and complete an up-gradient well to reference the groundwater quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well, but Mr. Schubert respectfully declined permission.

As result of discussion with NMOCD in March 2001 of the F-29 Facility Annual Monitoring Report, ROC contracted with Safety & Environmental Solutions, Inc. (SESI) to "pump and





ROC F29 GW Monitoring Sept. 7, 2001

dispose" to attempt to remove the elevated-chloride groundwater in MW-2. A reduction in TDS concentration from 3470 ppm to 1385 ppm was realized from a purge of 18,355 gallons. At several points during the intensified effort (daily purge and test July 16 through July 30), the groundwater chloride concentration fell to 223ppm, below the WQCC level (250ppm). Enclosed with this letter is the fluid recovery report of F-29 Facility site activity and analytical results prepared by David Boyer of SESI.

Because the groundwater chloride concentration has fluctuated between 223 and 480ppm, depending on purge volume, ROC would like to expand the groundwater investigation with an up-gradient monitor well and a down-gradient monitor well, as depicted on the attached facility site map. Both of these wells will be located within the ROC property boundaries. All fluid produced from the monitor wells will be measured for volume and then disposed into the SWD Well F-29 Facility, a commercial disposal well owned and operated by ROC.

The monitor wells will be completed pursuant to NMOCD guidelines and sampled pursuant to NMOCD specifications for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO<sub>4</sub>, CO<sub>3</sub>, HCO<sub>3</sub>. Upon receipt of the analytical results, ROC will contact the NMOCD for discussion of further action.

ROC would like to reiterate that this location is surrounded by the Occidental Permian North Hobbs Waterflood Unit and is adjacent to the historical "Windmill Oil Company" production and recovery area. ROC believes that because extensive vertical delineation results at this facility revealed salt-water impact to the vadose zone was arrested before groundwater was contacted, the elevated chloride and TDS concentrations are most likely the result of off-site historical events consistent with seventy-plus years of petroleum production.

If you have any questions, please call. ROC looks forward to your reply.

RICE OPERATING COMPANY

Caroly Deran Haynes

Carolyn Doran Haynes Operations Engineer

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



From the desk of: Carolyn Doran Haynes

N

9-7-01

Wayne Dave boyer's charts - graphs are in software not compatible up MS officer adres, so I couldn't transmit email. Amit heritate to call of you han questions. Thanks so much for all your help & patime. Carlos



		Redwood Tank Excavation		Emeraency Overflov	w Pit
Ground Surfa	Ce	¢			
		West Boring		300-430 ppm Cl	<50 pm TPH
2	143 ppm TPH	(completed, will bring to surface)	12 ppm TPH		
4	1084 ppm Cl		207 ppm/Cl	64 ppm Cl	<pre>&lt;&lt;10 ppm TPH</pre>
9					
8				79 ppm Cl; <60 pl	opm TPH
10	24 ppm TPH	23.4ppm TPH	<10 ppr TPH		
12	285 ppm Cl	443 ppm Cl	791 ppm Cl		
14					
16	******	East Boring			
18		(blugged)			
20	800 ppm Cl				
22					
24					
26	1700 ppm Cl				
28					
30	700 ppm Cl	95 ppm Cl	48 ppm TPH		
32					
34		117 ppm CI	63 ppm TPH		
36					
38					
40	206 ppm Cl	3660 ppm TPH			
42					
44					
46	70 ppm Cl	158 ppm TPH			
48					
50	Groundwater Leve	16			
	Rice Operating Con	npany	Chloride and TPH	Redwood Tank Excavation and E	Emergency Overflow Pit
	Hobbs, NM 8824	0	Delineation	Unit Letter F, Sec 29-	-2
	(202) 393-91/4			Lea County, New	v Mexico

## Rice Operating Company F-29 Monitor Well Fluid Recovery Report Section 29, T19S, R38E Lea County, New Mexico

August 29, 2001



Prepared for:

Rice Operating Company 122 W. Taylor Hobbs, New Mexico 88240

By:

Safety & Environmental Solutions, Inc. 703 E. Clinton, Suite 102 Hobbs, New Mexico 88240 (505) 397-0510



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#### I. Background

Safety & Environmental Solutions, Inc. (SESI) was engaged to perform sampling and data collection on a Rice Operating SWD System Well. The well is referred to as the F-29 monitor well. The subject area is located in Section 29, Township 19 S Range 38 E in Lea County, New Mexico. (See Figure 1. Location Map).

#### II. Work Performed

The well was scheduled for pumping by SESI for 8-hour periods every other day with a small capacity (~1 gpm) submersible pump. The fluid recovered from the well was placed in a holding provided by Rice Operating Company. Due to equipment problems, the pumping schedule was not met in June. Beginning in mid-July, a larger submersible pump capable of pumping 7-10 gpm was utilized. On July 31, generator and wiring problems prevented pumping that day. Due to an August 1 OCD deadline, no further pumping was performed. Table 1 provides the pumping record for July including field measurement of chloride concentrations using Hach Quantabs. A total of 3,280 gallons of fluid was removed during the current test period ending July 31. An approximate total of 18,355 gallons has been removed since the beginning of the pumping period on March 9, 2001.

On August 14, 2001 a SESI technician performed sampling of the well. Samples were taken from the well after pumping a short period with the repaired generator. The samples were obtained and placed in appropriate containers, preserved and transported under chain of custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The analysis performed on these samples was for detection of Major Cations and Anions. (See Analytical Results)

#### **III.** Analytical Results

Comparison tables of the analytical data are provided in Table 2 to show the differences before and after pumping fluid from the F-29 well. Analysis of the groundwater samples performed by Cardinal Laboratories are compared and summarized as shown in the table. A negative number indicates a decrease in constituent concentration from the previous sampling date.

The final sampling on August 14 shows chloride concentration (340 mg/L) exceeding the NM Water Quality Control Commission (WQCC) groundwater standard<sup>1</sup> (250 mg/L) by 90 mg/L. Although the chloride concentration exceeds the standard, it has decreased by an order of magnitude from sampling conducted in March of 2000. Figure 2 shows the decline in concentration from March 2000 to August 2001. The decline stopped and became generally asymptotic beginning in March of this year.

<sup>1</sup> The NM Oil Conservation Division (OCD) utilizes the NM WQCC groundwater standards in administration of OCD rules and regulations.



In July, heavy pumping of the monitor well did not substantially change the concentration of chloride in the well and might have caused a slight increase (Figure 3). The fact that daily pumping could cause chloride concentration to fluctuate between 250 and 480 mg/L as it did on July 29 indicates the likelihood of a nearby source.



Rice Operating Company Lea County, New Mexico

## IV. Report Tables, Figures and Laboratory Results

Pumpìn
Well
Monitor
Rice F-29
July 2001
Table 1.

	Avg.	Chloride	(IIII)	1	1	333	298	298	359	258	258	321	384	414	321	445	288	249, 258	398	480	384	429	223	357	258	223	398	429	278	398	298	333	462	429	370	345		
	Avg.	Pumping Defe (cnm)	<b>Nate (gpm)</b> 0.85	0.7	1	, ,	10.4	7.9	7.9	6.9	6.1	6.9	7.1	6.7	6.7	8	7.1	7.0	1	1	5.6	1	1	1	1	1	1	6.6	1	1	6.1	1	-	9.9	I	1		
Bindin	Time	Pumped	8 hr	8 hr	20	1	22	25	25	20	20	20	15	16	25	1	30	1	1	:	60	1		1	:	4	4 1	30	1	1	30	1 1	1	30	1 1	1		
	Approx.	Volume	Clialige (gal) 410	336	1		229	198	198	137	122	137	107	107	168		214		1	1	336	1	1	1	1	· -	1	198	4		183			198		1	3,280	2 ft <sup>2</sup>
MI 67-J 2017		Difference	(III.)	0.22	0.74 (?)	1	0.15	0.13	0.13	0.09	0.08	0.09	0.07	0.07	0.11	1	0.14	1	1		0.22	1	1	1	1	3	1	0.13	1	1	0.12	1	1	0.13	1	1	me Pumped:	î., area 204.1
1 1002 July	1	Tank Finish	(11) :	2.14	2.88		6.08	6.99	7.34	7.26	7.18	7.09	7.02	6.96	7.26	:	6.75		1	1	7.02		6		1	1	1	6.88	8	1	7.41	3	1	7.28	1	1	IJy Total Volu	 t., radius 8.06 1
		Tank Start	(m) :	1.92	2.14	1	6.23	7.12	7.47	7.35	7.26	7.18	7.09	7.03	7.37	k t	6.89	1	1	1	7.24	8	1	1	1	8		7.01	1	1	7.53		1	7.41	1	-	ηL	erence 50.65 f
	,	Sample		1	12:00 PM	12:45 PM	8:36 AM	7:24 PM	10:24 AM	12:34 PM	8:49 AM	5:34 PM	8:29 AM	7:26 AM	7:20 AM	7:34 AM	7:07 AM	7:15 AM	7:24 AM	7:34 AM	10:17 AM	10:25 AM	10:34 AM	10:44 AM	10:54 AM	11:04 AM	11:14 AM	7:20 PM	7:29 PM	7:39 PM	6:55 AM	7:04 AM	1:42 PM	7:20 PM	7:29 PM	7:39 PM		7/25. Circumfe
		Data	07/05/01	02/06/01	07/16/01	10/61/20	07/20/01	07/20/01	07/21/01	07/22/01	07/23/01	07/23/01	07/24/01	07/25/01	07/26/01	07/26/01	07/27/01	07/27/01	07/27/01	07/27/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/29/01	07/30/01	07/30/01	07/30/01	07/30/01	07/30/01	07/30/01		 <b>Fank</b> strapped

1



F-29	Na	Ca	Mg	K	Conductivity	T-Alkalinity
Monitor Well	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg CaCO <sub>3</sub> /L)
December 12, 2000	500	250	51	15.16	4,239	246
March 16, 2001	167	142	49	12.65	2,146	228
Change	-333	-108	-2	-2.51	-2,093	-18
	Cľ	SO <sub>4</sub>	CO <sub>3</sub>	HCO <sub>3</sub>	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
December 12, 2000	1,027	127	0	300	7.32	2,586
March 16, 2001	396	221	0	279	7.32	1,373
Change	-631	94	0	-21	0	-1 213

Table 2. Summary of F-29	<b>Chemical Analyses December 2</b>	2000 to August 2001
5	2	0

<b>F-29</b>	Na	Ca	Mg	K	Conductivity	T-Alkalinity
Monitor Well	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg CaCO <sub>3</sub> /L)
March 16, 2001	167	142	49	12.65	2,146	228
March 23, 2001	226	142	41	11.00	1,823	228
Change	59	0	-8	-1.65	-323	0
	Cľ	SO4	CO <sub>3</sub>	HCO <sub>3</sub>	рН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
March 16, 2001	396	221	0	279	7.32	1,373
March 23, 2001	368	271	0	279	6.98	1,312

F-29	Na	Ca	Mg	K	Conductivity	T-Alkalinity
Monitor Well	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg CaCO <sub>3</sub> /L)
March 23, 2001	226	142	41	11.00	1,823	228
May 7, 2001	219	139	37	9.31	1,846	230
Change	-7	-3	-4	-1.69	23	2
	Cl	SO <sub>4</sub>	CO <sub>3</sub>	HCO <sub>3</sub>	pH	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
March 16, 2001	368	271	0	279	6.98	1,312
May 7, 2001	365	234	0	280	7.01	1,272
Change	-3	-37	0	1	0.03	-40

Table 2. Summary of F-29 Chemical Analyses December 2000 to August 2001 (concluded)

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<b>F-29</b>	Na	Ca	Mg	K	Conductivity	T-Alkalinity
Monitor Well	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg CaCO <sub>3</sub> /L)
May 7, 2001	219	139	37	9.31	1,846	230
June 8, 2001	256	184	37	14.3	2,289	243
Change	37	45	0	4.99	443	13
	Cľ	SO <sub>4</sub>	CO <sub>3</sub>	HCO <sub>3</sub>	рН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
May 7, 2001	365	234	0	280	7.01	1,272
June 8, 2001	513	212	0	297	6.92	1,796
Change	148	-22	0	17	-0.09	524

<b>F-29</b>	Na	Ca	Mg	K	Conductivity	T-Alkalinity
Monitor Well	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg CaCO <sub>3</sub> /L)
June 8, 2001	256	184	37	14.3	2,289	243
August 14, 2001	171	124	31	7.46	1,854	217
Change	-85	-60	-6	-6.8	-435	-26
	Cľ	SO <sub>4</sub>	CO <sub>3</sub>	HCO <sub>3</sub>	рН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
June 8, 2001	513	212	0	297	6.92	1,796
August 14, 2001	340	133	0	264	6.76	1,385
Change	-173	-79	0	-33	-0.16	-411



Figure 1 Location Map



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F-29 Fluid Recovery Rep

*Rice Operating Company Lea County, New Mexico* 



F-29 Fluid Recovery Reput

Rice Operating Company Lea County, New Mexico 

## Copies of Laboratory Analytical Results





PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

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

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: BOB ALLEN 703 E. CLINTON, STE 103 HOBBS, NM 88240 FAX TO: (505) 393-4388

Receiving Date: 08/14/01 Reporting Date: 08/16/01 Project Owner: RICE Project Name: F-29 Project Location: WEST COUNTY ROAD Sampling Date: 08/14/01 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT Sample Received By: GP Analyzed By: AH

120.1

310.1

		Na	Ca	Mg	К	Conductivity	T-Alkalinity
LAB NUMBER	SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	( <i>u</i> S/cm)	(mgCaCO <sub>3</sub> /L)

ANALYSIS DATE:	08/15/01	08/15/01	08/15/01	08/15/01	08/15/01	08/15/01
H6077-1 WATER WELL	171	124	31	7.46	1854	217
Quality Control	1.076	47	44	5.02	1489	NR
True Value QC	1.000	50	50	5.00	1413	NR
% Recovery	108	94.9	88.5	100	105	NR
Relative Percent Difference	1.5	8.5	13.6	5.2	0.3	NR

273.13500-Ca-D3500-Mg E

	500	0-0a-0	poon-wig	
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8049

	CI	SO4	CO3	HCO3	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
		8/15/01				
ANALYSIS DATE:	08/15/01	05/12/00	08/15/01	08/15/01	08/15/01	08/15/01
H6077-1 WATER WELL	340	133	0	264	6.76	1385
			Ī			
		11 - 14 1				
Quality Control	1001	51.06	NR	1011	6.86	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	100	102	NR	101	98.0	NR
Relative Percent Difference	6.5	0	NR	0	0.6	NR

METHODS:	 SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

METHODS:

Date 14-1 . 1947

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims increasing incr

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+ Cardinal cannot accept verbal changes. Please fax written changes to 915-873-7020.





#### Price, Wayne

Rice Operating Hobbs[SMTP:riceswd@gte.net] Rice Operating Hobbs Monday, March 05, 2001 7:53 AM Price, Wayne Read: Rice F-29 GW From: Reply To: Sent: To: Subject:



This is a receipt for the mail you sent to "Price, Wayne" <WPrice@state.nm.us>; "'riceswd'" <riceswd@gte.net> at 03/02/2001 5:03 PM

This receipt verifies that the message has been displayed on the recipient's computer at 03/05/2001 7:53 AM





#### Price, Wayne

From:	Price, Wayne
Sent:	Friday, March 02, 2001 5:03 PM
To:	Price, Wayne; 'riceswd'
Cc:	Williams, Chris
Subject:	RE: Rice F-29 GW

OCD has reviewed the Rice Operating Company (ROC) letter dated March 02, 2001 requesting emergency abatement actions by pumping contaminated water from the on-site monitor well. The OCD hereby approves of this emergency action with the following additonal conditions:

- 1. Install a sufficient number of monitor wells to properly define the site specific groundwater flow gradient(s) and the extent of contamination from the source area.
- 2. All new bore holes, monitor and recovery well(s) on site shall be sampled and analyzed for BTEX, General Chemistry and WQCC metals.
- 3. ROC will notify the OCD Santa Fe office and the OCD District office at least 72 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples during OCD's normal business hours.
- 4. ROC shall submit the results of the investigation to the OCD Santa Fe Office by April 28, 2001 with a copy provided to the OCD Hobbs District Office and shall include the following investigative information:
  - a. A description of all investigation, remediation and monitoring activities which have occurred including conclusions and recommendations.
  - b. A geologic/lithologic log and well completion diagram for each monitor well.
  - c. A water table potentiometric map showing the location of the leaks and spills, excavated areas, monitor wells, and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient.
  - d. Isopleth maps for contaminants of concern which were observed during the investigations.
  - e. Summary tables of all ground water quality sampling results and copies of all laboratory analytical data sheets and associated QA/QC data taken within the past year.
  - f. The quantity and disposition of all recovered product and/or wastes generated.

Please be advised that NMOCD approval of this plan does not relieve ROC of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve ROC of responsibility for compliance with any other federal, state, or local laws and/or regulations.



## **RICE** Operating Company

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

March 2, 2001

Mr. Wayne Price NM Energy and Minerals Dept. OCD Environmental Bureau 1220 St. Francis Santa Fe, NM 87504

> Re: SWD F-29 Facility – Groundwater Monitoring NW/4, Unit Letter F, Sec. 29, T18S, R38E Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the groundwater monitoring at the F-29 SWD Facility. This letter is to follow-up on our telephone conversation of earlier today and request approval to initiate emergency conditions at this site.

A brief background review: the water analysis indicated elevated dissolved salt concentrations in the alternate well (MW-2) as well as in the sanded-up well (MW-1). ROC verbally notified the NMOCD Santa Fe Office of this occurrence on August 1, 2000 and through email on September 11, 2000. After discussion on August 1, it was suggested that ROC drill and complete an up-gradient well to reference the groundwater quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well, but Mr. Schubert respectfully declined permission.

ROC will continue the effort to establish the extent of groundwater impact at this site. ROC will re-evaluate the surrounding area and investigate possibilities of any alternative measures to gain adjoining groundwater information. ROC will also discuss the matter further with Mr. Schubert.

Regarding the concentration of TDS in MW-2, it is well to considerer the reduction in TDS concentration form 3470 ppm to 2586 ppm over the short period of time and minimal amount of purge. ROC would like to initiate an emergency condition at this site in order to immediately focus an intensified purge of this well by pumping continuously at a rate the well will support. All fluid produced from the MW-2 will be measured for volume and then disposed into the SWD Well F-29 Facility, a commercial disposal well owned and operated by ROC.

MW-2 fluid will be periodically sampled pursuant to NMOCD specifications for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO<sub>4</sub>, CO<sub>3</sub>, HCO<sub>3</sub>. Quarterly sampling events will continue pursuant to NMOCD specifications.







ROC has discussed this activity with Safety and Environmental Solutions Inc., (SESI) the consulting firm assisting with the F-29 project. If this emergency condition is approved by the NMOCD, SESI will install a 12-volt pump, capacity of approximately 0.5 gpm and begin fluid recovery the week of March 5, 2001. ROC, through SESI, will informally report results to NMOCD on a monthly basis, probably through email, or as fluctuation in results would dictate.

If you have any questions, please call. ROC looks forward to your reply.

RICE OPERATING COMPANY

Carolyn Doran Haynes Operations Engineer

Cc: LBG, file

**R** C **E** Operating Company

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

#### CERTIFIED MAIL RETURN RECEIPT NO. 7099 3220 0001 9928 4379

February 8, 2001

Mr. Wayne Price NM Energy and Minerals Dept. OCD Environmental Bureau 1220 St. Francis Santa Fe, NM 87504

FEB 1 2 20 TERMATION DIVISION

Re: SWD F-29 Facility – Groundwater Monitoring NW/4, Unit Letter F, Sec. 29, T18S, R38E Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the closure for the emergency overflow pit and the below-ground redwood tanks that were located at the F-29 Facility. ROC understands that NMOCD has requested a two-year sampling plan for monitoring the groundwater at this facility.

The initial monitor well at this location was documented to have been completed with 2-inch casing to 60 feet BGS with 10 feet of screen above the water table interface and 10 feet below. The initial sample was tested for BTEX and Chlorides and was found to be within the WQCC limits. However, when the 2-year sampling program started in April 2000, it was discovered that the well could not be properly purged and there was sparse influx of water into the wellbore. Depth indicators revealed that the well had filled with sand to 51 feet BGS (the water table is at 50.5 feet BGS.) ROC had tried to bail the sand from the well with no avail. Water analysis revealed an elevated concentration of dissolved salts that was not found in the initial sample.

In order to assure re-producible water sampling events, ROC requested to complete an alternate monitor well with 4-inch casing and 15 feet of screen: 5 feet above the water table interface and 10 feet below. (Verbal approval was received via telephone conversation June 1, 2000.) This well was drilled by Harrison and Cooper of Wolfforth, TX on July 10, 2000 and was completed and developed pursuant to NMOCD guidelines. A well log report and location of the replacement monitor well is included in this package.





ROC F29 GW Monitoring 2000 Report February 8, 2001

The water analysis indicated elevated dissolved salt concentrations in this alternate well also. ROC verbally notified the NMOCD Santa Fe Office. After discussion, it was suggested that ROC drill and complete and up-gradient well to reference the ground water quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well. Mr. Schubert respectfully declined permission.

The 2000 quarterly monitoring events for the alternate monitor well were scheduled and conducted by Safety and Environmental Solutions, Inc. (SES) of Hobbs. Analytical tests were conducted by Cardinal Laboratories of Hobbs. The 2000 MW Report was compiled by SES.

ROC has contracted with SES for Year 2001 monitor well sampling and SES will schedule all major events with a 48-hour advance notice to the NMOCD. All sampling activities will be conducted pursuant to NMOCD guidelines.

The ground water will be tested for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO<sub>4</sub>, CO<sub>3</sub>, HCO<sub>3</sub>. The well will be sampled pursuant to NMOCD specifications and the Hobbs NMOCD Office will be notified 48 hours in advance of sampling events.

At this time, ROC offers to continue the sampling program without pumping the well because there is no information concerning the up-gradient ground water quality. ROC prefers to minimize the risk of inviting influx of possibly impacted off-site water.

If you have any questions, please call.

RICE OPERATING COMPANY

Curolyn Doran Harmes

Carolyn Doran Haynes Operations Engineer

- Enclosures: Monitor Well Boring Report 2000 Analytical and Elevation Tables Site Map SESI Monitoring Reports and Lab Results
- Cc: LBG, TG, file, OCD Hobbs District I 1625 N. French Drive Hobbs, NM 88240

Send original copy by certified ma	ail to: TDLR, P.	O. Box 1215	7, Austin,	TX 7871	1									
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Please attach electric log, chemical analysis, and other pertinent information, if available.

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IARY OF WATER SAMPLE ANALYTICAL RESULTS 1999 - 2000	RICE OPERATING COMPANY SWD WELL F-29 SITE	Benzene Toluene Ethylbenzene Xylenes Total BTEX TDS Chloride (opm) (ppm) (ppm) (ppm) (ppm) (ppm)	0.010 0.750 0.750 0.620 0.620 1.000 250	<0.002 < 0.002 < 0.002 < 0.006 < 0.012 194	<0.002 < 0.002 < 0.002 < 0.006 < 0.012 < 6600 2564	<0.002 < 0.002 < 0.002 < 0.006 < 0.012 3470 1829	<0.002 < <0.002 < <0.002 < <0.006 < <0.012 3032 1748	<0.002	aboratories in Hobbs, New Mexico.	ylene (BTEX); total dissolved solids (TDS); and chloride analyses were conducted using	32.3, respectively	NMWQCC human health standards for ground water.	
SUMMARY OF WATER SA	RICE OPERATING	Date Benzene Toluene Sampled (ppm) (ppm)	andards 0.010 0.7	03/05/99 <0.002 <0.002	3/21/2001 <0.002 <0.002	7/14/2000 <0.002 <0.002	9/27/2000 <0.002 <0.002	2/12/2000 <0.002 <0.002	d by Cardinal Laboratories in Hobbs, New Mexico	libenzene, and xylene (BTEX), total dissolved solid	0, 160.1, and 352.3, respectively.	old print exceed NMWQCC human health standar	
		Well Name	NMWQCC Ste	M/V-1	MW-1 0	MW-2 0	MW-2 0	MW-2 1	Analysis was performe	Benzene, toluene, eytr	EPA Methods 802	Results presented in b	

TER		LNAPL	Thickness	00.00	00.0	00.00	0.00	0.00	
S by QUAR	-29 SITE	Surface	Elevation				98.5	98.5	
SUREMENT	<b>ND WELL F</b>	Casing	Elevation		100.00		100.00	100.00	
ATER MEAS	OMPANY SI	Water	Elevation		50.11		50.74	50.39	
<b>GROUNDW</b>	ERATING C		<b>Depth to Water</b>	50.00	49.89	49.00	49.26	49.61	
MMARY OF	<b>RICE OPI</b>		Date Gauged	03/05/99	03/21/2000	07/10/2000	09/27/2000	12/12/2000	
SUM			Well	MW-1	MW-1	MW-2	MW-2	MW-2	

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Page 1 of 1





PHONE (915) 673-7001 · 2111 BEECHWOOD · ABILENE, TX 79603

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

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: F.WESLEY ROOT
122 W. TAYLOR
HOBBS, NM 88240
FAX TO.

Receiving Date: 03/05/99 Reporting Date: 03/06/99 Project Owner: RICE OPERATING Project Name: SWD F-29 Project Location: 29-T18S-R38E, LEA CO., NM

Sampling Date: 03/05/99 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT Sample Received By: BC Analyzed By: BC

					EIHYL	TOTAL
LAB NO.	SAMPLE ID	CI	BENZENE	TOLUENE	BENZENE	XYLENES
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
ANALYSIS D	ATE:	03/05/99	03/05/99	03/05/99	03/05/99	03/05/99
H4046-1	B-1	194	<0.002	<0.002	<0.002	<0.006
	·····					
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Quality Contro		1335	0.089	0.095	0.092	0.276
True Value Q		1319	0.100	0.100	0.100	0.300
% Recovery		101	88.9	94.6	91.5	92.0
Relative Perce	ent Difference	1.5	3.5	4.6	4.0	5.1

METHODS: CI- Std. Methods 4500-CIB; BTEX - EPA SW-846 8260

Alash

#### H4046.XLS

PLEASE NOTE: Llability and Dsmages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including incse for negligence and any other cause whetspeever shall be deemed waived unless made in writing and received by Cardinal within thiny (30) days after completion of the applicable service. In no event shall Cardhal be liable for indicantal or consequential damages, including, winnout limitation, cusiness interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services interruptional, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

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2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240

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LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE					OTHER :	DAT	m	TIME	BTEX	ChLORid	1				<b></b>		<u> </u>					ļ		<u> </u>	l	+			l
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*Rice Operating Company F-29 Monitor Well Report Lea County, New Mexico* 

## Section 29, T19S, R38E Lea County, New Mexico

April 24, 2000



prepared for:

Rice Operating Company 122 W. Taylor Hobbs, New Mexico 88240

By:

Safety & Environmental Solutions, Inc. 703 E. Clinton, Suite 103



.



Hobbs, New Mexico 88240 (505) 397-0510

## TABLE OF CONTENTS

I. Background	2
II.Work Performed	2
III. Analytical Results	3
IV. Maps and Figures	3



#### I. Background

Safety & Environmental Solutions, Inc. (SESI) was engaged on March 21, 2000 to perform sampling and data collection from a Rice Operating Hobbs SWD System Well F-29 monitor well (See Vicinity Map). The subject area is located in Sections 29, Township 19 S Range 38 E in Lea County, New Mexico.

#### II. Work Performed

SESI personnel Dee Whatley arrived at the site on March 21, 2000. Ground water samples were taken from each well after either hand bailing or a submersible pump developed the wells. Three to five casing volumes of water were removed from each well until pH and temperature of the water were stabilized. The samples were obtained and placed in appropriate containers, preserved and transported under chain of custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The analyses requested by Rice Operating Company included Benzene, Toulene, Ethyl Benzene, and Xylenes (BTEX) and Major Cations and Anions. (See Analytical Data)

In addition to the sampling, SESI also surveyed and marked the north side of the top of casing in each well. From that point, the depth to the top of ground water was measured using a Solinst water level indicator. The total depth of each well was measured in order to compute the proper casing volumes. (See TOC and TOW Maps) A summary of this data follows:

D	Date	Casing	<b>Depth</b> to	Water	Free Product
	server and the server	Elevation	Water	Elevation	Thickness
F-29 Well	3/21/00	100.00'	49.89'	50.11'	N/a





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#### **III.** Analytical Results

The analysis of the groundwater samples performed by Cardinal Laboratories are summarized as follows:

SAMPLE	BENZENE	TOLUENE	ETHNYL	TOTAL
ID	mg/L)	(mg/L)	BENZENE	XYLENES
			(mg/L)	(mg/L)
<b>F-29</b>	< 0.002	< 0.002	< 0.002	< 0.006
WELL				

SAMPLE ID	Na (mg/L)-	Ca (mg/L)	Mg (mg/L)	K _(mg/L)_	Conductivity ( <i>u</i> mhos/cm)	T-Alkalinity (mgCaCO <sub>3</sub> /L)
F-29 WELL	991	399	122	28.9	8910	284

SAMPLE-ID	Cl .(mg/L)	SO <sub>4</sub> (mg/L)	CO <sub>3</sub> (mg/L)	HCO3 (mg/L)	рН (s.u.)	TDS (mg/L)
F-29 WELL	2564	227	0	346	7.56	6600

#### **IV.** Maps and Figures

Vicinity Map Analytical Results *Monitor Well Report April 24, 2000* 

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Rice Operating Company Lea County, New Mexico

## Figure 1 Vicinity Map

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Monitor Well Report April 24, 2000

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Rice Operating Company Lea County, New Mexico

Figure 2 Analytical Results

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PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

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

ANALYTICAL RESULTS FOR SAFETY & ENVIRONMENTAL SOLUTIONS, INC. ATTN: DEE WHATLEY 703 E. CLINTON, SUITE #103 HOBBS, NM 88240 FAX TO:

Receiving Date: 03/21/00 Reporting Date: 03/22/00 Project Owner: RICE Project Name: RICE F-29 MONITOR WELL Project Location: F-29 Modified Reporting Date: 04/14/00

#### Sampling Date: 03/21/00 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT Sample Received By: AH Analyzed By: AH

MODIFIED REPORT

	Na	Ca	Mg	K Conductivity	T-Alkalinity
LAB NUMBER SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L) (u mhos/cm)	(mgCaCO <sub>3</sub> /L)

ANALYSIS DATE:	03/22/00	03/21/00	03/21/00	03/21/00	03/21/00	03/21/00
H4733-1 F-29 WELL	991	399	122	28.9	8910	284
Quality Control	0.851	52	53	5.02	1392	NR
True Value QC	1.000	50	50	5.00	1413	NR
% Recovery	85.1	104	106	100	98.5	NR
Relative Percent Difference	5.3	0	0	1.8	0.2	NR
METHODS:	273.1	3500-Ca-D	3500-Mg E	8049	120.1	310.1
	CI	SO₄	$CO_3$	HCO <sub>3</sub>	pН	TDS

	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DATE:	04/10/00	04/10/00	03/22/00	03/22/00	03/21/00	03/21/00
H4733-1 F-29 WELL	2564	227	. 0	346	7.56	6600
Quality Control	992	49.39	NR	971	7.01	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	99.2	98.8	NR	97.1	100	NR
Relative Percent Difference	0.9	3.5	NR		0.1	NR
METHODS:	SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

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04/14/2000

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Terms and Conditions: laterest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invice, and all costs of codections, including attorney's fees. 5 ANALYSIS REQUEST Page\_ □ No Add'I Phone #: □ No Add'I Fax #: <u>Π</u> Υes 34 Ya N SNO. t Phone Result: t walved artiess mede in writing and received by Cardinal within 30 days after completion of the applicable I imitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaties, Fax Result: REMARKS: OFIC **JME** mount paid by the client for the services hareunder by Cardinal, regardese of whether such daim is based upon any of the above stated ressons or otherwise. SAMPLING TO 3-2/00 DATE 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 CHECKED BY: zip: (505) 393-2326 Fax (505) 393-2476 (Initials) PRESERV. : ABHTØ In contract or tort, shell be limited to the Company: ICE / COOF Address: Phone #: P.O. #: State: Fax #: Attn: SA8\010A CITY: : ABHTO Sample Condition Cool Intact Cosl Tract No TNo Received By: (Lab Staff SLUDGE to r Well MATRIX CRUDE OIL sertal demages, including without limitation, business interruptions, JIOS Ŷ <u>яэтаwэ</u>тгауу Received By ŕ ino RECOUNDWATER SARDINAL LABORATORIES, INC. **# CONTAINERS** r ä 4 (G)RAB OR (C)OMP. (915) 673-7001 Fax (915) 673-7020 Project Owner: Date: 3-2/-00 /2.20/m Date: Time: Date: Time: Date: remody for any ob od Marte ÿ 5-25 ł State: Fax #: 74 VEASE NOTE: Unbity and Damages. Cardinal's lability and clearly exclusive other cause wheteo 7 Sample I.D. Q tal or consect **Due** γ Mates or accession artery out of or related to the party Sampier Relinquished: 29 J Sampler - UPS - Bus - Other: 1 Delivered By: (Circle One) ſ vice. In no event shall Cardinal be liable for malyses. Ali cleams including those for ne-Project Manager: Company Name: Project Location: **Relinquished By** Sampler Name: 7.7 Project Name: FOR LAB USE ONLY Lab I.D. Project #: Address: Phone #: N CIPS:

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST** 







PHONE (915) 673-7001 . 2111 BEECHWOOD . ABILENE, TX 79603

PHONE (505) 393-2926 + 101 E. MARLAND + HOBBS, NM 88240

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

Receiving Date: 07/17/00 Reporting Date: 07/21/00 Project Number: NOT GIVEN Project Name: NOT GIVEN Project Location: F-29 MW-2 Sampling Date: 07/14/00 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT Sample Received By: AH Analyzed By: AH

		Na	Ca	Mg	к	Conductivity	T-Alkalinity
LAB NUMBER	SAMPLE ID	(mg/l.)	(mg/L)	(mg/L)	(mg/L)	(mS/cm)	(mgCaCO <sub>3</sub> /L)

ANALYSIS DATE	07/20/00	07/20/00	07/20/00	07/20/00	07/20/00	07/20/00
H5014-1 F-29	740	263	220	11.07	<b>594</b> 1	307
Quality Control	0.875	46	56	5.05	1368	NR
True Value QC	1.000	50	50	5.00	1413	NR
% Recovery	87.5	92	112	101	96.7	
Relative Percent Difference	7.2	8.7	0	4.2	0.1	NR
METHODS:	SM	3500-Ca-D	3500-Mg E	8049	120.1	310.1
	ci	SO4	ĊO3	HCO₃	pН	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(s.u.)	(mg/L)
ANALYSIS DATE:	07/18/00	07/20/00	07/20/00	07/20/00	07/20/00	07/21/00
H5014-1 F-29	1829	260	0	375	7.12	3470
Quality Control	1080	50.73	NR	1000	6.98	NR
True Value QC	1000	50.00	NR	1000	7.00	
% Recovery	108	101	NR	100	99.7	NR
Relative Percent Difference	4.6	1.2	NR	0	0	nr
METHODS:	SM4500-CI-B	375.4	310.1	310.1	150.1	160.1

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

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

Receiving Date: 07/17/00 Reporting Date: 07/19/00 Project Number: NOT GIVEN Project Name: NOT GIVEN Project Location: F-29 MW-2 Sampling Date: 07/14/00 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT Sample Received By: AH Analyzed By: BC

LAB NO.	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DA	TE	07/17/00	07/17/00	07/17/00	07/17/00
H5014-1	F-29	<0.002	<0.002	<0.002	<0.008
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······································					
Quality Contro	)	0.100	0.100	0.095	0.288
True Value QC	)	0.100	0.100	0.100	0.300
% Recovery		99.8	99.8	95.3	96.0
<b>Relative Perce</b>	ent Difference	1.6	2.0	8.1	8.1

METHOD: EPA SW 846-8021B, 5030, 5021 Gas Chromatography

Q. Cook

H5014B, XLS PLEASE NOTE: Liability and Dameges. Cardinal's liability and client's exclusive remedy for any claim artaing, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligance and any other cause whatseever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable arrive. In no event shall Cardinal be liable for incidental or consequantial damages, including, without limitation, business interruptions, loss of use, or loss of profils incurred by client, its subsidiaries, affiliates 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.

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