AP - 48

STAGE 1 & 2 WORKPLANS

DATE:

July, 2005

Highlander Environmental Corp.

Midland, Texas

CERTIFIED MAIL
RETURN RECIEPT NO. 7004 1160 0000 4837 8607

2005 JUL 15 PM 12 53

July 7, 2005

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

RE: **STAGE I ABATEMENT PLAN**
JCT. L-1, Justis SWD SYSTEM
UNIT "L", SEC. 1, T25S, R37E
NMOCD Case #1R0423-0

Mr. Price:

RICE Operating Company (ROC) has retained Highlander Environmental Corp. (Highlander) to address potential environmental concerns at the above-referenced site. ROC is the service provider (operator) for the Justis 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. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is requested. The following Stage I Abatement Plan is for the Justis Jct. L-1 Site.

Should you have any questions, please contact me at (432) 682-4559. Your prompt review of this submission is appreciated. Thank you for your attention to this matter.

Highlander Environmental Corp.

Tim Reed

Timothy M. Reed, P.G
Vice President

cc: Wayne Price – NMOCD
Kristin Farris Pope - ROC

STAGE I ABATEMENT PLAN

JCT. L-1, JUSTIS SWD SYSTEM

UNIT "L", SEC. 1, T-25-S, R-37-E

NMOCD CASE #1R0423-0

Prepared
for

RICE OPERATING COMPANY

JULY 2005

Highlander Environmental Corp.

Midland, Texas

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STAGE I ABATEMENT PLAN
JCT. L-1, Justis SWD SYSTEM
UNIT "L", SEC. 1, T25S, R37E
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1.0 EXECUTIVE SUMMARY

As part of the RICE Operating Company (ROC) Junction Box Upgrade Workplan, the original Justis L-1 junction box was removed and replaced with a new water tight junction box, located 50 feet south of the old box. Once the junction box was removed, evaluation of the surrounding and subsurface soils was initiated. Delineation was conducted with a backhoe. Chloride testing and PID field screening were performed at regular intervals. The final excavation measured 20' x 22' x 12' deep. PID readings were minimal and TPH testing revealed concentrations well below NMOCD regulatory guidelines. Chloride concentrations, however, did not appear to decline with depth.

On 12/29/2003, a soil boring was placed into the center of the excavation and advanced to a depth of 80' below ground surface, apparently encountering a saturated zone at 75' below ground surface. As with the excavation samples, chloride concentrations failed to decline and, in fact, increased in certain sections of the soil boring. The borehole was plugged and a 1.5 foot thick clay barrier was placed into the excavation at 6 feet below ground surface. A permanent marker was placed at the soil boring location. The remainder of the excavation was backfilled with excavated soils. No TPH impact to groundwater was indicated. A cased monitor well was installed and groundwater has been sampled and analyzed on a quarterly basis. Traces of benzene and ethylbenzene found in the original sampling have not been evident in subsequent sampling events. Chloride and total dissolved solid (TDS) concentrations have been declining since the original sampling

2.0 CHRONOLOGY OF EVENTS

November 13, 2003	The junction box was removed and the Site was delineated vertically and horizontally with a backhoe. The Site was excavated to the approximate dimensions of 20' x 22' x 12'.
December 29, 2003	A soil boring was placed near the old box location and advanced to a depth of 80'.
February 24, 2004	ROC submitted a Junction Box Disclosure Form to the NMOCD.

June 15, 2004	Highlander submitted a work plan for a confirmation borehole and possible monitor well placement.
November 3, 2004	Highlander submitted a revised workplan to address NMOCD concerns.
November 4, 2004	NMOCD approved revised workplan.
December 9, 2004	Monitor Well (MW-1) was installed.
December 21, 2004	Monitor Well (MW-1) was purged and sampled.
January 14, 2005	Rice submitted a Notification of Groundwater Impact to the NMOCD.
March 29, 2005	Monitor Well (MW-1) was purged and sampled.
May 5, 2005	Daniel Sanchez (NMOCD) requested a Rule 19, Stage I Abatement Plan for this site.
June 16, 2005	Monitor Well (MW-1) was purged and sampled.

3.0 BACKGROUND & PREVIOUS WORK

As part of the ROC Junction Box Upgrade Workplan, the original junction box was removed and replaced with a new water tight junction box located 50 feet south of the old box. Once the junction box was removed, evaluation of the surrounding and subsurface soils was initiated. Delineation was conducted with a backhoe. Chloride testing and PID field screening were performed at regular intervals. The final excavation measured 20' x 22' x 12' deep. PID readings were minimal and TPH testing revealed concentrations well below NMOCD regulatory guidelines. Chloride concentrations, however, did not appear to decline with depth. The site location is shown on Figure 1.

On 12/29/2003, a soil boring was placed into the center of the excavation and advanced to a depth of 80' below ground surface, apparently encountering a saturated zone at 75' below ground surface. As with the excavation samples, chloride concentrations failed to decline and, in fact, increased in certain sections of the soil boring. The borehole was plugged and a 1.5 foot thick clay barrier was placed into the excavation at 6 feet below ground surface. A permanent marker was placed at the soil boring location. The remainder of the excavation was backfilled with excavated soils.

On February 24, 2004, ROC submitted a Junction Box Disclosure Form to the NMOCD. On June 15, 2004, Highlander submitted a work plan for a confirmation borehole and possible monitor well placement at the site. The NMOCD responded with requested revisions to the workplan and on November 3, 2004, Highlander submitted a revised workplan to address NMOCD concerns. The workplan was approved by the NMOCD on November 4, 2004. Highlander supervised the installation of Monitor Well (MW-1) on December 19, 2004. The well was purged and sampled on December 21, 2004. On January 14, 2005, Rice submitted a Notification of Groundwater Impact to the NMOCD.

The monitoring well has been sampled on a quarterly basis since December 2004. The most recent sampling was performed on June 16, 2005. Traces of benzene and ethylbenzene were found in the original sampling event and only benzene slightly exceeded the WQCC

standards of 0.01 mg/L for benzene. In the past two quarters, BTEX parameters have not been detected at or above reporting limits. Chloride and total dissolved solid concentrations have been declining since the original sampling where chloride was 1,060 mg/L and TDS was 2,660 mg/L. The most recent sample concentrations are 684 mg/L chloride and 1,900 mg/L TDS.

4.0 GEOLOGY & HYDROGEOLOGY

4.1 Regional and Local Geology

This site is located in the southern edge of the Eunice Plain physiographic subdivision of southern Lea County. The Eunice Plain is bounded on the north by the Llano Estacado, and on the southwest by San Simon Ridge and Antelope Ridge. The Eunice Plain is underlain by a hard caliche surface and is almost entirely covered by a reddish-brown dune sand. Tertiary rocks in this area are represented by the Ogallala formation of Pliocene age. The Ogallala underlies most of the Eunice Plain. It is a heterogeneous complex of terrestrial sediments, which mantles an irregular erosion surface cut into the Triassic rocks.

4.2 Regional and Local Hydrogeology

Groundwater occurs under unconfined conditions in the Ogallala Formation. The Ogallala Formation is regionally known as the High Plains Aquifer. Recharge to the Ogallala Formation occurs through infiltration of rainfall and snowmelt. Discharge occurs principally through pumping from wells.

The regional flow direction for groundwater in the High Plains aquifer is primarily to the south-southeast, however, the localized flow in this area may be more to the east towards Monument Draw, located approximately 1 mile to the east. The depth to water in monitor well MW-1 is approximately 78.5' (TOC).

4.3 Water Well Inventory

A water well inventory will be performed to encompass a ½ mile radius around the facility. The inventory will include a review of water well records on the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey (USGS) website. Any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius will be inspected.

5.0 SUBSURFACE SOILS

The soils in the vicinity of this site are of the Bernino-Cacique loamy fine sands association. In this association, typically, the surface layer is reddish-brown loamy fine sand about 6 inches thick. From 6 inches to 16 inches, is red light sandy clay loam. The subsoil from

16 inches to 60 inches is red to pink light sandy clay loam. The soil boring at this site indicated silty sand to 80', with shallow intermittent caliche stringers.

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

The monitoring well has been sampled on a quarterly basis since December 21, 2005. The most recent sampling was performed on June 16, 2005. Quarterly sampling of this well and any additional well(s) will continue.

6.2 Hydrocarbons in Groundwater

Traces of benzene and ethylbenzene were found in the original sampling event. Only benzene slightly exceeded the WQCC standards of 0.01 mg/L for benzene. In the past two quarters, BTEX parameters have not been detected at or above reporting limits.

6.3 Other Constituents of Concern

Chloride and total dissolved solid concentrations have been declining since the original sampling where chloride was 1,060 mg/L and TDS was 2,660 mg/L. The most recent sample concentrations are 684 mg/L chloride and 1,900 mg/L TDS.

7.0 STAGE I ABATEMENT PLAN

Highlander proposes to install two additional monitoring wells at the junction box location. The monitor wells will be placed appropriately to evaluate groundwater impact and hydraulic gradient. The monitor wells will be constructed according to EPA and industry standards.

Following installation, the wells will be developed either by bailing with a rig or hand bailer, or pumping with an electric submersible pump to remove fine grained sediment disturbed during drilling and to ensure collection of representative groundwater samples. Water removed from the well will be disposed of in the Justis SWD System.

As part of the Stage I Abatement Plan, the residual impact to Vadose Zone soils will be evaluated by various methods to determine what, if any remediation/isolation techniques will be required at the Site.

The information will be evaluated and utilized to design a groundwater remedy if needed. The groundwater remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. Such recommendations and findings will be presented to NMOCD in a subsequent Stage II Abatement Plan. 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.

8.0 QUALITY ASSURANCE/ QUALITY CONTROL

All monitor wells will be constructed to EPA and industry standards. All downhole equipment (i.e., drill rods, drill bits, etc.) will be thoroughly decontaminated between each use with a steam cleaner.

The wells will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. The wells will be properly purged and sampled with clean, dedicated, polyethylene bailers and disposable line. The groundwater samples will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0.

9.0 PROPOSED SCHEDULE OF ACTIVITIES

Upon approval, the work outlined above will be implemented in a timely manner, dependent upon availability of local drilling contractors. Quarterly sampling of the existing monitor well will be continued and all results will be submitted in an annual summary report within the first quarter of 2006.

Respectfully submitted,
Highlander Environmental Corp.

Tim Reed

Timothy M. Reed, P.G.
Vice President

TABLES

Table 1
Rice Operating Company
Justis, L-1 Site
Soil Sample Results
Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	OVM (ppm)	TPH (mg/kg)			Chloride (mg/kg)
				C6-C12	C12-C35	Total	
MW-1	12/9/04	5	0	-	-	-	-
	12/9/04	10	0	-	-	-	-
	12/9/04	15	0	<10.0	<10.0	<10.0	4,890
	12/9/04	20	0	-	-	-	3,100
	12/9/04	25	0	-	-	-	5,440
	12/9/04	30	0	-	-	-	2,340
	12/9/04	35	0	-	-	-	2,040
	12/9/04	40	1	<10.0	<10.0	<10.0	2,980
	12/9/04	45	1	-	-	-	3,400
	12/9/04	50	0	-	-	-	2,420
	12/9/04	55	1	-	-	-	2,170
	12/9/04	60	1	-	-	-	3,250
	12/9/04	65	0	-	-	-	4,130
	12/9/04	70	1	<10.0	<10.0	<10.0	1,870
	12/9/04	75	1	-	-	-	-

(-) not analyzed

Table 2
Rice Operating Company
Justis, L-1 Site
Groundwater Sample Results
Lea County, New Mexico

Water level Measurement:

Well ID	Date Measured	Water level TOC (ft)
MW-1	12/21/04	78.43
	3/29/05	78.19
	6/16/05	78.11

Groundwater Sample Results:

Well ID	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)
MW-1	12/21/04	0.0158	<0.001	0.00209	<0.001
	3/29/05	<0.001	<0.001	<0.001	<0.001
	6/16/05	<0.001	<0.001	<0.001	<0.001

Well ID	Date Sampled	Calcium mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Chloride mg/L	Sulfate mg/L	Alkalinity mg/L Total	TDS mg/L
MW-1	12/21/04	381	14.4	143	477	1,060	550	206	2,620
	3/29/05	225	13.2	77.8	421	873	502	222	2,020
	6/16/05	179	9.55	75.3	326	684	468	226	1,900

H:O&G/2142-Lab 6/16/05

FIGURES

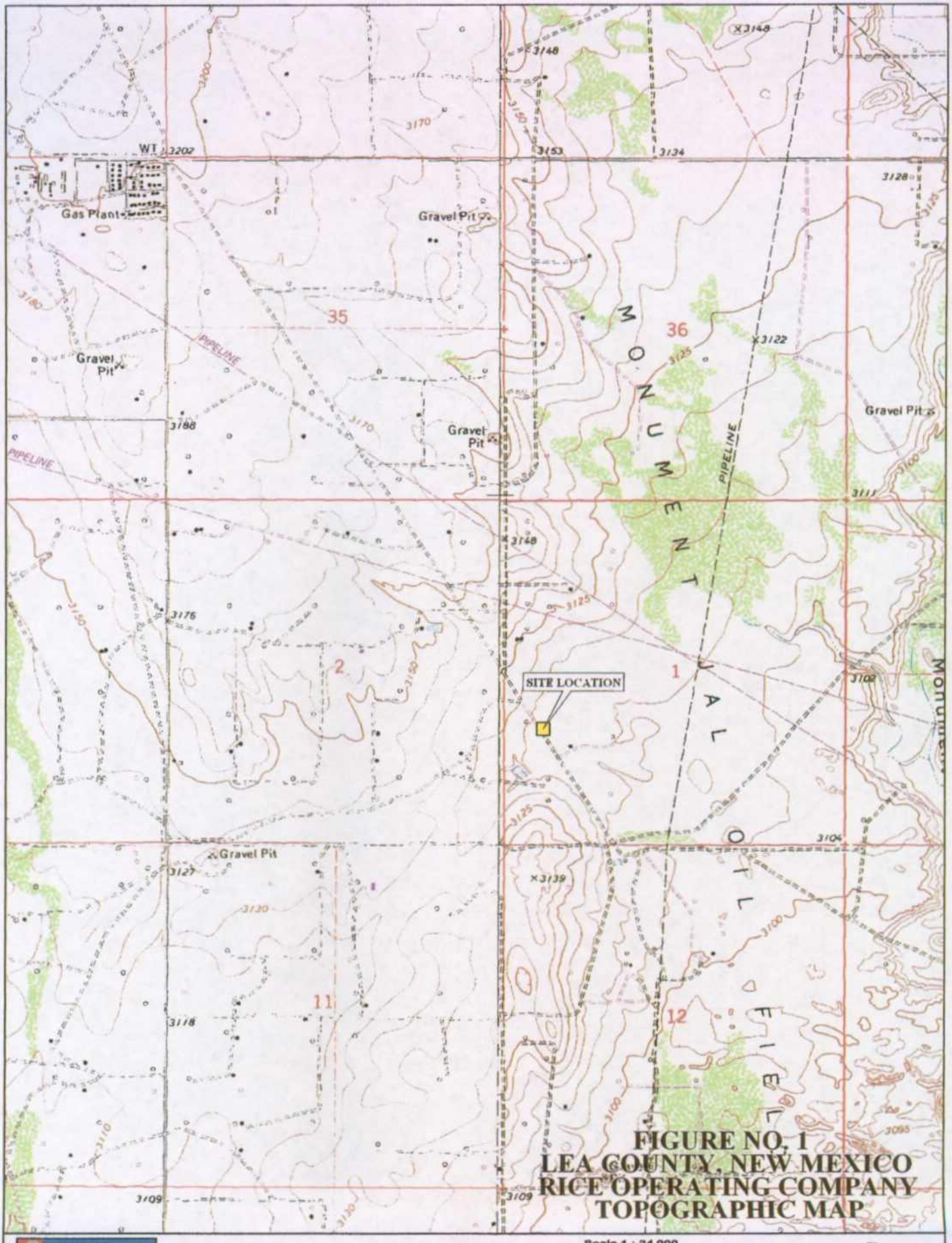


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

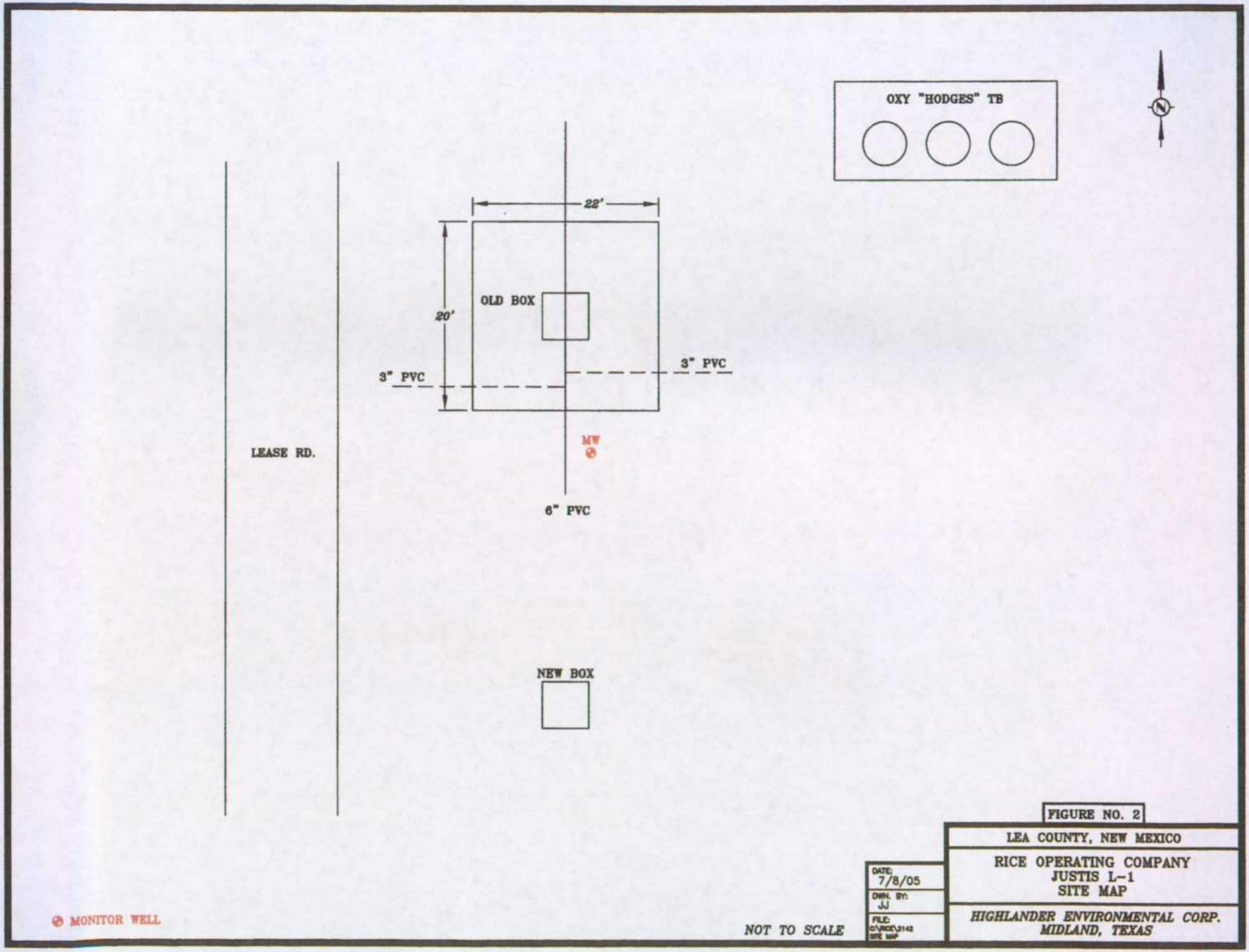


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
JUSTIS L-1
SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

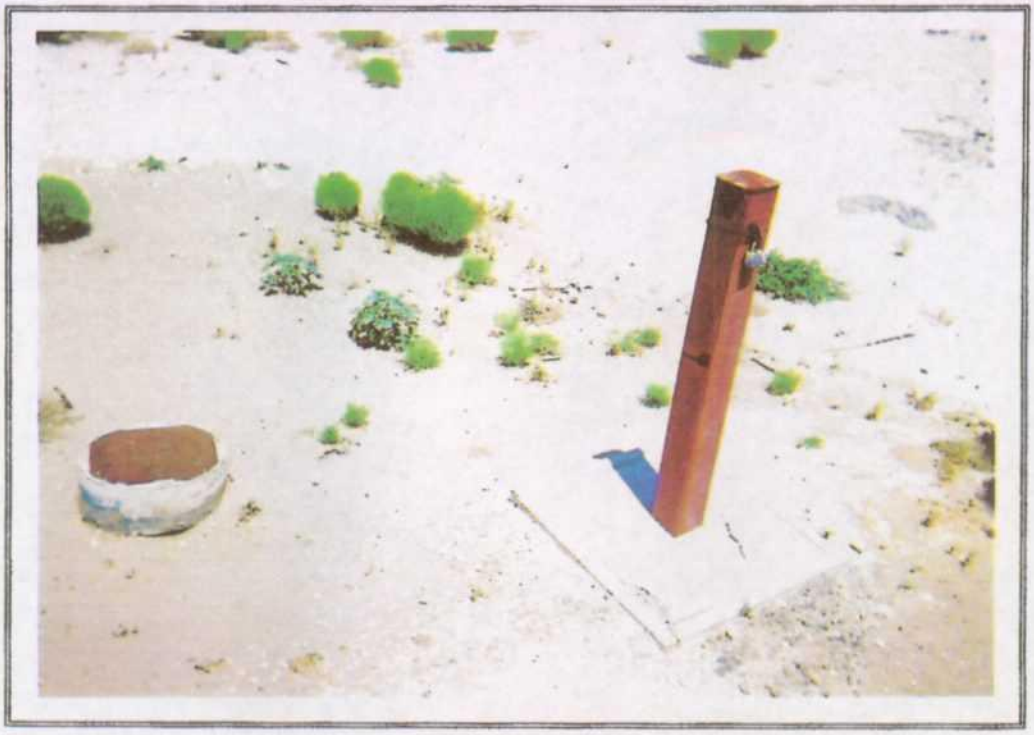
PHOTOGRAPHS

PHOTOGRAPHIC DOCUMENTATION
JCT. L-1 Justis SWD System

1. Site Looking North.

2. Site Looking South.

PHOTOGRAPHIC DOCUMENTATION
JCT. L-1 Justis SWD System



3. Monitoring Well, MW-1.

APPENDIX A

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Justis	L-1	L	1	25S	37E	Lea	Moved 50 ft south		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Joyce Willis OTHER _____

Depth to Groundwater 75 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10 *

Date Started 11/11/2003 Date Completed 12/29/2003 OCD Witness No

Soil Excavated 196 cubic yards Excavation Length 22 Width 20 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** 11/14/2003 **Sample Depth** 12 ft

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
SIDEWALLS	9.2	<10.0	89.2	1890
BOTTOM	0.7	<10.0	<10.0	2020
REMEDIATED	22.4	<10.0	213	1500

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	7	1309
	8	811
	9	497
	10	610
	11	499
	12	719
	13	1071
	14	1360
	15	892
	20	2035
	25	4681
	30	1576
	35	1490
	40	2305
	45	2542
	50	2593
	55	2509
	60	3405
	67	1559

General Description of Remedial Action: Delineation was conducted with a backhoe producing a 20 x 22 x 12 ft deep excavation. Chloride tests and PID readings were performed at regular intervals. PID readings were minimal and TPH lab tests revealed concentrations well below NMOCD guidelines. Chloride concentrations, however, did not sufficiently decline with depth. On 12/29/2003, a soil bore was initiated to delineate the vertical extent of chloride impact. The bore was advanced to a depth of 80 ft and chloride concentrations still did not decline with depth. According to the bore log, it appears a saturated zone was encountered at 75 ft. The bore hole was then plugged (see log). At 6 ft bgs, a 1.5 ft compacted clay barrier was installed in the 22 x 20 ft excavation and the remainder of the hole was backfilled with the excavated soil. An identification plate to mark the bore location and clay barrier below was placed on the surface of this site for future identification. ROC will employ Highlander Environmental of Midland in 2004 to characterize potential environmental concerns at this site.

** A natural pond is located 685 ft south of the junction.*

ADDITIONAL EVALUATION IS HIGH PRIORITY.

enclosures: chloride graph, photos, lab results, diagram, PID readings, clay density test

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 2/23/2004 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Project Scientist

**** This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.***

LOG OF BORING

K. Farris
RICE Operating Company

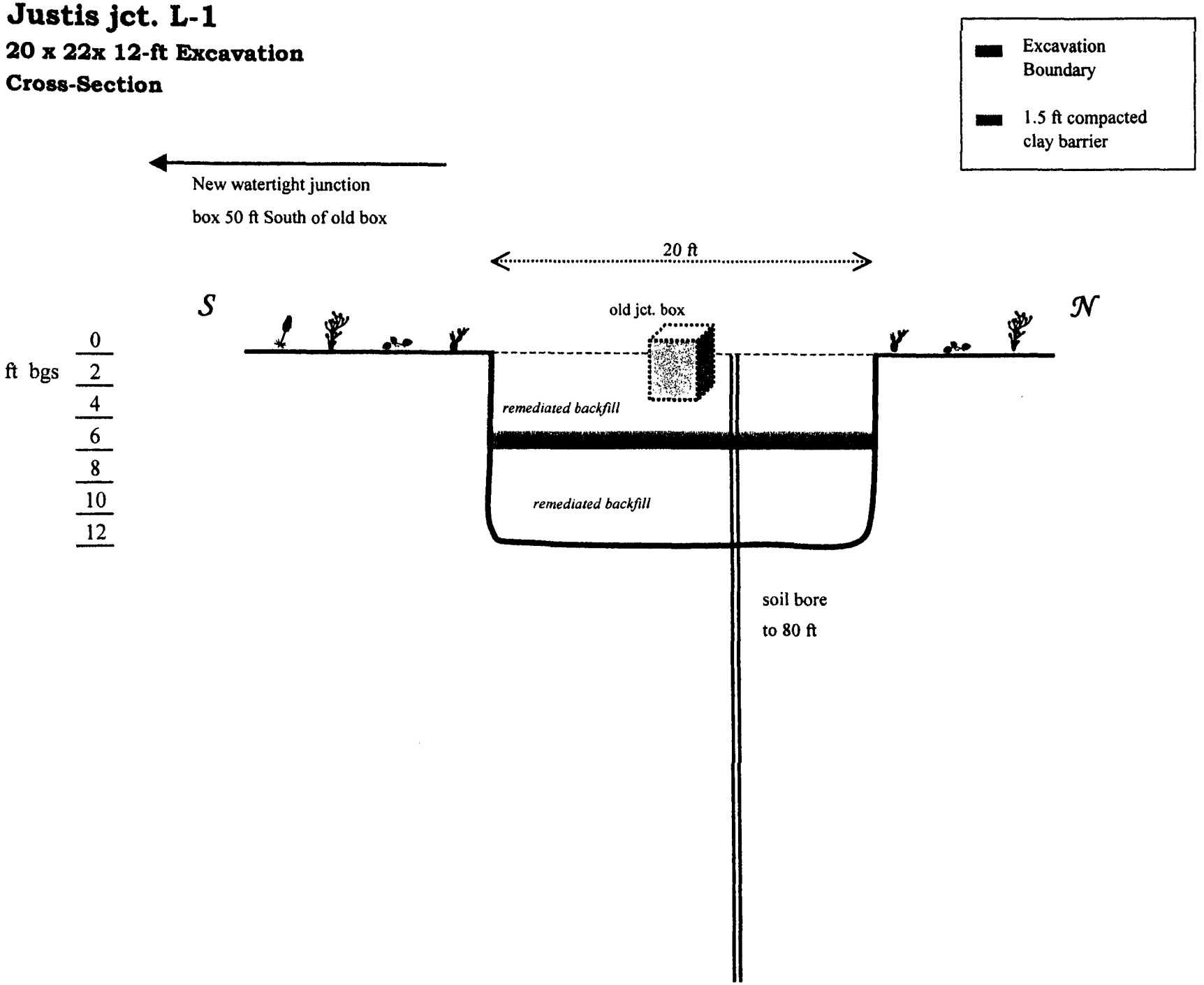
Logger:	Joe Gatts; Mort Bates	**Client:**	**Well ID:**
Driller:	Atkins Engineering Associates, Inc.	RICE Operating Company	SB-1
Drilling Method:	Hollow Stem Auger	**Project Name:**	
Start Date:	12/29/2003	jct. L-1	
End Date:	12/29/2003	**Location:**	
Notes: TD = 80 ft Groundwater = 75 ft		Justis SWD System Sec. 1, T25S, R37E Lea County, NM	

Depth (feet)	Split Spoon chloride	Split Spoon PID	Description	Lithology	Additional Notes
0.0			0-8 ft Silty Sand w/Broken Caliche: loose, tan, dry	3-6 ft bentonite seal	Mixed lithology backfill from original excavation to 12 ft with clay barrier
5.0					
10.0			8-10 ft Fat Clay: stiff, red, damp		
			10-15 ft Silty Sand w/Broken Caliche: loose, tan, dry		
15.0	892	no			
		odor	15-18 ft Silt: firm, white & tan, dry		
20.0	2035	no	18-60 ft Silty Sand: loose, light brown, dry		remainder of bore backfilled with drill cuttings
		odor			
25.0	4681	no			
		odor			
30.0	1576	no			
		odor			
35.0	1490	no			
		odor			
40.0	2305	no			
		odor			
45.0	2542	no			
		odor			
50.0	2593	no			
		odor			
55.0	2509	no			
		odor			
60.0	3405	no			
	3114	odor	60-63 ft Silty Sand: loose, lt. Gray, moist		
65.0			63-67 ft Silty Sand Partially Cemented: hard, white, dry		
	1559	no			
70.0		odor	67-76 ft Silty Sand: loose, reddish tan, moist	▼ 70-75 ft bentonite seal	
75.0	411	no			
		odor	76-80 ft Silty Sand: soft, reddish tan, wet		
80.0	247	no			
		odor			

Justis jct. L-1

20 x 22x 12-ft Excavation

Cross-Section



Justis jct. L-1

T25S, R37E

Depth bgs (ft)	[Cl] ppm
4	1041
5	1489
6	2172
7	1309
8	811
9	497
10	610
11	499
12	719
13	1071
14	1360
15	892
20	2035
25	4681
30	1576
35	1490
40	2305
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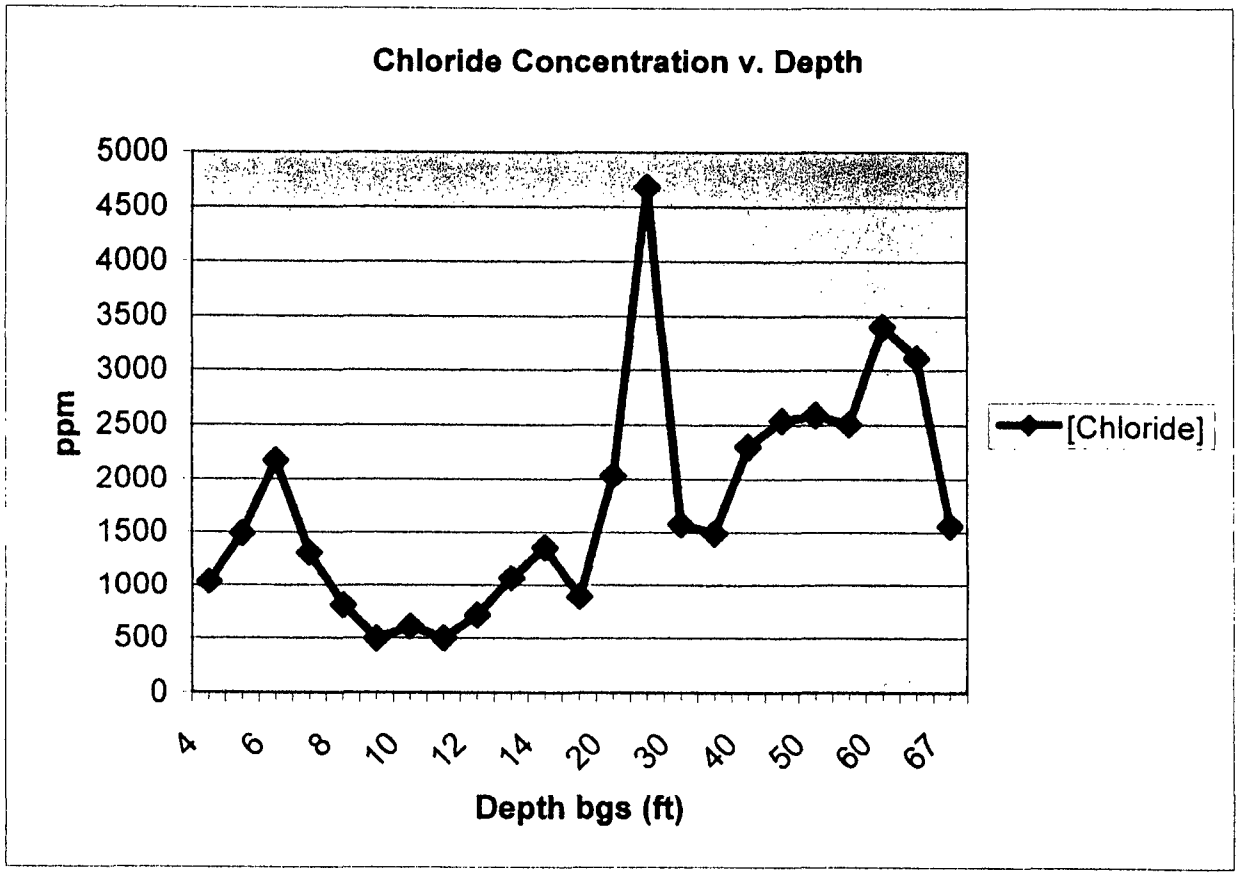
67	1559



Groundwater = 75 ft

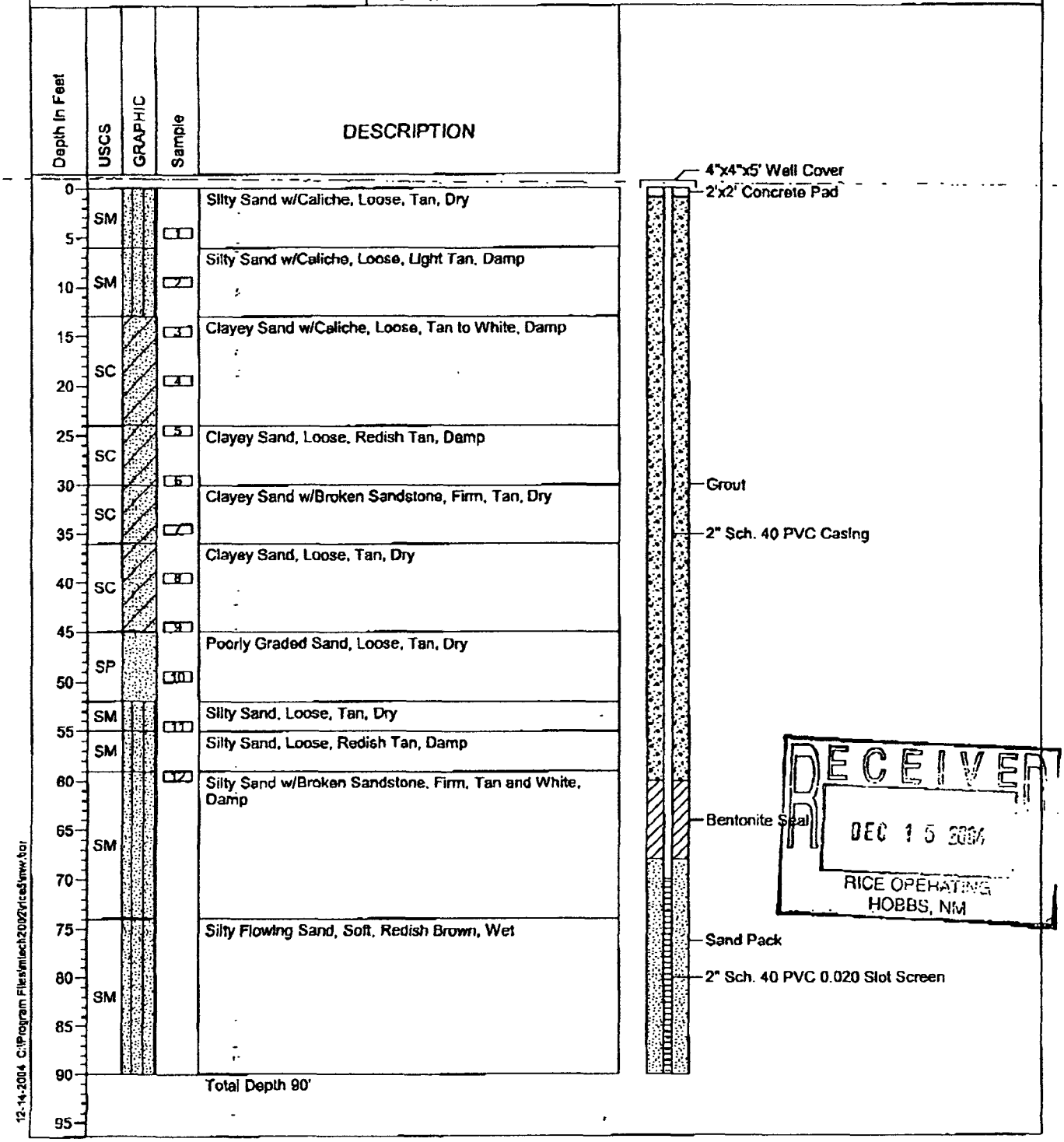
4-14 ft = Backhoe
15-67 ft = Soil Bore

Atkins Engineering Associates, Inc.
P.O. Box 3156
Roswell, New Mexico 88202-3156

Log of Boring Justis Vent L-1 Monitor Well

Rice Operating
122 West Taylor
Hobbs, New Mexico 88240
Contact: Roy Rascon
Job#: JUSTISL.MWD.04

Drill Start	: 12-09-04 (1700)	Logged By	: M. Bates
Drill End	: 12-10-04 (1130)		
Boring Location	: South edge of pit		
Site Location	: W. Monument		
Auger Type	: 4¼ Hollow Stem		



12-14-2004 C:\Program Files\mitech2002\vice3\vmw.tor