

AP - 49

STAGE 1 & 2 REPORTS

DATE:

June 2, 2003



Highlander Environmental Corp.

Midland, Texas

June 2, 2003

Ms. Christen Farris
Rice Operating Company
122 West Taylor
Hobbs, New Mexico 88240

Re: Monitor Well Sampling, Rice Operating Company, Justis Saltwater Disposal System, SWD Well #H-2, Unit H, Section 2, T-26-S, R-37-E, Lea County, New Mexico

Dear Ms. Farris:

This letter details the sampling of three (3) Rice Operating Company (Rice) monitor wells at the above-mentioned location.

Highlander was contacted by Rice to purge and sample three monitor wells on a site near Jal, New Mexico. On May 20, 2003, Highlander personnel traveled to the location. Prior to sampling, the wells were gauged for static water levels. Using total depth measurements obtained during prior monitoring, accurate purging volumes were calculated.

At the time of sampling, all monitor well caps were opened and water level measurements were taken from the top of the casing. The measurements were taken to the nearest 0.01 feet. The water level measurements and purge volumes for the monitor wells are shown in Table 1. Proper purging procedures were followed for each monitor well. Each well was purged using a portable submersible pump. Between purging events, the pump and associated tubing were washed with a laboratory grade detergent and rinsed with deionized water.

Approximately three casing volumes of water were purged from each well prior to sampling. Groundwater samples were collected as soon as possible after the groundwater returned to its static level. Each well was inspected for the presence of phase-separated hydrocarbons (PSH).

Groundwater samples were collected using clean disposable polyethylene bailers and disposable line. The samples were transferred into labeled and preserved containers provided by the laboratory. All of the samples were delivered under proper chain-of-custody control

to Environmental Labs of Texas, Inc., Odessa, Texas. The groundwater samples were analyzed for major anions, by methods 310.1, 9253 and 375.4, cations by method 6010B, Total Dissolved Solids (TDS) by method 160.1 and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B. Copies of the laboratory analyses are enclosed in Appendix A.

Respectfully Submitted,
HIGHLANDER ENVIRONMENTAL CORP.



Timothy M. Reed, CAPM, REM
Vice President



TABLE

Rice Engineering - SWD H-2

Table 1: Cumulative Water Level Measurements

MW #	Sample Date	Total Depth (TOC) (feet)	Depth to Water (TOC) (feet)	Purge Volume (Gallons)
MW-1	8/16/02	137.2	116.20	66
MW-2	8/16/02	142.1	121.85	25
MW-3	8/16/02	133.3	118.68	20

MW #	Sample Date	Total Depth (TOC) (feet)	Depth to Water (TOC) (feet)	Purge Volume (Gallons)
MW-1	11/12/02	144*	123.32	60
MW-2	11/12/02	142	122.10	25
MW-3	11/12/02	133	118.90	25

MW #	Sample Date	Total Depth (TOC) (feet)	Depth to Water (TOC) (feet)	Purge Volume (Gallons)
MW-1	2/13/03	144*	122.95	70
MW-2	2/13/03	142	121.71	25
MW-3	2/13/03	133	118.53	25

MW #	Sample Date	Total Depth (TOC) (feet)	Depth to Water (TOC) (feet)	Purge Volume (Gallons)
MW-1	5/20/03	144*	123.34	70
MW-2	5/20/03	142	122.08	25
MW-3	5/20/03	133	118.87	25

*Denotes new TD measurement due to monitor well pipe extension



APPENDIX A

Analytical Report

ANALYTICAL REPORT

Prepared for:

**IKE TAVAREZ
HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705**

Project: Rice Operating/Justis SWD Well #H-2

PO#:

Order#: G0306543

Report Date: 05/23/2003

Certificates

US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705
682-3946

Order#: G0306543
Project: 1863
Project Name: Rice Operating/Justis SWD Well #H-2
Location: Lea County, NM

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

<u>Lab ID:</u>	<u>Sample :</u>	<u>Matrix:</u>	<u>Date / Time</u> <u>Collected</u>	<u>Date / Time</u> <u>Received</u>	<u>Container</u>	<u>Preservative</u>
0306543-01	MW-1	WATER	5/20/03 11:15	5/20/03 17:15	See COC	See COC
	<u>Lab Testing:</u>		Rejected: No	Temp: 4 C		
	8021B/5030 BTEX					
	Anions					
	Cations					
Total Dissolved Solids (TDS)						
0306543-02	MW-2	WATER	5/20/03 11:50	5/20/03 17:15	See COC	See COC
	<u>Lab Testing:</u>		Rejected: No	Temp: 4 C		
	8021B/5030 BTEX					
	Anions					
	Cations					
Total Dissolved Solids (TDS)						
0306543-03	MW-3	WATER	5/20/03 12:40	5/20/03 17:15	See COC	See COC
	<u>Lab Testing:</u>		Rejected: No	Temp: 4 C		
	8021B/5030 BTEX					
	Anions					
	Cations					
Total Dissolved Solids (TDS)						

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

IKE TAVAREZ
HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705

Order#: G0306543
Project: 1863
Project Name: Rice Operating/Justis SWD Well #H-2
Location: Lea County, NM

Lab ID: 0306543-01

Sample ID: MW-1

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0005614-02		5/21/03 14:55	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Toluene	<0.001	0.001
Ethylbenzene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	83%	80	120
Bromofluorobenzene	93%	80	120

Lab ID: 0306543-02

Sample ID: MW-2

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0005614-02		5/21/03 16:39	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	<0.001	0.001
Toluene	<0.001	0.001
Ethylbenzene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	99%	80	120
Bromofluorobenzene	82%	80	120

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

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ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

IKE TAVAREZ
HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705

Order#: G0306543
Project: 1863
Project Name: Rice Operating/Justis SWD Well #H-2
Location: Lea County, NM

Lab ID: 0306543-03
Sample ID: MW-3

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0005614-02		5/21/03 17:01	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	0.001	0.001
Toluene	<0.001	0.001
Ethylbenzene	<0.001	0.001
p/m-Xylene	<0.001	0.001
o-Xylene	<0.001	0.001

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	95%	80	120
Bromofluorobenzene	94%	80	120

Approval:

Raland K. Tuttle
Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

Date

5-26-03

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

IKE TAVAREZ
HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705

Order#: G0306543
Project: 1863
Project Name: Rice Operating/Justis SWD Well #H-2
Location: Lea County, NM

Lab ID: 0306543-01

Sample ID: MW-1

Anions

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Bicarbonate Alkalinity	171	mg/L	1	2.00	310.1	5/21/03	SB
Carbonate Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
Chloride	102	mg/L	1	5.00	9253	5/21/03	SB
Hydroxide Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
SULFATE, 375.4	196	mg/L	5	2.5	375.4	5/21/03	SB

Cations

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Calcium	74.8	mg/L	10	0.10	6010B	5/22/03	SM
Magnesium	30.7	mg/L	10	0.010	6010B	5/22/03	SM
Potassium	6.49	mg/L	10	0.50	6010B	5/22/03	SM
Sodium	78.8	mg/L	10	0.10	6010B	5/22/03	SM

Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Total Dissolved Solids (TDS)	682	mg/L	1	5.0	160.1	5/22/03	SB

Lab ID: 0306543-02

Sample ID: MW-2

Anions

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Bicarbonate Alkalinity	132	mg/L	1	2.00	310.1	5/21/03	SB
Carbonate Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
Chloride	1130	mg/L	1	5.00	9253	5/21/03	SB
Hydroxide Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
SULFATE, 375.4	215	mg/L	5	2.5	375.4	5/21/03	SB

Cations

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Calcium	297	mg/L	100	1.0	6010B	5/22/03	SM
Magnesium	153	mg/L	100	0.10	6010B	5/22/03	SM
Potassium	15.4	mg/L	10	0.50	6010B	5/22/03	SM
Sodium	148	mg/L	100	1.0	6010B	5/22/03	SM

Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Total Dissolved Solids (TDS)	3600	mg/L	1	5.0	160.1	5/22/03	SB

RL = Reporting Limit N/A = Not Applicable

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ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

IKE TAVAREZ
HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TX 79705

Order#: G0306543
Project: 1863
Project Name: Rice Operating/Justis SWD Well #H-2
Location: Lea County, NM

Lab ID: 0306543-03

Sample ID: MW-3

Anions

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution</u> <u>Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date</u> <u>Analyzed</u>	<u>Analyst</u>
Bicarbonate Alkalinity	156	mg/L	1	2.00	310.1	5/21/03	SB
Carbonate Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
Chloride	168	mg/L	1	5.00	9253	5/21/03	SB
Hydroxide Alkalinity	<0.10	mg/L	1	0.10	310.1	5/21/03	SB
SULFATE, 375.4	278	mg/L	5	2.5	375.4	5/21/03	SB

Cations

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution</u> <u>Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date</u> <u>Analyzed</u>	<u>Analyst</u>
Calcium	72.4	mg/L	10	0.10	6010B	5/22/03	SM
Magnesium	37.8	mg/L	10	0.010	6010B	5/22/03	SM
Potassium	7.96	mg/L	10	0.50	6010B	5/22/03	SM
Sodium	96.8	mg/L	100	1.0	6010B	5/22/03	SM

Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution</u> <u>Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date</u> <u>Analyzed</u>	<u>Analyst</u>
Total Dissolved Solids (TDS)	885	mg/L	1	5.0	160.1	5/22/03	SB

Approval:

Raland K. Tuttle 5-27-03
Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

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ENVIRONMENTAL LAB OF TEXAS I, LTD.

12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0306543

BLANK							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L		0005614-02			<0.001		
Toluene-mg/L		0005614-02			<0.001		
Ethylbenzene-mg/L		0005614-02			<0.001		
p/m-Xylene-mg/L		0005614-02			<0.001		
o-Xylene-mg/L		0005614-02			<0.001		
MS							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L		0306543-03	0.001	0.1	0.106	105.%	
Toluene-mg/L		0306543-03	0	0.1	0.103	103.%	
Ethylbenzene-mg/L		0306543-03	0	0.1	0.095	95.%	
p/m-Xylene-mg/L		0306543-03	0	0.2	0.192	96.%	
o-Xylene-mg/L		0306543-03	0	0.1	0.092	92.%	
MSD							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L		0306543-03	0.001	0.1	0.107	106.%	0.9%
Toluene-mg/L		0306543-03	0	0.1	0.104	104.%	1.1%
Ethylbenzene-mg/L		0306543-03	0	0.1	0.097	97.%	2.1%
p/m-Xylene-mg/L		0306543-03	0	0.2	0.198	99.%	3.1%
o-Xylene-mg/L		0306543-03	0	0.1	0.093	93.%	1.1%
SRM							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/L		0005614-05		0.1	0.105	105.%	
Toluene-mg/L		0005614-05		0.1	0.103	103.%	
Ethylbenzene-mg/L		0005614-05		0.1	0.096	96.%	
p/m-Xylene-mg/L		0005614-05		0.2	0.198	99.%	
o-Xylene-mg/L		0005614-05		0.1	0.092	92.%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Anions

Order#: G0306543

BLANK	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L		0005587-01			<2.00		
Carbonate Alkalinity-mg/L		0005588-01			<0.10		
Chloride-mg/L		0005594-01			<5.00		
Hydroxide Alkalinity-mg/L		0005589-01			<0.10		
SULFATE, 375.4-mg/L		0005591-01			<0.50		
DUPLICATE	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L		0306543-01	171		172		0.6%
Carbonate Alkalinity-mg/L		0306543-01	0		<0.10		0.0%
Hydroxide Alkalinity-mg/L		0306543-01	0		<0.10		0.0%
SULFATE, 375.4-mg/L		0306525-01	498		474		4.9%
MS	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/L		0306536-01	65	167	230	98.8%	
MSD	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/L		0306536-01	65	167	233	100.6%	1.3%
SRM	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L		0005587-04		0.05	0.0496	99.2%	
Carbonate Alkalinity-mg/L		0005588-04		0.05	0.0496	99.2%	
Chloride-mg/L		0005594-04		5000	4960	99.2%	
Hydroxide Alkalinity-mg/L		0005589-04		0.05	0.0496	99.2%	
SULFATE, 375.4-mg/L		0005591-04		50	52	104.0%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Cations

Order#: G0306543

BLANK							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Calcium-mg/L		0005610-02			<0.010		
Magnesium-mg/L		0005610-02			<0.001		
Potassium-mg/L		0005610-02			<0.050		
Sodium-mg/L		0005610-02			<0.010		
DUPLICATE							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Calcium-mg/L		0306525-01	97		97.5		0.5%
Magnesium-mg/L		0306525-01	50.6		50.7		0.2%
Potassium-mg/L		0306525-01	9.43		9.47		0.4%
Sodium-mg/L		0306525-01	251		251		0%
SRM							
	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Calcium-mg/L		0005610-05		2	1.96	98.%	
Magnesium-mg/L		0005610-05		2	2.08	104.%	
Potassium-mg/L		0005610-05		2	1.76	88.%	
Sodium-mg/L		0005610-05		2	1.78	89.%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0306543

BLANK	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Total Dissolved Solids (TDS)-mg/L		0005621-01			<5.00		
DUPLICATE	WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Total Dissolved Solids (TDS)-mg/L		0306543-01	682		668		2.1%

