1R - 426-169

WORKPLANS

DATE:
10-26-07

Hansen, Edward J., EMNRD

From: David Hamilton [david@rthicksconsult.com]
Sent: Friday, November 30, 2007 2:59 PM
To: Hansen, Edward J., EMNRD
Cc: Randy Hicks; Kristin Pope
Subject: B-29 Site, Case Number Not Yet Assigned
Attachments: B29ICPAmendS.pdf

Mr. Hansen,

Attached please find an amendment to the Initialization and Characterization Plan for the B-29 site northwest of Eunice, New Mexico. If you have any questions or concerns, please don't hesitate to contact us. We look forward to your response.

Best regards,

Dave Hamilton
R.T. Hicks Consultants
505 266 5004

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

October 26, 2007

Mr. Ed Hanson
NMOCD
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Via E-mail

I. RE: BD System B-29 Site; Section 29, 21S, 37E Unit B, No assigned Case Number

Dear Mr. Hanson,

This correspondence amends the July 31, 2003 ICP submitted to NMOCD for the B-29 site northwest of Eunice, New Mexico. Plate 1 is a map showing the location). Plate 2, an aerial photograph of the site, provides locations of water supply wells within a 2.0-mile radius of the site identified in the Office of the State Engineer database.

In December 2006, ROC and Hicks Consultants used an air-rotary drill rig and split spoon sampler to collect vadose zone samples at seven (7) locations to a maximum sample depth of 94 feet. Plate 4 shows the locations of all borings relative to the outline of the original release. Appendix A includes the previous work plan. Appendix B presents all of the boring logs from the site, including those of ROC (Sept. 2002).

The principal findings of the most recent field program are:

A. ESB-1 encountered the capillary fringe at the total depth of 95 feet.
B. Soil chloride concentrations exceed 1000 mg/kg at total depth in five of the seven borings (50-94 feet below land surface).
C. The highest chloride load (mass/unit area) exists near the junction box, the origin of the 2002 release.

Plate 4 presents chloride profiles from the drilling series.

Based upon the data from these borings, we propose the following amendment to the Investigation/Characterization Plan of July 31, 2003.

1) At two locations, we will install four-inch monitoring wells (Plate 4). Both wells will be placed such that any significant impact to ground water will be detected in the wells.
   a) The first well (MW-1) will be located within an area no farther than 50 feet southeast of the junction box and 25 feet east of the release area. This location is on a down gradient edge of the release.
   b) The second well (MW-2) is to be located just west of SB-01 and ESB-3. The second location is within the release area and down gradient from borings with highest chloride loading (see Plate 3 showing the potentiometric surface, Plate 4 showing the outline of the release relative to the release source, the junction box, and Plate 5 showing results from the previous borings)

2) The borings will cease at the top of the red beds (Dockum Group) or 20-feet below observed saturation, whichever is penetrated first.
3)
   a) For the boring near the junction box, MW-1, field methods will evaluate soil samples collected every 10 feet for chloride.
   b) In order to collect detailed information of chloride migration rate at the boring located near SB-01 and ESB-3, MW-2; field methods will evaluate soil samples collected every 2.5 feet for chloride to a depth of 30 feet. Between the depths of 30 feet and 50 feet, soil samples will be evaluated every 5 feet. Below the depth of 50 feet, samples will be evaluated every 10 feet.
4)
   a) A laboratory will evaluate two soil samples for chloride and at least two samples for soil moisture from the boring close to the junction box, MW-1.
   b) From the boring near SB-01 and ESB-3 (MW-2), a laboratory will evaluate two soil samples for chloride and two samples for soil moisture between the surface and 30 feet. From a depth greater than 30 feet, a laboratory will evaluate at least one soil sample for chloride and at least one sample for soil moisture.
5) Upon encountering ground water, the monitoring wells will be completed with a 20-foot screen with 5 feet of screen above the water table.
6) Both wells will be developed and sampled for chloride and TDS (Hydrocarbons have not been detected at depth).
7) After two quarters of ground water sampling, we will evaluate the results and either:
   a) submit a corrective action plan or
   b) submit a second amendment to the ICP which will call for characterization of the extent and magnitude of any demonstrated ground water impairment.

If you have any questions concerning this submittal, please contact Kristin Pope of ROC.

Sincerely,
R.T. Hicks Consultants, Ltd.

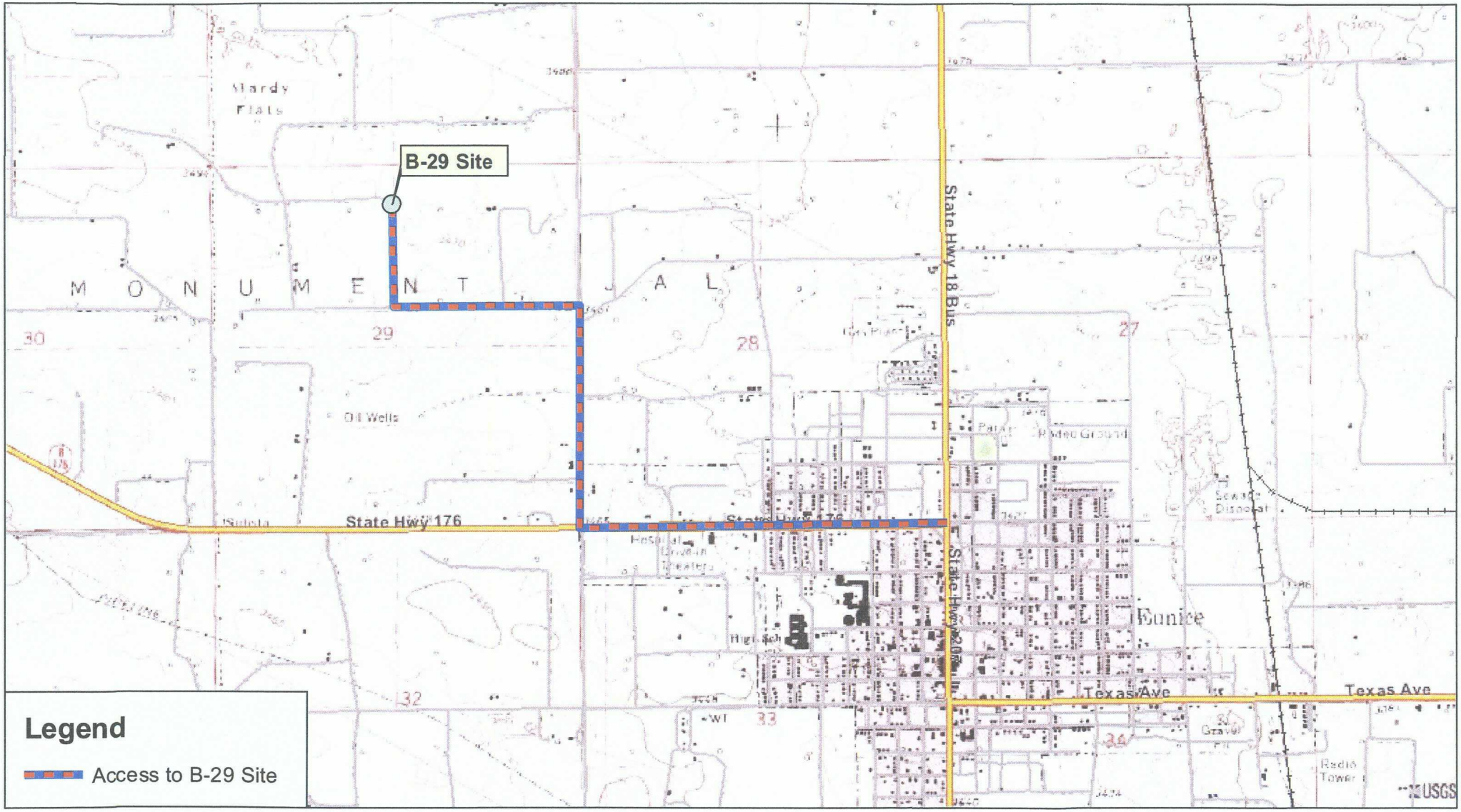
David Hamilton

Dave Hamilton
Project Scientist

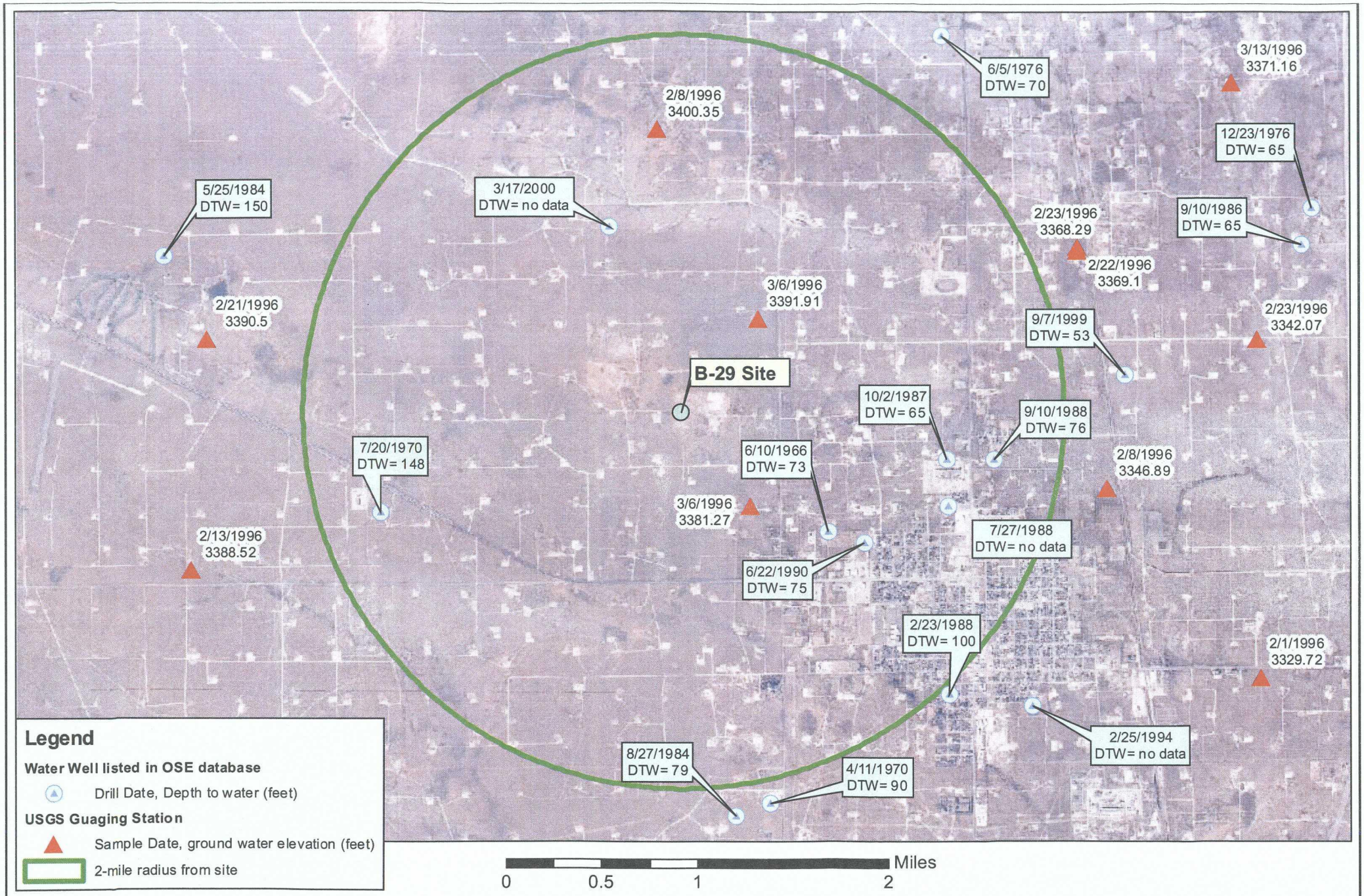
Copy: Rice Operating Company

PLATES

To access the site, from the intersection of State Highway 176 and 207, Eunice, New Mexico, proceed west on State Highway 176 for 1 mile. Turn north on County Rd 33. Proceed north for 0.6 miles. At 0.6 miles, turn west on an unnamed dirt road. Proceed on the dirt road for 0.2 miles. At 0.2 miles, turn north. Proceed north 0.2 miles to the site.



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	7.5 USGS Topo and access to the site	Plate 1
	Rice Operating Company: B-29 Site (BD System)	Nov. 2007



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Albuquerque, NM 87104
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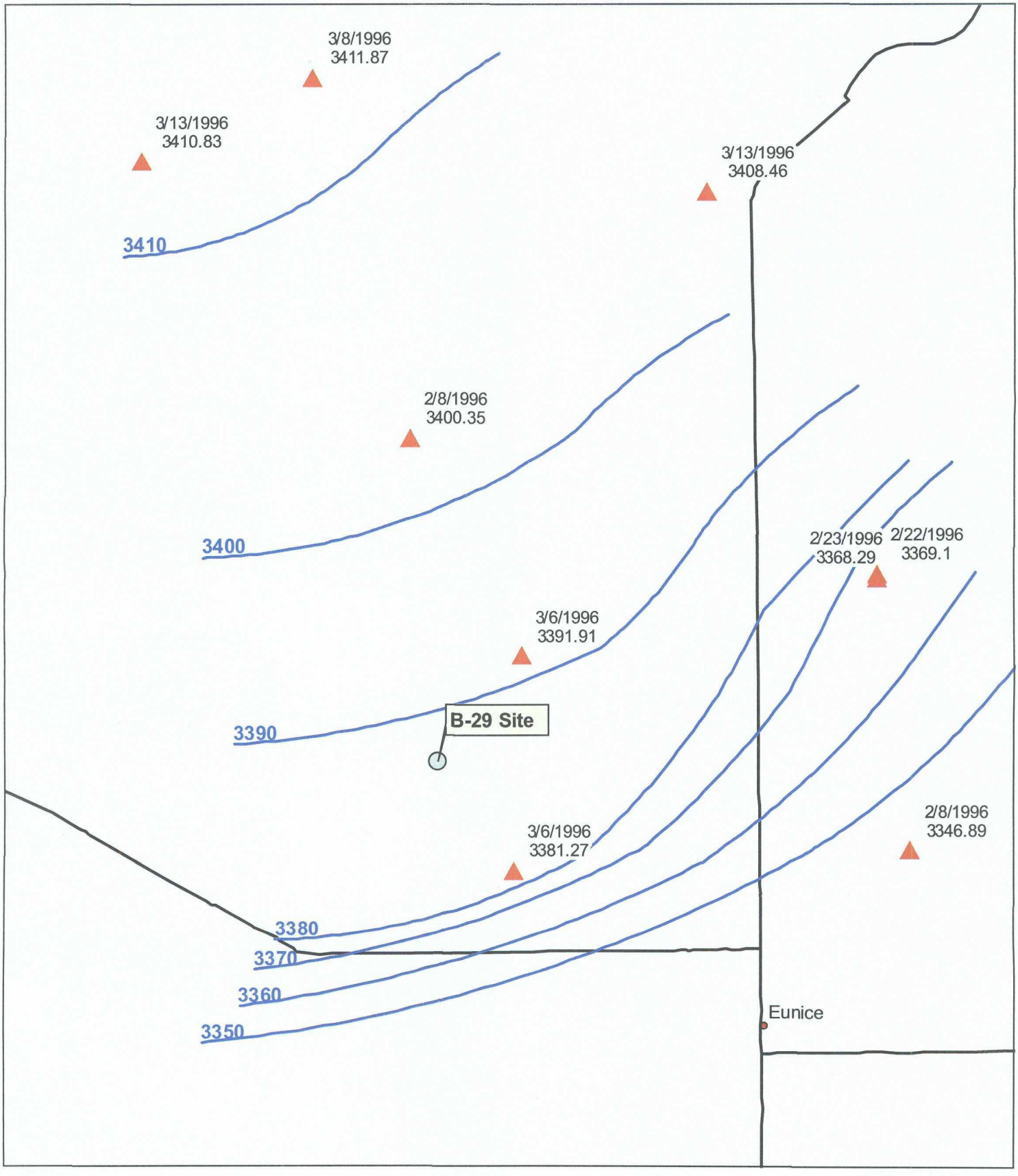
Water Well Inventory Map
Water wells listed in the OSE and USGS database

Plate 2

Rice Operating Company: B-29 Site (BD System)

Nov. 2007

N
W
E
S



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Regional Potentiometric Surface Map (USGS, 1996)	Plate 3
	Rice Operating Company: B-29 Site (BD System)	Nov. 2007

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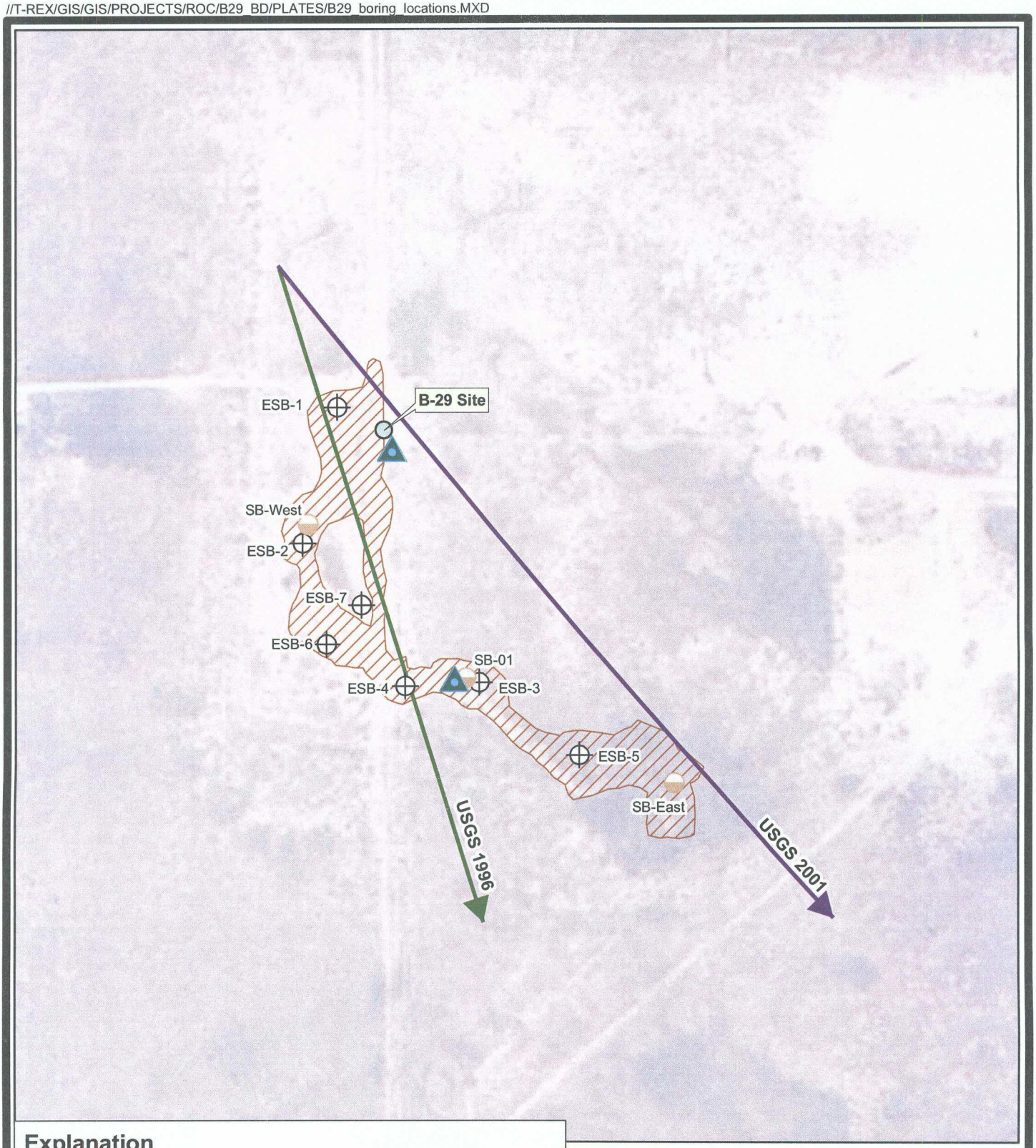


Explanation

- Proposed monitor well
- 2002 Release Extent

Soil Boring

- 2002
- 2006

USGS Ground water flow direction

- 1996
- 2001

N
W
E
S

0 100 200
Feet

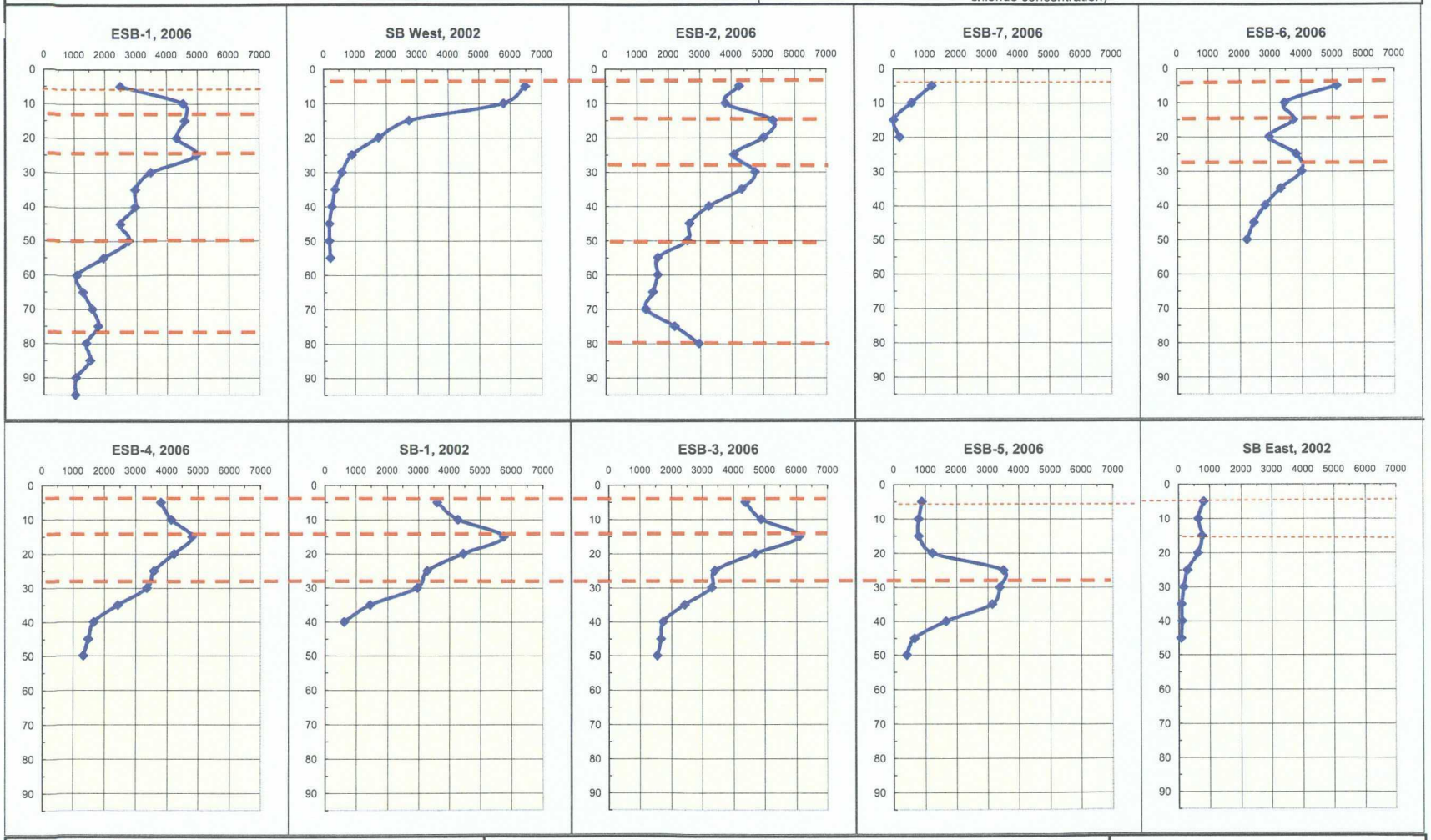
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Boring Locations at the B-29 Site	Plate 4
	Rice Operating Company: B-29 Site (BD System)	November 2007

11/26/2007

Chloride Profiles are Arranged by Relative Distance from the B-29 Junction Box. ESB-1 is closest to the Junction Box, SB East is furthest from the Junction Box.

Marks common depths of high chloride concentrations

Marks common depths of peripherally effected area (based upon lower chloride concentration)



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B-29 Site

Chloride Concentration Profiles from the SB and ESB Boring Series

Plate 5

November, 2007

APPENDIX A

R. T. HICKS CONSULTANTS, LTD.

219 Central Avenue NW Suite 266 Albuquerque, NM 87102 505.266.5004 Fax: 505.246.1818

July 31, 2003

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

RE: B-29 Discharge Site, Section 29, 21S, 37E Unit B

Dear Mr. Price

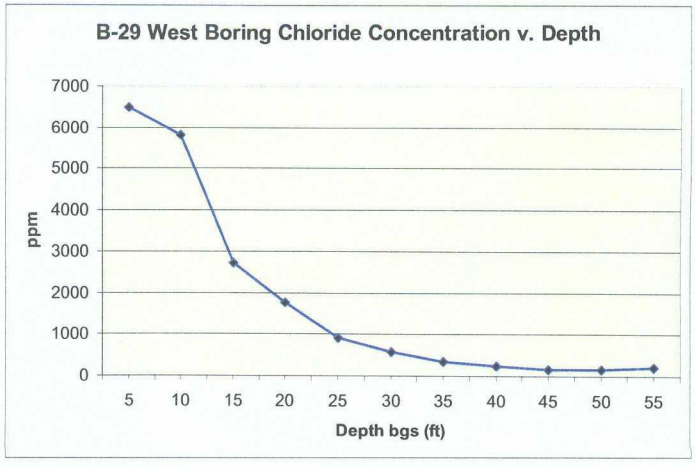
Rice Operating Company retained Hicks Consultants to address potential environmental concerns at the above referenced site. This submission proposes a scope of work that we believe will best mitigate any threat to human health and the environment and lead to closure of the regulatory file for this site.

Background

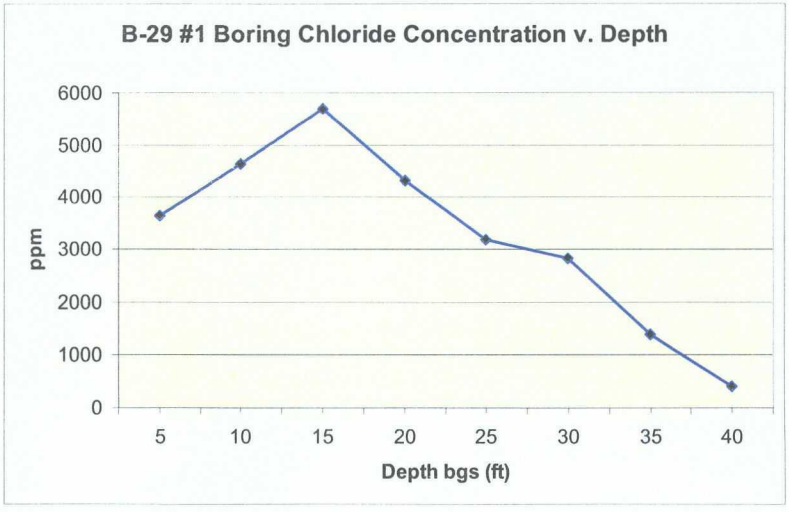
The B-29 Discharge Site is located about 1.5 miles northwest of the intersection of State Routes 8/176 and Loop 18, near Eunice, New Mexico. Plate 1 shows the location of the site.

Rice Operating Company (ROC) submitted a C-141 Report on June 10, 2002 and installed the first of three soil borings on June 25, 2003. In September 2003, ROC installed two additional soil borings and collected soil samples. The release originated at the pipeline as shown in Plate 1. ROC personnel did not observe any evidence of a material hydrocarbon release; the released fluid was produced water. Therefore, ROC addressed this release as a brine release and did not collect samples for petroleum hydrocarbon constituents.

The soil borings show a decline in chloride concentrations. For example, samples from shallow depths at Soil Boring west (5-20 feet) range from 6483 to 1755 ppm. However the sample from 35 feet exhibits a chloride concentration of 344 and at 55 feet deep, the chloride concentration drops to 196 ppm. Figure 2 shows a similar relationship for Boring #1, which was nearest the pipeline failure. In both figures, the decrease of chloride concentrations suggest that the release from did not create



saturated conditions in the vadose zone. If the release caused saturated conditions, we would expect relatively consistent chloride concentrations with depth. Instead, all three borings exhibited concentrations greater than 800 ppm at 5 feet, but chloride concentrations of 413, 196, and 76 ppm at 40 feet below surface. From these data we conclude that the pipeline release did not impact ground water.



Because soil boring data show no evidence of potential ground water impairment, we have restricted our proposed activities to reclamation of the surface to its original productive capacity and evaluation of the threat to ground water quality posed by the residual chlorides in the vadose zone. To create certainty that hydrocarbons are not present in material quantities, we will also sample the soil horizon at 5-foot depth adjacent to the soil borings shown on Plate 1.

1. Evaluate Chloride and Regulated Hydrocarbon Flux from the Vadose Zone to Ground Water

We propose to employ HYDRUS1D and a simple ground water mixing model to evaluate the potential of residual chloride and any regulated hydrocarbons in the vadose zone to materially impair ground water quality at the site. We will employ predictions of the migration from the vadose zone to ground water in our selection of an appropriate remedy for the land surface and underlying vadose zone. This simulation is the "no action" alternative, which predicts constituent flux to ground water in the absence of any engineered remedy by ROC.

For this simulation, we will employ the input parameters to HYDRUS and the mixing model outlined in Table 1. We will assume that vegetation is not present over the release site (no evapotranspiration) and an aquifer thickness that is consistent with our examination of the literature and nearby well logs. At other sites, we have found that chloride is distributed throughout the thickness of the aquifer.

Table 1: Input Parameters for Simulation Modeling

Input Parameter	Source
Vadose Zone Thickness	Nearby water supply well logs
Vadose Zone Texture	Nearby water supply well logs
Dispersion Length	Professional judgment
Soil Moisture	Field Measurements from a nearby monitoring well boring and HYDRUS simulations
Vadose Zone Chloride Load	ROC Data from Disclosure Report
Length of release perpendicular to ground water flow	Field Measurements
Climate	Pearl, NM station (Hobbs)
Background Chloride in Ground Water	Samples from nearby water supply wells
Ground Water Flux	Calculated from regional hydraulic data and data from nearby wells
Aquifer Thickness	Nicholson and Clebsch (1960) and SEO data and nearby water supply well logs

2. Collection and Evaluation of Data for Simulation Modeling

The HYDRUS1D and mixing model simulation requires input of 10 parameters. As Table 1 shows, we must collect site specific data for several of these parameters, some data are available from previous ROC work at the site, and other data are available from public sources. Our previous work with the American Petroleum Institute showed that soil moisture values did not strongly influence the ability of the model to predict chloride migration from the vadose zone to ground water. We plan to use HYDRUS 1D to generate a simulated soil moisture content for this site and compare the value with measured soil moisture in samples from a nearby site..

We propose a field program to collect other important site-specific data for model input. First we will measure the depth to ground water at nearby windmills and supply wells to determine the hydraulic gradient (Plate 1). We will also employ data from monitoring wells at a Chevron Tank Battery south of the site. To establish background chloride concentrations in ground water, we propose to sample one active supply well located in Sections 29 and 30 (Figure 1) and employ existing data from the background well located at the nearby Chevron Tank Battery site.

As mentioned earlier, we plan to obtain three soil samples at the five foot depth near each of the soil borings shown on Plate 2. We will submit these samples to the laboratory for analysis of BTEX.

3. Design Remedy and Submit Report

ROC has completed the repair of the pipeline at the site. We do not anticipate additional releases of produced water. Our modeling of the "no action alternative" (Task 1) may show that the residual constituents in the vadose zone pose a threat to ground water quality. If such a threat does exist, we will use the HYDRUS-1D model predictions to develop a remedy for the vadose zone. If necessary, we will simulate:

1. excavation, disposal and replacement of clean soil to remove the chloride mass,

2. installation of a low permeability barrier to minimize natural infiltration,

3. soil leaching to remove chloride from the root zone then grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and

4. a combination of the above potential remedies.

We will select the vadose zone remedy that offers the greatest environmental benefit while causing the least environmental damage.

We plan to commence data collection for the HYDRUS1D simulations described above in August. Your approval to move forward with this work plan will facilitate our access to nearby windmills and speed the implementation of a surface remedy.

Sincerely,
R.T. Hicks Consultants, Ltd.

Randall T. Hicks
Principal

Copy:
Rice Operating Company

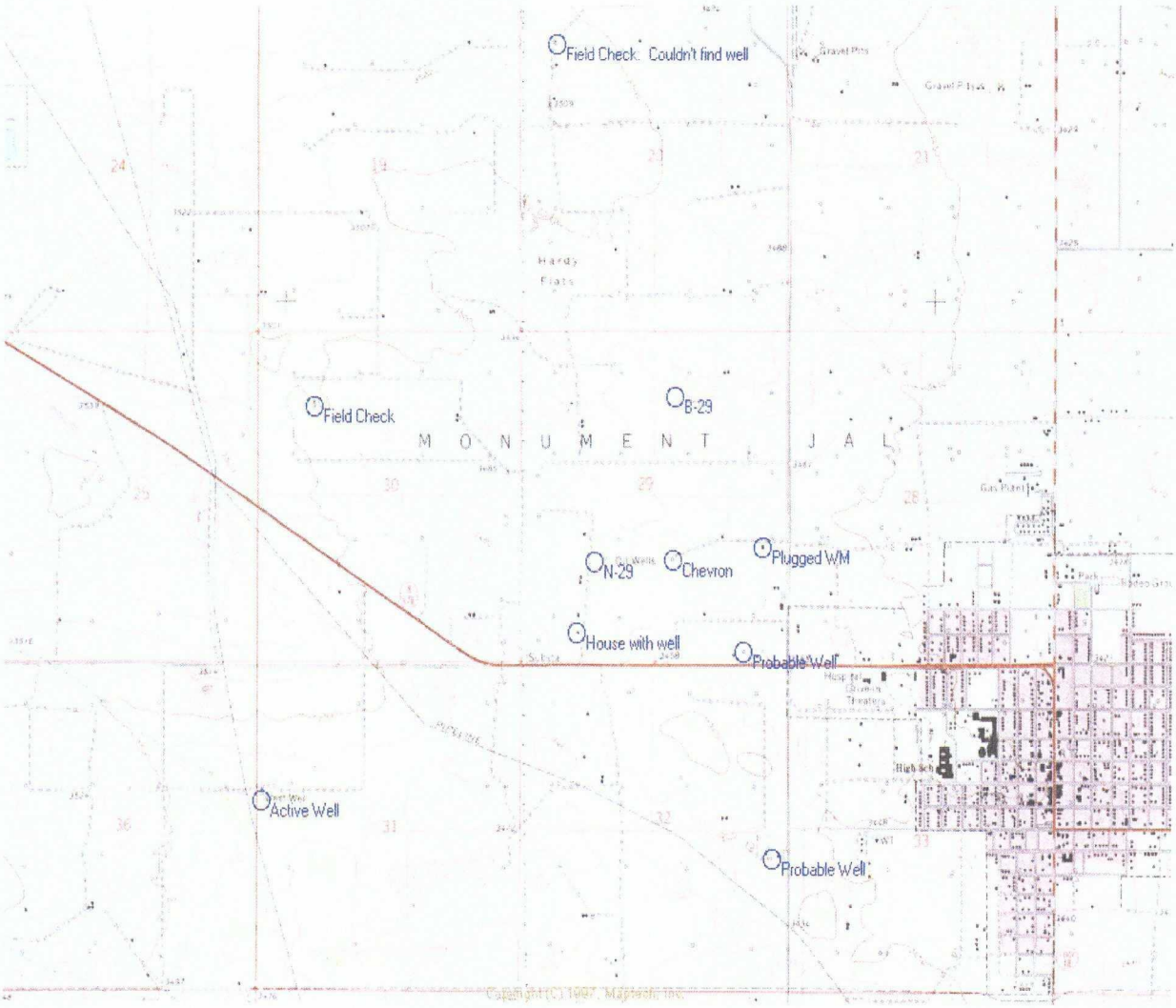
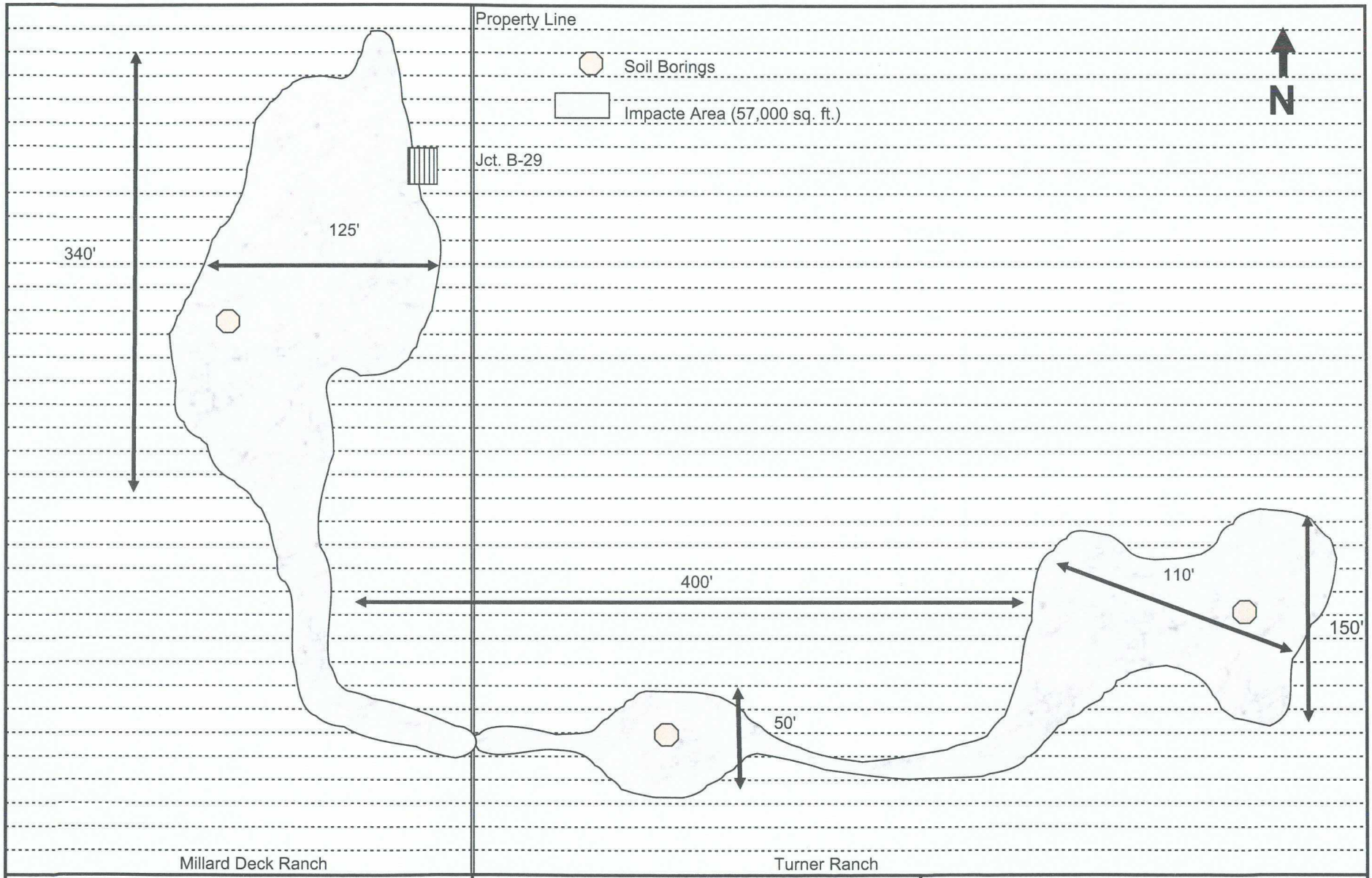


Plate 1: Location Map Showing Nearby Water Wells



Rice Operating Company
122 West Taylor
Hobbs, NM 88240
(505) 393-9174

SALT IMPACTED AREA

Blinbry Drinkard SWD System
B-29 Discharge Area
Unit Letter B, Sec 29-T21S-R37E
Lea County, New Mexico

APPENDIX B

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**B-29**	Well No.SB-West	Date Drilled: 9/9/02	Driller: Eades	Completion:
122 West Taylor	**29-T21S-R37E**	Well Depth:	Boring Depth: 60'	Well Material:	Plugged
Hobbs, New Mexico 88240	**BD SWD System**	Casing Length	Boring Diameter: 4.75"	Casing Size:	with bentonite
(505) 393-9174	**Lea County, NM**	Screen Length:	Drilling Method: Air Rotary	Slot Size:	& cuttings.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl^-	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
	Topsoil					
5		Grab	6483			
10	Caliche	Grab	5807		cuttings	
15		Grab	2728			
20		Grab	1755			
25		Grab	899			
30		Grab	572			
35		Grab	344			
40		Grab	236			
45		Grab	160			
50		Grab	152		bentonite	
55		Grab	196			
60	Sand and Sandstone Stringers	Grab				
65						

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Albuquerque, NM 87104
505-266-5004

B-29 Site

Soil Borings, SB-West

Plate B-1

November, 2007

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**B-29**	Well No. MD SB 1	Date Drilled: 06-25-02	Driller: Eades	Completion:
122 West Taylor	**29-T21S-R37E**	Well Depth:	Boring Depth: 40'	Well Material:	Plugged
Hobbs, New Mexico 88240	**BD SWD System**	Casing Length	Boring Diameter: 4.75"	Casing Size:	with bentonite
(505) 393-9174	**Lea County, NM**	Screen Length:	Drilling Method: Air Rotary	Slot Size:	& cuttings.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl^-	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
1	Topsoil					
2						
3						
4					cuttings	
5		Grab	3599			
6						
7						
8	Sandy Brown Clay					
9						
10		Grab	4279			
11						
12						
13						
14	Caliche and Light Tan Sand					
15		Grab	5758			
16						
17						
18						
19						
20		Grab	4439			
21						
22						
23						
24						
25		Grab	3279			
26						
27					bentonite	
28						
29						
30		Grab	2959			
31						
32						
33						
34						
35		Grab	1440			
36						
37						
38	Caliche					
39						
40	Sand	Grab	592			

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Albuquerque, NM 87104
505-266-5004

B-29 Site

Plate B-2

Soil Borings, SB-1

November, 2007

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**B-29**	Well No. SB-East	Date Drilled: 9/9/02	Driller: Eades	Completion:
122 West Taylor	**29-T21S-R37E**	Well Depth:	Boring Depth: 45'	Well Material:	Plugged
Hobbs, New Mexico 88240	**BD SWD System**	Casing Length	Boring Diameter: 4.75"	Casing Size:	with bentonite
(505) 393-9174	**Lea County, NM**	Screen Length:	Drilling Method: Air Rotary	Slot Size:	& cuttings.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl^-	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
	Topsoil					
5		Grab	800			
10		Grab	632		cuttings	
15	Caliche	Grab	745			
20		Grab	603			
25		Grab	274			
30		Grab	152			
35		Grab	83		bentonite	
40		Grab	108			
45	Sand and Sandstone Stringers	Grab	76			
50						
55						
60						
65						

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Albuquerque, NM 87104
505-266-5004

B-29 Site

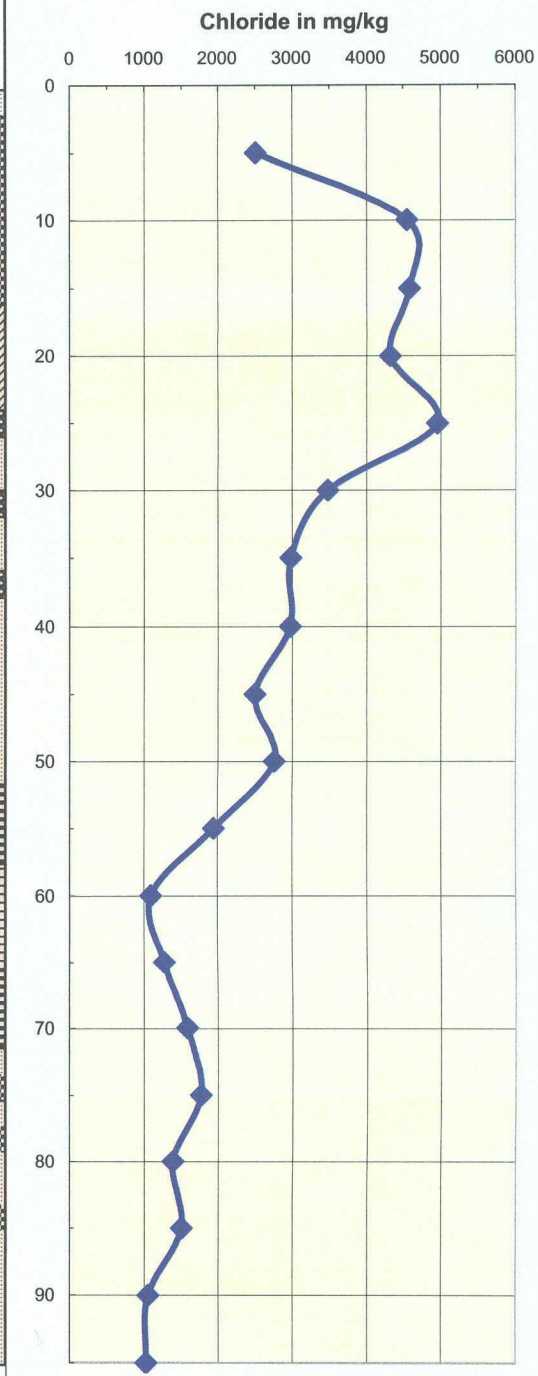
Soil Borings, SB-East

Plate B-3

November, 2007

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-1**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.330	T21S R37E	
Longitude:	103 11.097	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 3 feet	
2.0	Very fine grained sand, silt, caliche, 3-16 feet	
4.0		
6.0		
8.0		
10.0		
12.0		
14.0		
16.0	Fine grained sand, silt, some caliche, 16-24 feet	
18.0		
20.0		
22.0		
24.0	Vf sand, silt, hard caliche, 24-26 fee	
26.0	Very fine gained sand, silt, 26 -30 feet	
28.0		
30.0	Caliche, vf sand, siltt, 30-31 fee	
32.0	Vf sand, silt, 31-36 feet	
34.0		
36.0	Caliche, sand, silt, 36-37 fee	
38.0	Very fine sand, silt, 37-52 feet	
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		
52.0	Vf grained sand, silt, some clay, some caliche, 52 58 feet	
54.0		
56.0		
58.0	Vf grained sand, silt, some clay, 58-66 feet	
60.0		
62.0		
64.0		
66.0	Silt, vf grained sand, some clay, some caliche, 66 72 feet	
68.0		
70.0		
72.0	Vf grained sand, silt, occasional thin caliche, 72 77 feet	
74.0		
76.0	Fine grained sand, some silt, occasional thin caliche, 77-95 feet	
78.0		
80.0		
82.0		
84.0		
86.0		
88.0		
90.0		
92.0		
94.0		
96.0		



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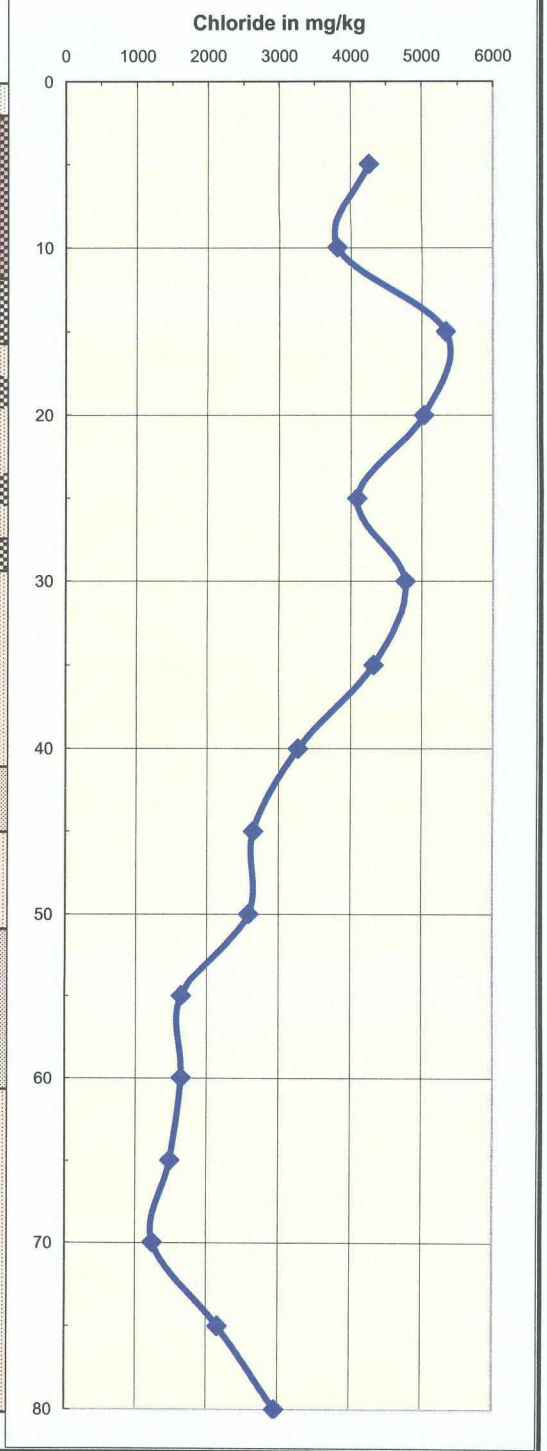
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
505-266-5004

B-29 Site	**Plate B-4**
Exploratory Soil Boring	**November, 2007**

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-2**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.295	T21S R37E	
Longitude:	103 11.108	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 2 feet	
2.0	Very fine grained sand, silt, some clay, some caliche, 2-13 feet, tan-red	
4.0		
6.0		
8.0		
10.0		
12.0	Vf grained sand, silt, caliche, 13-17 feet	
14.0		
16.0	Very fine grained sand, silt, some caliche, 17-28 feet	
18.0		
20.0		
22.0		
24.0		
26.0		
28.0	Very fine grained sand, silt, caliche, 28 -31 feet	
30.0	Very fine grained sand, silt, 31-42 feet	
32.0		
34.0		
36.0		
38.0		
40.0		
42.0	Silt, very fine grained sand, 42-47 feet	
44.0		
46.0	Very fine grained sand, silt, 47-52 feet	
48.0		
50.0		
52.0	Silt, very fine grained sand, 52-63 feet	
54.0		
56.0		
58.0		
60.0		
62.0	Very fine grained sand, silt, 62-80 feet	
64.0		
66.0		
68.0		
70.0		
72.0		
74.0		
76.0		
78.0		
80.0		



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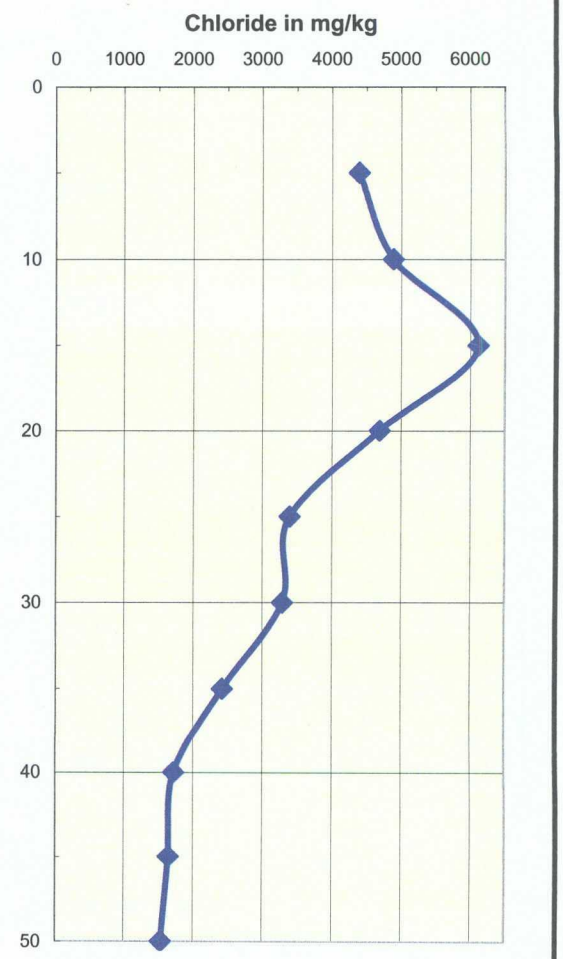
Albuquerque, NM 87104
505-266-5004

B-29 Site	**Plate B-5**
Exploratory Soil Boring	**November, 2007**

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-3**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.235	T21S R37E	
Longitude:	103 11.055	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 1 feet	
2.0	Fine grained sand, some silt, some caliche, 1-7 feet	
4.0		
6.0	Vf grained sand, silt,caliche, 7-14 feet	
8.0		
10.0		
12.0		
14.0	Silt, very fine grained sand, some caliche,14-18 feet	
16.0		
18.0	Very fine grained sand, silt, caliche, 18-23 feet	
20.0		
22.0	Silt, very fine grained sand, some caliche, 23-28 feet	
24.0		
26.0		
28.0	Fine grained sand, silt, some caliche layers, 28-37 feet	
30.0		
32.0		
34.0		
36.0	Silt, very fine sand, some thin caliche layers, 37-50 feet	
38.0		
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		



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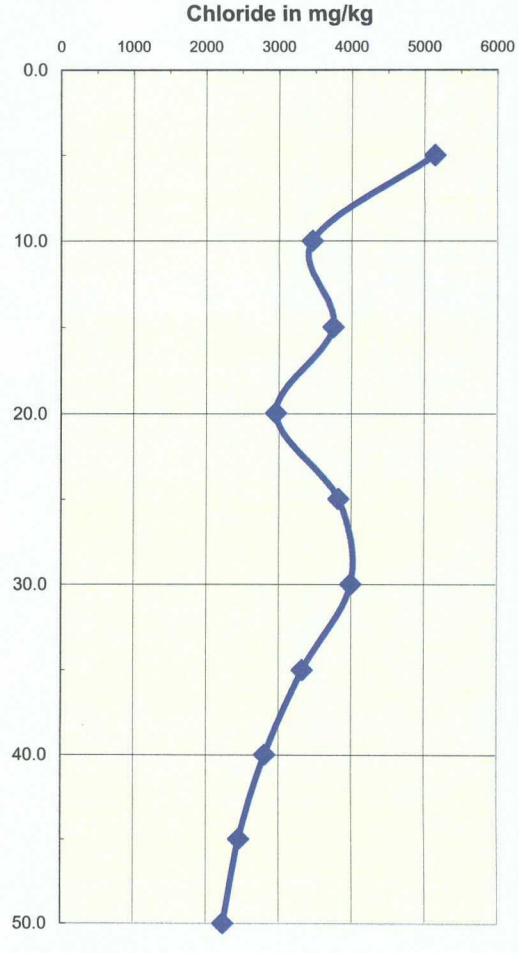
B-29 Site	**Plate B-6**
Exploratory Soil Boring	**November, 2007**

Driller:	Harrison Cooper Drilling	Client:	Boring ID:
Logger:	David Hamilton	Rice Operating Company	ESB-4
Drilling Method:	Air Rotary	Project Name:	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	Location:	
Latitude:	32 27.258	T21S R37E	
Longitude:	103 11.077	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 2 feet	
2.0	Very fine grained sand, silt, 2-3.5 feet	
4.0	Vf grained sand, silt, hard caliche, 3.5-7 feet	
6.0	Very fine grained sand, silt, some caliche, 7-20 feet	
8.0		
10.0		
12.0		
14.0		
16.0		
18.0		
20.0	Hard caliche, 20 -22 feet	
22.0	Very fine grained sand, silt, some caliche layers, 22-30 feet	
24.0		
26.0		
28.0	Silt, very fine grained sand, some caliche layers, 30-50 feet	
30.0		
32.0		
34.0		
36.0		
38.0		
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		



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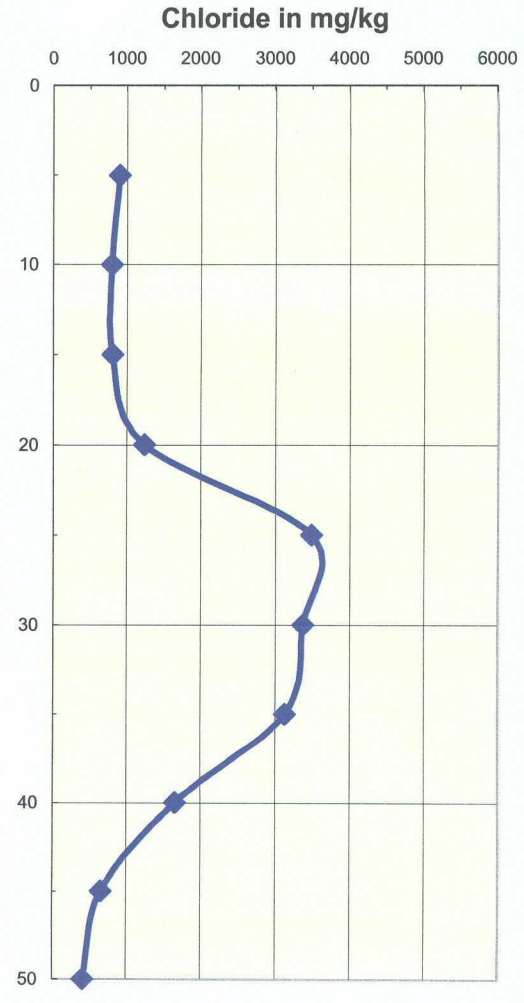
B-29 Site	Plate B-7
Exploratory Soil Boring	November, 2007

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-5**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.233	T21S R37E	
Longitude:	103 11.017	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 1.5 feet	
2.0	Silt, very fine grained sand, some clay, some caliche, 1.5-6 feet	
4.0		
6.0		
8.0	Vf grained sand, silt, some clay, 8-11 feet	
10.0	Sand, silt, some clay, some caliche, 11-18 feet	
12.0		
14.0		
16.0		
18.0	Sand, silt, caliche, 18 -22 feet	
20.0		
22.0	Caliche, sand, silt, 22-24 feet	
24.0	Vf grained sand, silt, 24-27 feet, tan	
26.0	Very fined grained sand, silt, caliche layers 27-30 feet	
28.0		
30.0	Vf grained sand, silt, caliche, 30-33 feet	
32.0	Fine grained sand, silt, 33 - 42 feet	
34.0		
36.0		
38.0		
40.0		
42.0	Fine grained sand, silt, thin caliche layers, 42-50 feet	
44.0		
46.0		
48.0		
50.0		



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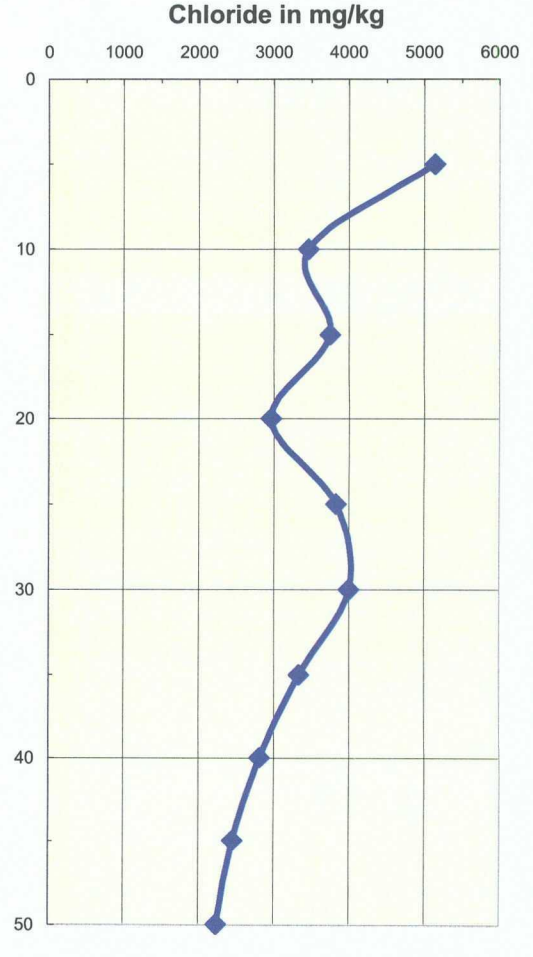
B-29 Site	**Plate B-8**
Exploratory Soil Boring	**November, 2007**

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-6**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.269	T21S R37E	
Longitude:	103 11.101	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 2 feet	
2.0	Very fine grained sand, silt, some caliche, 2-12 feet, light tan	
4.0		
6.0		
8.0		
10.0		
12.0	Vf grained sand, silt, 12-14 feet, light tan	
14.0	Very fine grained sand, silt, some caliche, 14-18 feet, light tan	
16.0		
18.0	Vf grained sand, silt, hard caliche, 18 -20 feet	
20.0	Silt, very fine grained sand, some caliche, 20-23 feet, light tan	
22.0		
24.0	Silt, very fine grained sand, some caliche, 23-30 feet, tan	
26.0		
28.0		
30.0	Silt, vf grained sand, hard caliche, 30-32 feet	
32.0	Silt, vf grained sand, caliche layers, 32-36 feet, ta	
34.0		
36.0	Silt, vf grained sand, hard caliche, 36-37 feet	
38.0	Silt, very fine grained sand, some caliche, 37 - 50 feet	
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		



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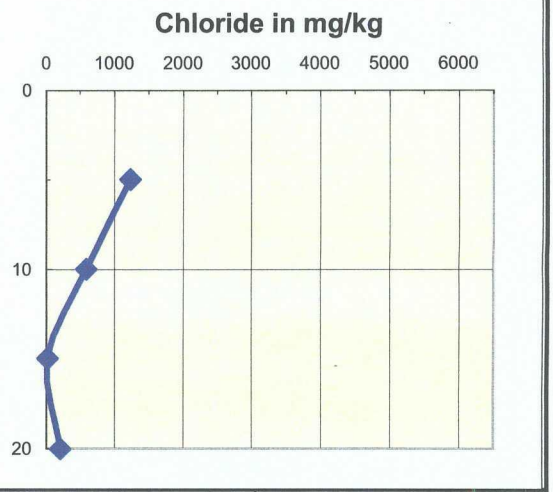
B-29 Site	**Plate B-9**
Exploratory Soil Boring	**November, 2007**

Driller:	Harrison Cooper Drilling	**Client:**	**Boring ID:**
Logger:	David Hamilton	Rice Operating Company	**ESB-7**
Drilling Method:	Air Rotary	**Project Name:**	
Start Date:	12/14/2006	B-29 Site	
End Date:	12/14/2006	**Location:**	
Latitude:	32 27.279	T21S R37E	
Longitude:	103 11.090	Section 29	

Depth (feet)	Description	Lithology
0.0	Surface, 0 - 1.5 feet	
2.0	Very fine grained sand, silt, some caliche, 1.5-12 feet	
4.0		
6.0		
8.0		
10.0		
12.0	Vf grained sand, silt, caliche, 12-20 feet	
14.0		
16.0		
18.0		
20.0		



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B-29 Site	**Plate B-10**
Exploratory Soil Boring	**November, 2007**