AP - 67

STAGE 2 WORKPLANS

DATE: 4-16-08

Hansen, Edward J., EMNRD

From: Hack Conder [hconder@riceswd.com]
Sent: Friday, December 12, 2008 4:33 PM
To: Hansen, Edward J., EMNRD
Subject: AP 67 EME D-1

Ed,

I would like to make an amendment to the Stage 2 abatement plan for AP-67 dated 4-16-08 on Page 15 2nd paragraph. Red is deleted words and blue is added words. If you have any questions or concerns please contact me.

Installation of a groundwater recovery system is contingent on successful application with the New Mexico Office of the State Engineer and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B). It may be that existing monitoring well MW-4 or MW-1 will be used for groundwater recovery, however it may be necessary to install a 4-inch diameter recovery well. The design and specifications of the groundwater recovery system are not known at this time; however a submersible or positive displacement pump capable of discharging at a minimum rate of 1 gpm should suffice. It is possible that the aquifer will not yield that rate of withdrawal due to the limited thickness (11-ft) and hence, transmissibility of the aquifer, therefore, appropriate scaling and design of the system will be employed after testing and construction activities commence. Flow rate, total volume, and chloride content of the recovered groundwater will be measured prior to discharge into the EME SWD system being utilized in pipeline maintenance operations. The necessary power supply for the system will likely be provided by a solar powered battery unless ROC determines that an electrical service provider is more practical. ROC plans to rapidly implement the ground water remedy at the Jct. D-1 site and then use the knowledge gained (and perhaps the same ground water treatment system) to provide an appropriate response to NMOCD requirement to remove the chloride mass at other sites.

7.3 Closure and Proposed Schedule of Activities
ROC will continue quarterly groundwater sampling at each of the four monitoring wells. At the completion of corrective actions as described above, a final report will be submitted with a request for final closure.

Hack Conder
Environmental Manager
Rice Operating Company
575-393-9174
Fax 575-397-1471

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2077

TRIDENT ENVIRONMENTAL

April 18, 2008

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

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2008 APR 21 PM 3 42

RE: Stage 1 Final Investigation Report and Amended Stage 2 Abatement Plan
EME Jct. D-1 Site (AP-67)
T20S-R36E-Section 1, Unit Letter D
Lea County, New Mexico

Dear Mr. Hansen

On behalf of Rice Operating Company (ROC), enclosed are the Stage 1 Final Investigation Report and Amended Stage 2 Abatement Plan for the above-referenced site. The Final Investigation Report includes the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan. In addition, the Amended Stage 2 Abatement Plan herein proposes corrective actions in Section 7.0, in accordance with NMOCD recommendations in your email dated February 13, 2008.

ROC has issued the NMOCD-approved public notice and will send copies of proof that the appropriate individuals and entities were notified soon in a separate submission.

ROC also requests immediate suspension of BTEX analysis since there is no evidence of hydrocarbon impact to the vadose zone and since December 2004 all groundwater analyses have indicated concentrations below the WQCC standards for each constituent of BTEX.

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

Sincerely,

Gilbert Van Deventer, REM, PG
Trident Environmental

cc: JSC, KFP, NMOCD (District 1 Hobbs)

April 16, 2008

STAGE 1 FINAL INVESTIGATION REPORT AND AMENDED STAGE 2 ABATEMENT PLAN

EME JCT. D-1 SITE (AP-67)

T20S, R36E, SECTION 1, UNIT LETTER D
LEA COUNTY, NEW MEXICO

Prepared for:

RICE *Operating Company*
122 West Taylor
Hobbs, New Mexico 88240

Prepared by:

TRIDENT ENVIRONMENTAL
P. O. Box 7624
Midland, Texas 79708

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APPENDICES

1.0 EXECUTIVE SUMMARY

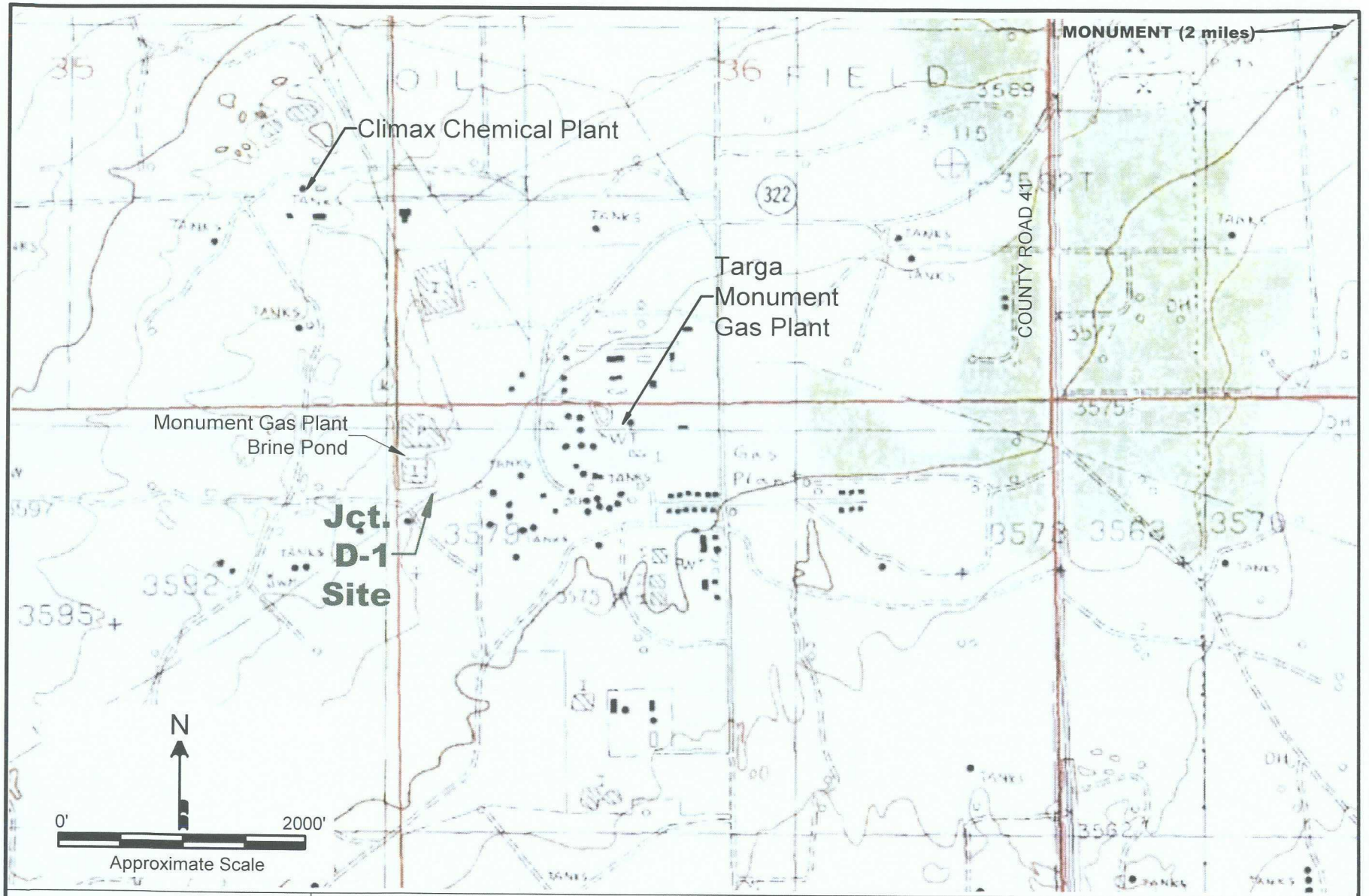
This Stage 1 Final Investigation Report includes the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan. In addition, the Amended Stage 2 Abatement Plan herein proposes corrective actions in Section 7.0 which are briefly described below. A site topographic map is provided in Figure 1.

Based on the chloride concentrations measured during the most recent soil boring investigation on April 10 and 11, 2006, it has been concluded that the accidental release on October 25, 2004, contributed only a minor amount of the chlorides and total dissolved solids (TDS) observed in groundwater at the EME Jct. D-1 site. It is suspected that a nearby brine pond and other offsite sources of chlorides and TDS have caused the regional groundwater impact. ROC has mitigated the threat of past and future accidental releases from the Jct. D-1 site by permanently removing the junction box, excavating a 30 ft wide by 30 ft long by 12 ft deep area, installing a clay layer, and backfilling the area surrounding the former junction box.

ROC proposes the creation of an infiltration barrier using imported clean topsoil and re-vegetating the surface. An approximate 8,800 ft^2 area in the vicinity of the former junction box will be re-seeded with a mixture of native grasses and plants that will re-establish vegetation in the area at a natural rate. The existing clay layer and re-vegetation proposed herein will mitigate the potential for residual constituents of concern from further infiltration, leaching, or percolation from the vadose zone into groundwater. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

At the request of the NMOCD via email communication on February 13, 2008 (Appendix E) a groundwater recovery system will be installed to remove an estimated chloride mass of 1,798 kilograms (kg) presumably introduced into the groundwater due two accidental releases at the site.

ROC will continue quarterly groundwater sampling at each of the four monitoring wells. At the completion of corrective actions as described herein, a final report will be submitted with a request for final closure.



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EME Jct. D-1 Site

T20S-R36E-Section 1 - Unit D

RICE Operating Company

FIGURE 1

TOPOGRAPHIC MAP

2.0 CHRONOLOGY OF EVENTS

September 28, 2004	EME D-1 junction box was removed.
October 1-7, 2004	Subsurface soil investigation with a backhoe, field test for chloride and hydrocarbon levels. This investigation indicated chloride impact to the vadose zone, however no indication of hydrocarbon impact was evident based on field screening with a photoionization detector (all readings were less than 0.1 ppm).
October 25, 2004	Accidental discharge of approximately 205 barrels (bbls) of produced water from the 4-inch pipeline suspended over the excavation. Approximately 180 bbls of produced water was recovered from within the excavation where the release was contained. Also, a temporary 4-inch poly line was installed to bypass the former junction box area.
October 27, 2004	ROC submitted a letter and C-141 Initial Report to the OCD office in Hobbs with a description of the remedial actions taken.
November 19, 2004	The site experienced another release from the pipeline approximately 52 feet north of the junction box where the temporary poly line was coupled to the existing 4-inch PVC line. The volume of this release was approximately 335 bbls and 280 bbls were recovered.
December 8, 2004	A monitoring well was installed a few feet south of the former junction box to further assess if ground water was impacted with chlorides.
December 9, 2004	ROC submitted notification to the OCD office in Hobbs documenting the further actions taken.
January 5, 2005	ROC notified the OCD office in Santa Fe that ground water impact was confirmed based on laboratory results of ground water samples analyzed from the on site monitoring well.
March 9, 2005	A junction box disclosure report was completed and submitted to the NMOCD with all other 2005 junction box reports.
March 10, 2005	The bottom 6-feet of excavation was backfilled with native soil.

April 29, 2005	Trident Environmental submitted an Investigation and Characterization Plan (ICP) to address potential environmental concerns at the above-referenced site.
May 5, 2005	Mr. Daniel Sanchez of the OCD requested that ROC submit an abatement plan to the OCD pursuant to Rule 19.
July 22, 2005	A 12-inch compacted clay layer was installed at 6-feet bgs.
July 26, 2005	The clay layer was covered with the remaining remediated soil to the surface, and contoured to drain rainwater away from the area.
December 5, 2005	A Stage 1 Abatement Plan for the EME Jct. D-1 site was prepared by R. T. Hicks Consultants, Ltd. and submitted to the NMOCD.
January 6, 2006	The 2005 Annual Groundwater Monitoring Report for the Jct. D-1 site was prepared by R. T. Hicks Consultants, Ltd. and submitted to the NMOCD.
February 6, 2006	ROC submitted proof of public notifications to the NMOCD.
March 30, 2006	The NMOCD gave verbal approval of the Stage 1 Abatement Plan Proposal.
April 10, 2006	Two additional monitoring wells (MW-2 and MW-3) were installed approximately 250 feet southeast and 70 feet northwest, respectively, of the former junction box.
April 10-11, 2006	Soil samples were collected from ten soil borings (B-1 through B-10) at areas outlying the former junction box.
December 14, 2006	One additional monitoring well (MW-4) was installed approximately 80 feet southeast of the former junction box, to allow monitoring of groundwater conditions closer to the downgradient side of the junction box.
February 7, 2007	The 2006 Annual Groundwater Monitoring Report for the Jct. D-1 site was prepared by Trident Environmental and submitted to the NMOCD.
November 23, 2007	ROC submitted a Stage 1 Final Investigation Report and Stage 2 Abatement Plan to the NMOCD
February 13, 2008	NMOCD requested ROC to submit an Amended Stage 2 Abatement Plan to include an estimate of chloride mass in groundwater and a plan for the removal of that chloride mass from the groundwater.

3.0 BACKGROUND

3.1 Site Location and Land Use

The D-1 junction box site and release is located on New Mexico State land in Township 20 South, Range 36 East, Section 1, unit letter D approximately 3 miles west-southwest of Monument, NM as shown on the attached Site Location Map (Figure 1). Produced water gathered by the EME SWD System in the site area is sent to the I-1 SWD well, which is located approximately 1 mile southeast of the D-1 Junction Box site. ROC is the service provider (agent) for the EME 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.

Land in the site area is, or has been, primarily utilized for crude oil production, chemical manufacturing, and cattle grazing. Several other oil and gas production/treatment facilities are located within and around the Jct. D-1 site as shown in Figure 2 below.

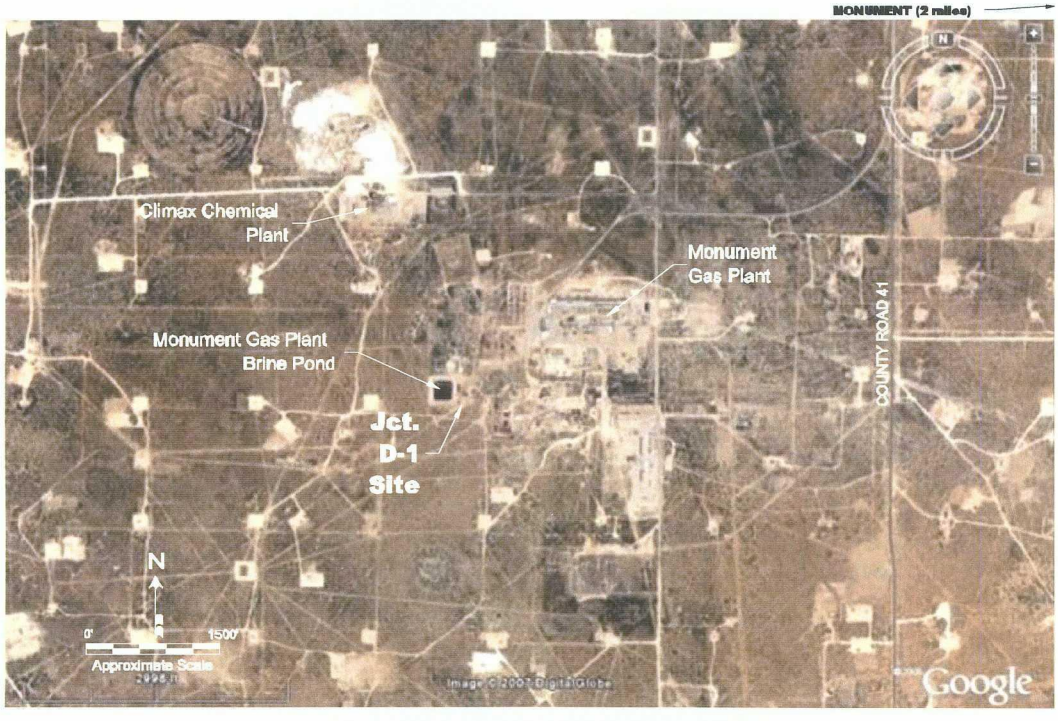


Figure 2: Aerial Photograph (April 2004)

According to the State Land Office Data Search website, grazing and agriculture rights for section D, unit letter 1 are assigned to James R. Byrd under permit no. G0-2087-0000. The same database indicates many subsurface pipelines are in the area.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Regional and Local Geology

The site is underlain by Quaternary colluvium deposits composed of sand, silt, and gravel deposited by slopewash, and talus which were re-deposited from the underlying Ogallala Formation. These deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The thickness of the colluvium deposits and Ogallala Formation at the Jct. D-1 site is estimated at 45 feet; however it varies locally as a result of significant paleo-topography at the top of the underlying Triassic Dockum Group. Since Cretaceous Age rocks in the region have been removed by pre-Tertiary erosion, the colluvial deposits and Ogallala Formation rest unconformably on the Triassic Dockum Group. The uppermost unit of the Dockum Group is the Chinle Formation, which primarily consists of micaceous red clay and shale but also contains thin interbeds of fine-grained sandstone and siltstone. The red clays and shale of the Chinle Formation act as an aquitard beneath the water bearing colluvial deposits and therefore limit the amount of recharge to the underlying Dockum Group.

The first few feet from ground surface are dominated by fine-grained dune sand. Based on the descriptions provided in lithologic logs the subsurface soils are composed of various amounts of fine-grained sand with soft and hard caliche, gravelly sand, fine-grained sand with fractured sandstone, and sandy clay. More detailed descriptions of the subsurface lithology are provided in the soil boring and monitoring well logs (Appendix A).

4.2 Regional and Local Hydrogeology

Potable ground water used in southern Lea County is derived primarily from the Ogallala Formation and the Quaternary alluvium. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes. Water well records from the Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) websites were reviewed to determine if there are any active water supply wells in use for domestic, irrigation, livestock, municipal, or industrial purposes in the Jct. D-1 area (Appendix D). As a result of this review and several field reconnaissance efforts there are no known potential water supply receptors within ½ mile of the Jct. D-1 site.

Recent data from the four monitoring wells at the Jct. D-1 site shows that the water table slopes towards the southeast at a magnitude of approximately 0.003 ft/ft which is consistent with those of several other groundwater monitoring sites in the Monument area and the prevailing regional gradient as cited in published reports (Nicholsen and Clebsch, 1961). Depth to groundwater beneath the site area is approximately 34 feet bgs. The base of the aquifer is at approximately 45 ft bgs with a saturated thickness estimated at 11 feet. There are no surface water bodies located within a mile of the site.

5.0 VADOSE ZONE CHARACTERISTICS

On April 10 and 11, 2006, two additional monitoring wells (MW-2 and MW-3) and ten soil borings (B-1 through B-10) were installed to complete delineation of the Jct. D-1 site in accordance with the Stage 1 Abatement Plan. Results of the soil sampling activities are shown on Figure 3.

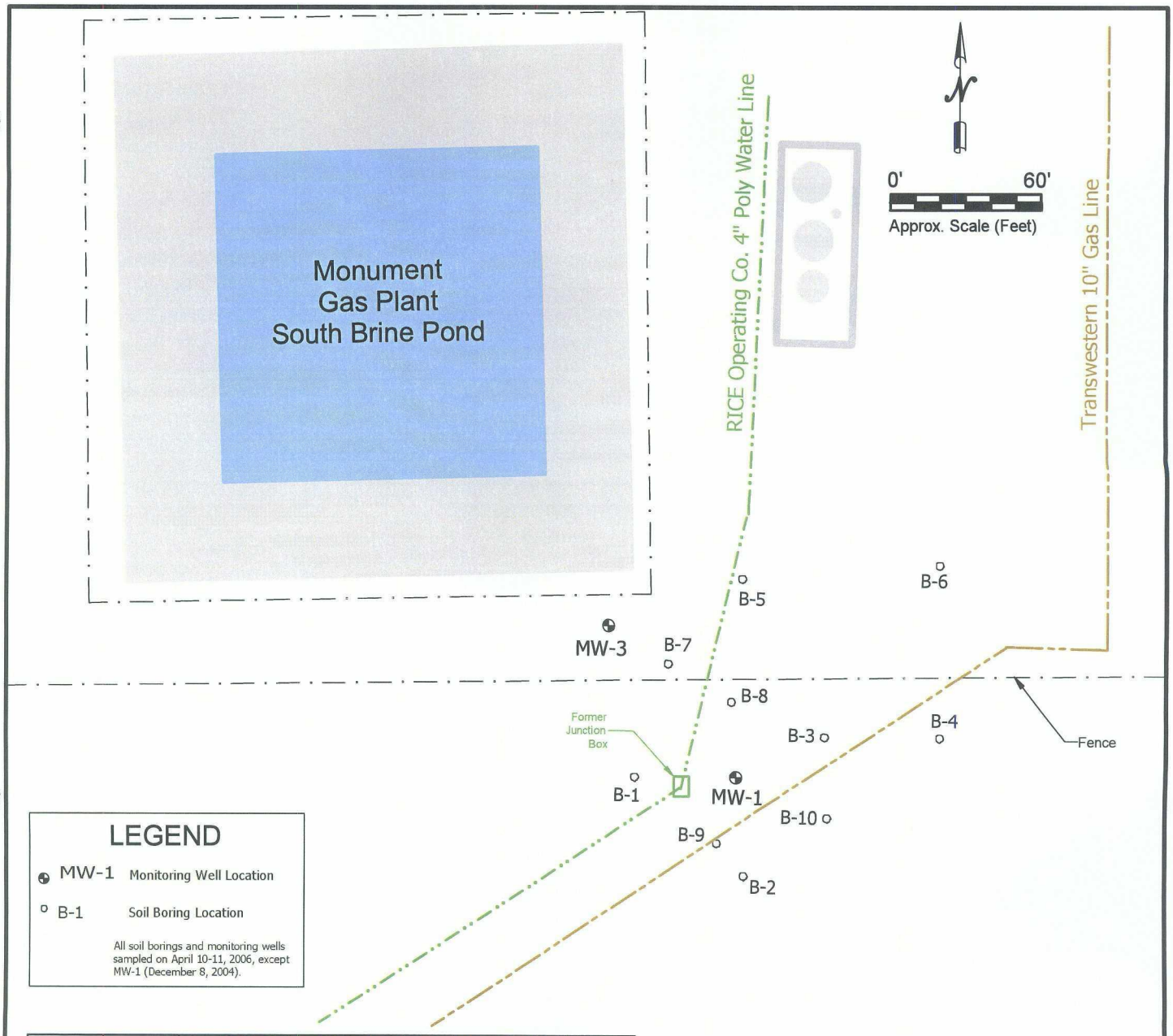
Each boring was advanced to a depth of 30 feet bgs and samples were collected at 5-foot intervals. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). In addition, headspace readings were obtained using a calibrated Thermal Instruments Model 580B Organic Vapor Meter (OVM) in accordance with procedures described in QP-07.

The first few feet from ground surface are dominated by fine-grained dune sand. Based on the descriptions provided in lithologic logs the subsurface soils are composed of various amounts of fine-grained sand with soft and hard caliche, gravelly sand, fine-grained sand with fractured sandstone, and sandy clay. Detailed descriptions of the subsurface lithology, field screening measurements, and monitoring well construction are provided in the soil boring and monitoring well logs (Appendix A). Photo documentation of field activities is included in Appendix B. Laboratory analytical reports and chain of custody documentation are included in Appendix C.

There is no indication of hydrocarbon impact to the vadose zone or groundwater at the Jct. D-1 site. However, based on the field chloride concentrations measured at each boring and monitoring well, there is reasonable probability that the Monument Gas Plant South Brine Pond located upgradient and adjacent to the Jct. D-1 site is a significant source of chlorides and TDS observed in the vadose zone and groundwater at the Jct. D-1 site. The highest chloride concentrations in the vadose zone *and* groundwater were observed in monitoring well MW-3 at the southeast edge of the south brine pond, approximately 75 ft northwest of the former junction box, and outside the area of the accidental discharge.

Although the upgradient brine pond is the likely source for the majority of the degradation in groundwater quality at the Jct. D-1 site, the accidental release into the excavation of the former junction box on October 25, 2004, may have contributed a minor amount to the chlorides and TDS observed on site.

ROC has mitigated the threat of the accidental release at the Jct. D-1 site by permanently removing the junction box, installing a clay layer, and backfilling a 30 ft wide by 30 ft long by 12 ft deep excavated area surrounding the former junction box. Further mitigation activities such as surface re-vegetation are proposed in section 7.0.



LEGEND

- MW-1 Monitoring Well Location
- B-1 Soil Boring Location

All soil borings and monitoring wells sampled on April 10-11, 2006, except MW-1 (December 8, 2004).

Boring/ MW	Date	Chloride Concentration (ppm) at Specified Depths					
		5'	10'	15'	20'	25'	30'
B-1	04/10/06	749	575	690	749	599	722
B-2	04/10/06	89	845	636	503	793	766
B-3	04/10/06	219	832	2015	561	494	482
B-4	04/10/06	271	973	769	854	623	749
B-5	04/11/06	2817	1226	2849	1193	2519	1040
B-6	04/11/06	1332	1281	986	940	424	673
B-7	04/11/06	1333	1497	863	884	874	659
B-8	04/11/06	966	1242	2106	4882	2271	940
B-9	04/11/06	112	758	573	542	511	629
B-10	04/11/06	1570	1309	717	722	513	719
MW-1	12/06/04	146	484	8865	4842	3876	1196
MW-2	04/10/06	151	598	516	290	276	292
MW-3	04/10/06	5934	5081	2744	6103	866	1667

Chloride field tests performed using field-adapted Method 9253 (QP-03).

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EME Jct. D-1 SITE

T20S-R36E-Section 1-Unit D

RICE Operating Company

FIGURE 3

SOIL SAMPLING RESULTS

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

Monitoring well (MW-1) has been sampled on a quarterly basis for major ions, TDS, and BTEX, since January 2002. On April 10 and 11, 2006, two additional monitoring wells (MW-2 and MW-3) were installed downgradient and upgradient, respectively, of the former junction box at the Jct. D-1 site to evaluate groundwater quality conditions. An additional monitoring well (MW-4) was installed approximately 80 feet southeast of the former junction box, to allow monitoring of groundwater conditions closer to the downgradient side of the junction box.

Historical analytical results and groundwater elevations for monitoring wells MW-1, MW-2, MW-3, and MW-4 are shown in Table 1. A map of the most current groundwater quality conditions for the Jct. D-1 site is depicted in Figure 4. A copy of the laboratory analytical report and chain of custody form for the most recent ground water sampling event is included in Appendix C.

6.2 Hydrocarbons in Ground Water

BTEX concentrations in all monitoring wells (MW-1, MW-2, MW-3, and MW-4) have been below New Mexico Water Quality Control Commission (WQCC) standards for each constituent and for every sampling event taken place.

6.3 Other Constituents of Concern

Chloride concentrations in monitoring wells MW-1 (13,400 mg/L), MW-2 (9,200 mg/L), MW-3 (14,900 mg/L), and MW-4 (11,900 mg/L) exceed the WQCC standard of 250 mg/L.

The TDS concentrations in monitoring wells MW-1 (29,255 mg/L), MW-2 (22,905 mg/L), MW-3 (32,095), and MW-4 (26,419 mg/L) exceed the WQCC standard of 1,000 mg/L.

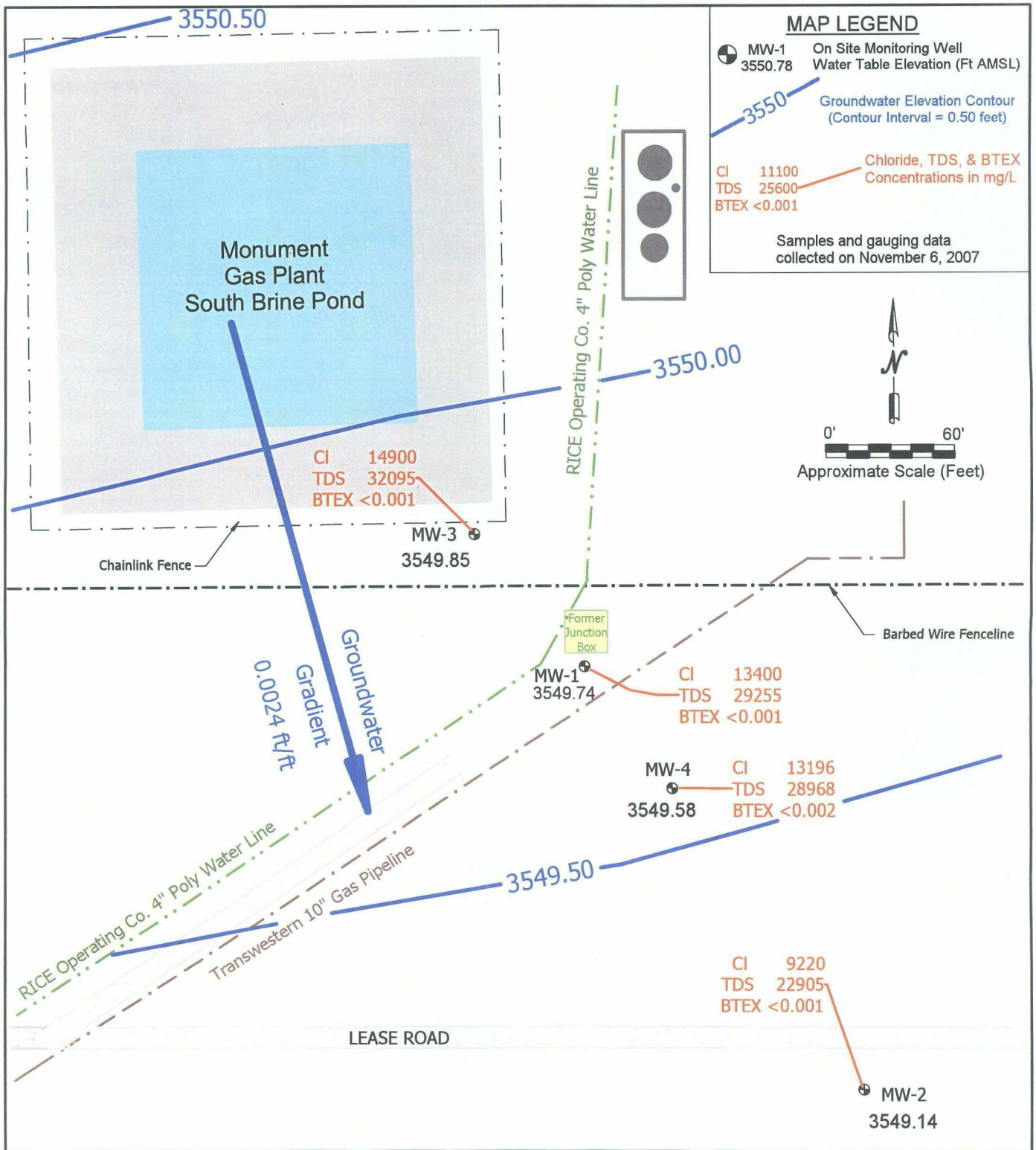
The higher chloride concentrations in upgradient monitoring well MW-3 (14,900 mg/L) are evidence of an upgradient offsite source. Monitoring well MW-3 is located at the southeast edge of the south brine pond (Monument Gas Plant) which has high potential for being the source of chlorides and TDS observed at the downgradient Jct. D-1 site.

There is reasonable probability other upgradient sources, including an abandoned hydrochloric and sulfuric acid manufacturing plant (DLD Resources, formerly Climax Chemical Company) located less than ½ mile northwest of the Jct. D-1 site, contributed to the regional groundwater impairment.

Although upgradient sources are likely for the majority of the degradation in groundwater quality at the Jct. D-1 site, there is reasonable probability that the reported accidental release into the excavation of the former junction box on October 25, 2004 has temporarily increased the chlorides and TDS observed on site. As shown graphically in Figure 5, chloride concentrations in MW-1, which is located adjacent to the southeast edge of the former junction box excavation, declined from a high of 29,400 mg/L in December 2004 to 10,700 mg/L by April 2006. TDS levels have correspondingly decreased during the same time period. However, since April 2006, chloride and TDS concentrations have remained relatively steady.

Table 1
Historical Analytical and Groundwater Elevations

Monitoring Well	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)
MW-1	12/21/04	37.20	3550.57	**29,400**	**56,800**	<0.001	<0.001	<0.001	<0.001
	02/09/05	36.20	3551.57	**29,200**	**54,200**	<0.001	<0.001	<0.001	<0.001
	05/03/05	35.27	3552.50	**22,900**	**43,600**	<0.001	<0.001	<0.001	<0.001
	08/13/05	37.74	3550.03	**18,600**	**34,800**	<0.001	<0.001	<0.001	<0.001
	10/19/05	34.70	3553.07	**15,600**	**31,900**	<0.001	<0.001	<0.001	<0.001
	01/18/06	34.95	3552.82	**13,000**	**28,000**	<0.001	<0.001	<0.001	<0.001
	04/19/06	35.54	3552.23	**10,700**	**26,800**	<0.001	<0.001	<0.001	<0.001
	07/18/06	36.24	3551.53	**12,900**	**24,400**	<0.001	<0.001	<0.001	<0.001
	10/10/06	36.57	3551.20	**10,200**	**20,200**	<0.001	<0.001	<0.001	<0.001
	02/27/07	36.99	3550.78	**11,400**	**26,400**	<0.001	<0.001	<0.001	<0.001
	06/04/07	37.36	3550.41	**13,100**	**25,700**	<0.001	<0.001	<0.001	<0.001
	08/20/07	37.71	3550.06	**13,096**	**29,024**	<0.002	<0.002	<0.002	<0.006
	11/06/07	38.03	3549.74	**13,400**	**29,255**	< 0.001	< 0.001	< 0.001	<0.003
MW-2	04/19/06	33.89	3551.73	**8,730**	**19,200**	<0.001	<0.001	<0.001	<0.001
	07/18/06	34.65	3550.97	**9,390**	**19,950**	<0.001	<0.001	<0.001	<0.001
	10/10/06	34.87	3550.75	**7,910**	**18,000**	<0.001	<0.001	<0.001	<0.001
	02/27/07	35.38	3550.24	**8,780**	**20,100**	<0.001	<0.001	<0.001	<0.001
	06/04/07	35.87	3549.75	**9,230**	**20,500**	<0.001	<0.001	<0.001	<0.001
	08/20/07	36.19	3549.43	**8,997**	**22,820**	<0.002	<0.002	<0.002	<0.006
	11/06/07	36.48	3549.14	**9,200**	**22,905**	< 0.001	< 0.001	< 0.001	<0.003
MW-3	04/19/06	37.55	3552.29	**11,100**	**25,600**	<0.001	<0.001	<0.001	<0.001
	07/18/06	38.24	3551.60	**15,400**	**25,900**	<0.001	<0.001	<0.001	<0.001
	10/10/06	38.59	3551.25	**13,100**	**24,000**	<0.001	<0.001	<0.001	<0.001
	02/27/07	39.00	3550.84	**15,900**	**30,800**	<0.001	<0.001	<0.001	<0.001
	06/04/07	39.47	3550.37	**18,100**	**33,100**	<0.001	<0.001	<0.001	<0.001
	08/20/07	39.81	3550.03	**12,696**	**28,292**	<0.002	<0.002	<0.002	<0.006
	11/06/07	39.99	3549.85	**14,900**	**32,095**	< 0.001	< 0.001	< 0.001	<0.003
MW-4	12/22/06	35.97	3550.93	**12,900**	**22,700**	<0.001	<0.001	<0.001	<0.001
	02/27/07	36.23	3550.67	**11,800**	**26,400**	<0.001	<0.001	<0.001	<0.001
	06/04/07	36.67	3550.23	**12,600**	**25,100**	<0.001	<0.001	<0.001	<0.001
	08/20/07	37.00	3549.90	**13,196**	**28,968**	<0.002	<0.002	<0.002	<0.006
	11/06/07	37.32	3549.58	**11,900**	**26,419**	< 0.001	< 0.001	< 0.001	<0.003
WQCC Standards				250	1000	0.01	0.75	0.75	0.62



TRIDENT ENVIRONMENTAL

EME Jct. D-1 Site

T20S - R36E - Section 1- Unit D

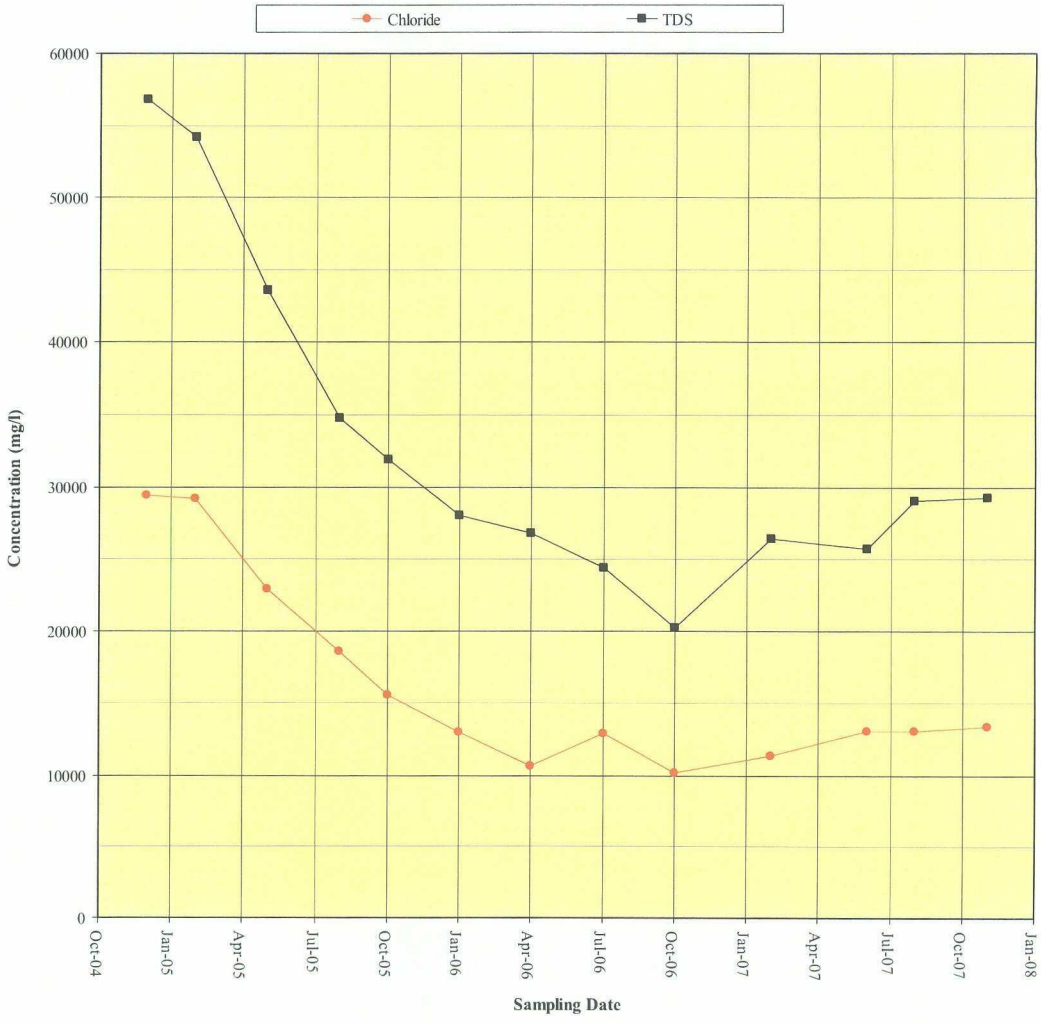
RICE Operating Company

FIGURE 4

GROUNDWATER ELEVATION AND CHLORIDE, TDS, & BTEX CONCENTRATION MAP

Figure 5

Graph of Chloride and TDS Concentrations Versus Time (MW-1)



7.0 STAGE 2 ABATEMENT PLAN

7.1 Corrective Action to the Vadose Zone

ROC has mitigated the threat of any accidental releases from the Jct. D-1 site by permanently removing the junction box, installing a clay layer, and backfilling a 30 ft wide by 30 ft long by 12 ft deep excavated area surrounding the former junction box.

ROC further proposes the creation of an infiltration barrier using imported clean sandy loam for the topsoil layer and re-vegetating the surface which will enhance the effectiveness of the existing clay layer. An approximate 8,800 ft^2 area in the vicinity of the former junction box where they is a lack of vegetation will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate. The infiltration barrier will enhance the effectiveness of the clay layer by providing two natural processes to control infiltration: (1) soil provides a water reservoir, and (2) natural evaporation from the soil plus plant transpiration empties the soil water reservoir. The infiltration barrier will consist of a layer of soil (sandy loam) that will support the growth of native grasses and plants and will vary in thickness to match the surrounding terrain of the dune sand habitat. The cover will contain at least 4 feet of clean soil with a concentration of less than 500 mg/kg chloride to encourage native plant growth.

Figure 6 depicts the area proposed for re-seeding and construction of the infiltration barrier. ROC will monitor the site for continued healthy growth of vegetation and add amendments if necessary.

7.2 Corrective Action to the Groundwater

The groundwater quality in this area of Monument is regionally impaired. The amount of chloride impairment caused by the accidental release from the Jct. D-1 did not significantly contribute to the regional impairment. The existing clay layer, infiltration barrier, and re-vegetation as proposed above will mitigate the potential for residual constituents of concern from further infiltration, leaching, or percolation from the vadose zone into groundwater.

At the request of the NMOCD via email communication on February 13, 2008 (Appendix E) a groundwater recovery system will be installed to pump and dispose of chloride-impacted groundwater into the EME Salt Water Disposal system. It is being assumed the observed increase (and subsequent decreases) in chloride concentrations in monitoring well MW-1 (adjacent to the release point) was directly the result of the October 25, 2004 and November 19, 2004 releases of chlorides to the groundwater table. With that assumption in mind, the following estimate of chloride mass was calculated based on simple mass balance equations which are explained as follows:

First, the size of the impacted area is conservatively assumed to be the maximum width (30-ft) times the length (30-ft) of the excavation which is then multiplied by a factor of 10

(estimated horizontal dispersivity factor). This total area is then multiplied by the thickness of the aquifer (11-ft) and its porosity (0.25) resulting in a total saturated pore space volume.

Second, the ambient chloride concentration at the site as reflected by upgradient monitoring well MW-3 (average chloride concentration of 14,457 mg/L over the complete record of monitoring) was subtracted from the highest concentration observed in downgradient well MW-1 (29,400 mg/L) two months after the October 25, 2004 release which results in a net difference in chloride concentration of 14,943 mg/L This net difference between the two concentrations above *conservatively* reflects the net impact to groundwater from the release. That concentration multiplied by the total saturated pore space volume (70,084 liters) results in the estimated chloride mass. These calculations are shown in the following table in the same order as described above.

First estimate of chloride mass:

Parameter Type	Value	Parameter Validation (description of equations used)
Release area	900 ft^2	Area of Concern (physical measurement of junction box excavation)
Longitudinal Dispersivity	10	Professional estimate for factoring the plume length
Aquifer Thickness	11 ft	Known lithology of monitoring well MW-4.
Porosity	0.25	Professional estimate for water saturated pore volume
Volume of impacted ground water below former excavation.	2,475 ft^3	Simple multiplication of each parameter listed above
Volume of Impacted Groundwater below former excavation.	70,084 L	Unit conversion of previous value to liters.
Averaged increase in on site chloride concentrations	14,943 mg/L	Difference between average concentrations in MW-3 and MW-2 (during complete period of record)
Total chloride mass	**1,047 kg**	Simple multiplication of two parameters listed above

To be conservative, an additional estimate of chloride mass was calculated based on an average chloride concentration (57,648 mg/L) of the total release volume (80 barrels) lost on 10/25/04 and 11/19/04 yields approximately 751 kg of chloride as summarized below. A copy of the C-141 forms and field test documentation are provided in Appendix E.

Second estimate of chloride mass:

Amount	Explanation
25 bbls	Volume of produced water (bbls) lost on 10/25/04 (based on C-141).
55 bbls	Volume of produced water (bbls) lost on 11/19/04 (based on C-141)
80 bbls	Total volume (bbls) of produced water lost after two events listed above.
13020 liters	Total volume of produced water accidently released (converted to liters).
57,648 mg/L	Average chloride concentration of produced water released on 11/19/04.
751 kg	Total chloride mass based on multiplication of two rows above (converted to kg)

Adding the two estimates of chloride mass calculated above (1,047 kg + 751 kg) yields a total value of 1,798 kg chlorides.

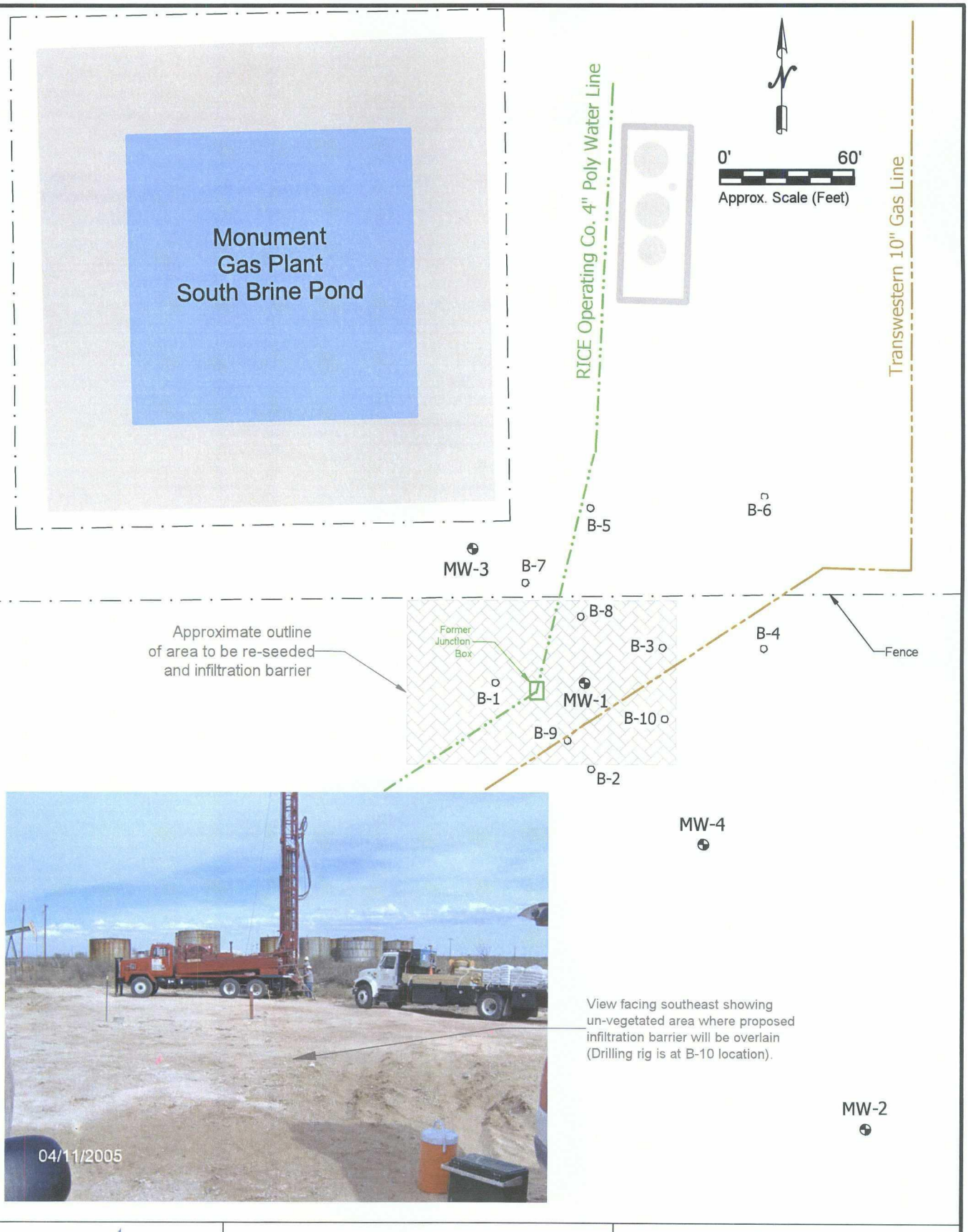
A groundwater recovery system employed at the Jct D-1 site extracting water with chloride concentrations consistent with those in MW-1 or downgradient well MW-4 (~12,000 mg/L)

could extract 65.4 kg per day by (continuously) pumping at a rate of 1 gallon per minute (gpm). At that rate it would take approximately 28 days and the equivalent of 942 barrels (bbls) to remove 1,798 kg of chloride mass.

Installation of a groundwater recovery system is contingent on successful application with the New Mexico Office of the State Engineer and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B). It may be that existing monitoring well MW-4 or MW-1 will be used for groundwater recovery, however it may be necessary to install a 4-inch diameter recovery well. The design and specifications of the groundwater recovery system are not known at this time; however a submersible or positive displacement pump capable of discharging at a minimum rate of 1 gpm should suffice. It is possible that the aquifer will not yield that rate of withdrawal due to the limited thickness (11-ft) and hence, transmissibility of the aquifer, therefore, appropriate scaling and design of the system will be employed after testing and construction activities commence. Flow rate, total volume, and chloride content of the recovered groundwater will be measured prior to discharge into the EME SWD system. The necessary power supply for the system will likely be provided by a solar powered battery unless ROC determines that an electrical service provider is more practical. ROC plans to rapidly implement the ground water remedy at the Jct. D-1 site and then use the knowledge gained (and perhaps the same ground water treatment system) to provide an appropriate response to NMOCD requirement to remove the chloride mass at other sites.

7.3 Closure and Proposed Schedule of Activities

ROC will continue quarterly groundwater sampling at each of the four monitoring wells. At the completion of corrective actions as described above, a final report will be submitted with a request for final closure.



TRIDENT ENVIRONMENTAL

EME Jct. D-1 SITE

T20S-R36E-Section 1-Unit D

RICE Operating Company

FIGURE 6

PROPOSED OUTLINE OF RE-SEEDING AREA AND INFILTRATION BARRIER

APPENDIX A

LITHOLOGIC LOGS

AND

MONITORING WELL CONSTRUCTION DIAGRAMS

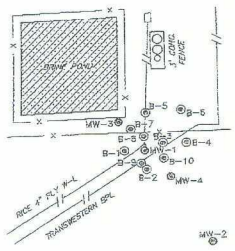
LOG OF BORING
K. Farris Pope
RICE Operating Company

Logger:	Israel Juarez; Mort Bates	Client:	Well ID:
Driller:	Atkins Engineering Associates, Inc.	RICE Operating Company	
Drilling Method:	4.25 in. Hollow Stem Auger	Project Name:	
Start Date:	12/8/04	jct. D-1 leak	MW-1
End Date:	12/8/04	Location:	
Notes: 20 ft southwest of former junction box site TD = 40 ft Groundwater = 31 ft		EME SWD System unit 'D', Sec. 1, T20S, R36E Lea County, NM	

Split Spoon

Depth (feet)	Sample chloride	Sample PID	Description	Lithology	Well Construction
0.0	113	1.6	0 - 4 ft CLAYEY SAND loose, light tan, damp		grout
1.0					
2.0					
3.0					
4.0					
5.0	146	5.2	4 - 11 ft SILTY SAND w/CALICHE reddish tan, damp		
6.0					
7.0					
8.0					
9.0					
10.0	484	0.9			
11.0			11 - 22 ft CLAYEY SAND w/CALICHE loose, tan, moist		
12.0					
13.0					
14.0					
15.0	8865	0.5			
16.0					
17.0					
18.0					
19.0					bentonite seal
20.0	4842	4.1			
21.0					
22.0					
23.0			22 - 31 ft SILTY SAND w/BROKEN SANDSTONE reddish tan, damp		
24.0					
25.0	3876	0.9			
26.0					
27.0					
28.0					
29.0					
30.0	1196	2.1			
31.0				▼	
32.0			31 - 40 ft POORLY-GRADED SAND soft, tan, wet		sand pack
33.0					
34.0					
35.0	1113	0.9		lab = 1120 ppm Cl	
36.0					
37.0					
38.0					
39.0					
40.0					

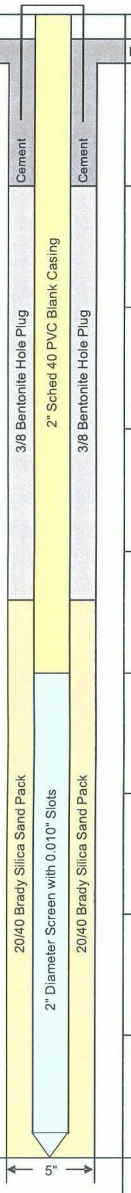
2-in. sch. 40 PVC casing



LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

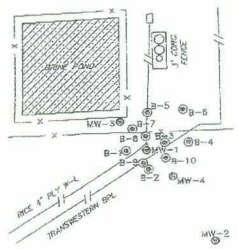
MONITOR WELL NO.: MW-2
SITE ID: EME D-1
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 04/10/06
COMPLETION DATE: 04/10/06
COMMENTS: Monitoring well located approximately 250 feet southeast of former junction box.

TOTAL DEPTH: 45 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit D
FIELD REP.: G. Van Deventer



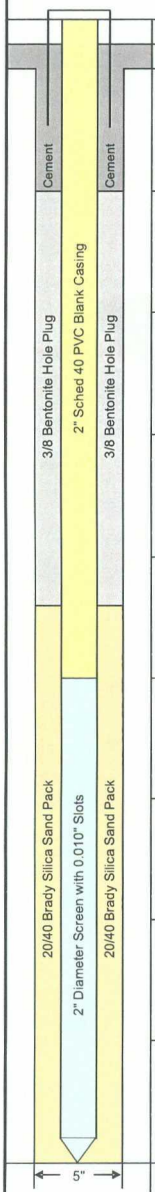
Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	Color	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW		Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	1358	Split Spoon	151	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry.
10	1400	Split Spoon	598	0	SM/CAL		Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft and hard caliche in matrix.
15	1403	Split Spoon	516	0			Hard caliche layer at 15 feet Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft and hard caliche in matrix.
20	1407	Split Spoon	290	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
25	1415	Split Spoon	276	0	SM		Pale yellowish brown (10 YR 6/2) fine-grained sand, subrounded grains, unconsolidated, dry.
30	1421	Split Spoon	292	0			Pale yellowish brown (10 YR 6/2) fine-grained sand, subrounded grains, unconsolidated, dry.
35	1425	Cuttings			SS/SW		Pale brown (5YR 5/2) fine-grained sandstone. Moist at 31 ft.
					GP		Pale brown (5YR 5/2) gravelly sand, subrounded grains, poorly sorted, unconsolidated, moist. Sand is fine-grained and gravel ranges from pea size to 1" nodules. Gravel content increases with depth
40	1430	Cuttings					Pale brown (5YR 5/2) fine-grained sandy gravel, subrounded grains, poorly sorted, unconsolidated, very moist. Sand is fine-grained and gravel ranges from pea size to 1" nodules.
45	1435	Cuttings			SW		Moderate reddish orange (10R 6/6) fine and medium-grained sand, subrounded grains, unconsolidated, very moist. Bottom of boring at 45 ft below ground surface.
50	1440	Cuttings			CL		Moderate reddish brown (10R 4/6) sandy clay (red bed), wet.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



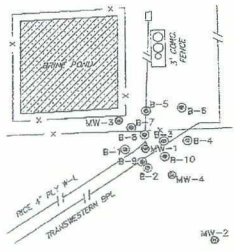
MONITOR WELL NO.: MW-3
SITE ID: EME D-1
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 04/10/06
COMPLETION DATE: 04/10/06
COMMENTS: Monitoring well located approximately 70 feet northwest of former junction box and at southeast corner of brine pond.

TOTAL DEPTH: 45 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit D
FIELD REP.: G. Van Deventer



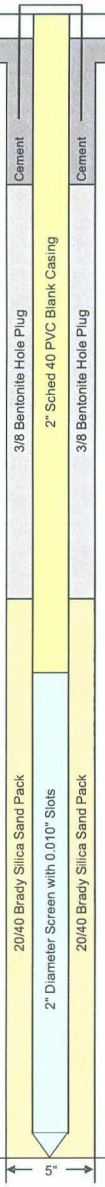
Depth	Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	Color	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW		Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	1604	Split Spoon	5934	0			Pale yellowish brown (10 YR 6/2) fine-grained sand with very pale orange (10YR 8/2) soft caliche in matrix. Sand grains are subrounded, unconsolidated, dry.
10	1608	Split Spoon	5081	0	SM/CAL		Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft and hard caliche in matrix.
15	1610	Split Spoon	2744	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft and hard caliche in matrix.
20	1615	Split Spoon	6103	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
25	1620	Split Spoon	866	0	SM		Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
					SS		Pale brown (5YR 5/2) cherty sandstone (microcrystaline grain size).
30	1628	Split Spoon	1667	0	SW		Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry
							Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry
					SS		Pale brown (5YR 5/2) cherty sandstone (microcrystaline grain size). Slightly moist at 31 ft.
35		Cuttings			SW		Pale brown (5YR 5/2) fine-grained sand, subrounded grains, unconsolidated, slightly moist.
							Grayish-orange (10YR 7/4) gravelly sand, subrounded grains, poorly sorted, unconsolidated, moist. Sand is fine-grained and gravel ranges from pea size to 1" nodules.
40		Cuttings			SP		Pale brown (5YR 5/2) gravelly sand, subrounded grains, poorly sorted, unconsolidated, moist. Sand is fine to medium-grained and gravel ranges from pea size to 1" nodules.
45		Cuttings					Bottom of boring at 45 ft below ground surface.
					CL		Moderate reddish brown (10R 4/6) sandy clay (red bed), wet.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-4
SITE ID: EME D-1
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 12/14/06
COMPLETION DATE: 12/14/06
COMMENTS: Monitoring well located approximately 80 feet southeast of former junction box. corner of brine pond.

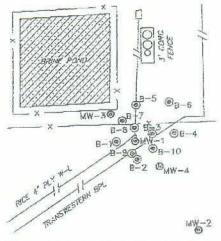
TOTAL DEPTH: 45 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit D
FIELD REP.: G. Van Deventer



Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	Color	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
0		Surface			SW		Pale yellowish brown (10 YR 6/2) fine-grained sand. Sand grains are subrounded, well sorted, unconsolidated, dry.
5	0814	Cuttings					Pale yellowish brown (10 YR 6/2) fine-grained sand. Sand grains are subrounded, well sorted, unconsolidated, dry.
10	0816	Cuttings			SM/CAL		Grayish-orange (10 YR 7/4) fine-grained sand with very pale orange (10 YR 8/2) soft caliche in matrix.
15	0818	Cuttings					As above but with increasing calcium carbonate (caliche) content.
20	0820	Cuttings			SW		Light brown (5 YR 5/6) fine-grained sand, subrounded grains, well sorted, unconsolidated, dry
25	0823	Cuttings					Light brown (5 YR 5/6) very fine-grained sand, subrounded grains, moderately sorted, unconsolidated, dry
30	0825	Cuttings			SW/CAL		Light brown (5 YR 6/4) fine-grained sand with <5% grayish orange (10 YR 7/4) calcium carbonate in matrix. Sand grains are subrounded, moderately sorted, unconsolidated, dry
35	0827	Cuttings					Light brown (5 YR 6/4) fine to medium-grained sand with <5% grayish orange (10 YR 7/4) calcium carbonate in matrix. Sand grains are subrounded, moderately sorted, unconsolidated, dry
40	0828	Cuttings			SW		Light brown (5 YR 5/6) fine to medium-grained sand, subrounded grains, moderately sorted, unconsolidated, slightly damp.
45	0830	Cuttings			SC CL		Moderate reddish brown (10R 4/6) clayey sand, wet. Bottom of boring at 45 ft below ground surface.

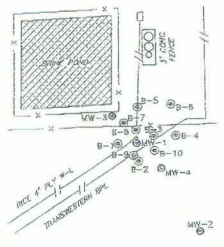
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/10/06	EME D-1 Junction Box Site	
End Date:	04/10/06	Location:	B-1
Notes: Boring located 43 feet west of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	5-7	907	Split Spoon	749	0			Light brown (5 YR 6/4 and 5 YR 5/6) fine-grained sand, subrounded grains, unconsolidated, dry
10	10-12	911	Split Spoon	575	0			Light brown (5 YR 6/4 and 5 YR 5/6) fine-grained sand, subrounded grains, unconsolidated, dry
12								Hard caliche layer at 13 feet
15	15-17	916	Split Spoon	690	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
20	20-22	919	Split Spoon	749	0		SM	Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
25	25-27	928	Split Spoon	599	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry.
30	30-32	935	Split Spoon	722	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry. Moist (groundwater) at 31 ft bgs.
32								Boring terminated at 32 feet.



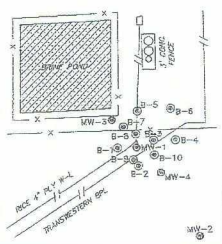
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/10/06	EME D-1 Junction Box Site	
End Date:	04/10/06	Location:	B-2
Notes: Boring located 53 feet south of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0								Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
1								
2							SW	
3								
4								
5	5-7	958	Split Spoon	89	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft and hard caliche in matrix.
6								
7								
8							SM/CAL	
9								
10	10-12	1000	Split Spoon	845	0			Very pale orange (10 YR 8/2) and light brown (5Y 6/4) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
11								
12								Hard caliche layer at 13 feet
13								
14								
15	15-17	1003	Split Spoon	636	0			Light brown (5 YR 5/6) fine-grained sand, subrounded grains, unconsolidated, dry.
16								
17								
18								
19								
20	20-22	1007	Split Spoon	503	0			Light brown (5 YR 5/6) fine-grained sand, subrounded grains, unconsolidated, dry.
21								
22							SM	
23								
24								
25	25-27	1015	Split Spoon	793	0			Pale yellowish brown (10 YR 6/2) fine-grained sand, subrounded grains, unconsolidated, dry.
26								
27								
28								
29								
30	30-32	1022	Split Spoon	766	0			Pale yellowish brown (10 YR 6/2) fine-grained sand, subrounded grains, unconsolidated, dry. Moist (groundwater) at 31 ft bgs.
31								
32								Boring terminated at 32 feet.
33								
34								
35								
36								
37								
38								
39								
40								



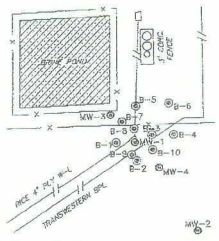
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/10/06	EME D-1 Junction Box Site	
End Date:	04/10/06	Location:	B-3
Notes: Boring located 37 feet east of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0								Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
1								
2							SW	
3								
4								
5	5-7	1046	Split Spoon	219	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
6								
7								
8							SM/CAL	
9								
10	10-12	1048	Split Spoon	832	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
11								
12								Hard caliche layer at 13 feet
13								
14								
15	15-17	1052	Split Spoon	2015	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
16								
17								
18								
19								
20	20-22	1055	Split Spoon	561	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
21								
22								
23								
24								
25	25-27	1101	Split Spoon	494	0		SM	Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
26								
27								
28								
29								
30	30-32	1110	Split Spoon	482	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry.
31								Moist (groundwater) at 31 ft bgs.
32								Boring terminated at 32 feet.
33								
34								
35								
36								
37								
38								
39								
40								



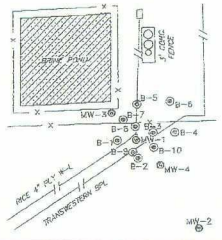
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/10/06	EME D-1 Junction Box Site	
End Date:	04/10/06	Location:	B-4
Notes: Boring located 83 feet east of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0								
1								
2							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
3								
4								
5	5-7	1134	Split Spoon	271	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
6								
7								
8							SM/CAL	
9								
10	10-12	1136	Split Spoon	973	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
11								
12								
13								
14								
15	15-17	1139	Split Spoon	769	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
16								
17								
18								
19								
20	20-22	1145	Split Spoon	854	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
21								
22								
23								
24								
25	25-27	1153	Split Spoon	623	0		SM	Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
26								
27								
28								
29								
30	30-32	1200	Split Spoon	749	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry. Moist (groundwater) at 31 ft bgs.
31								
32								Boring terminated at 32 feet.
33								
34								
35								
36								
37								
38								
39								
40								



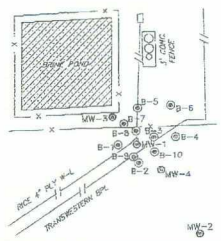
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-5
Notes: Boring located 67 feet north of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	5-7	0825	Split Spoon	2817	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
10	10-12	0828	Split Spoon	1226	0			Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
15	15-17	0830	Split Spoon	2849	0		SM/CAL	Light brown (5 YR 6/4) fine-grained sand with with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
20	20-22	0834	Split Spoon	1193	0			Light brown (5 YR 6/4) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
25	25-27	0842	Split Spoon	2519	0			Grayish-orange (10 YR 7/4) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
30	30-32	0847	Split Spoon	1040	0		SM	Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, slightly moist.
32								Boring terminated at 32 feet.



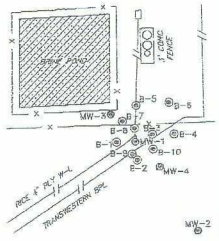
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-6
Notes: Boring located 111 feet northeast of former junction box.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	5-7	0914	Split Spoon	1332	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
10	10-12	0917	Split Spoon	1281	0			Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
15	15-17	0922	Split Spoon	986	0		SM/CAL	Light brown (5 YR 6/4) fine-grained sand with with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
20	20-22	0924	Split Spoon	940	0			Light brown (5 YR 6/4) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
25	25-27	0931	Split Spoon	424	0			Grayish-orange (10 YR 7/4) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
30	30-32	0935	Split Spoon	673	0		SM	Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, slightly moist.
32								Boring terminated at 32 feet.



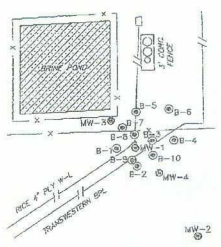
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-7
Notes: Boring located 43 feet northwest of former junction box and adjacent to north side of fence.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	5-7	1316	Split Spoon	1333	0		SM/CAL	Pale yellowish brown (10 YR 6/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
10	10-12	1318	Split Spoon	1497	0			Light brown (5YR 5/6 fine-grained sand, subrounded grains, unconsolidated, dry. Soft very pale orange caliche (10 YR 8/2) in matrix.
15	15-17	1322	Split Spoon	863	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
20	20-22	1325	Split Spoon	884	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
25	25-27	1338	Split Spoon	874	0		SM	Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
30	30-32	1343	Split Spoon	659	0			Light brown (5 YR 6/4) fine-grained sand, subrounded grains, unconsolidated, dry. Moist (groundwater) at 31 ft bgs.
32								Boring terminated at 32 feet.



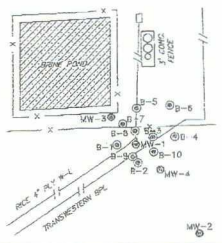
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-8
Notes: Boring located 16 feet north of former junction box and adjacent to south side of fence.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0								Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
1								
2							SW	
3								
4								
5								
6	5-7	1438	Split Spoon	966	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
7								
8							SM/CAL	
9								
10								
11	10-12	1440	Split Spoon	1242	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
12								
13								
14								
15								Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
16	15-17	1443	Split Spoon	2106	0		CAL/SM	
17								
18								
19								
20								
21	20-22	1447	Split Spoon	4882	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
22								
23								
24								
25								
26	25-27	1453	Split Spoon	2271	0		SM	Light brown (5 YR 6/4) fine-grained sand, some cherty gravel, subrounded grains, unconsolidated, dry.
27								
28								
29								
30								
31	30-32	1503	Split Spoon	940	0			Light brown (5 YR 6/4) fine-grained sand with some cherty gravel, subrounded grains, unconsolidated. Moist (groundwater) at 31 ft bgs.
32								Boring terminated at 32 feet.
33								
34								
35								
36								
37								
38								
39								
40								



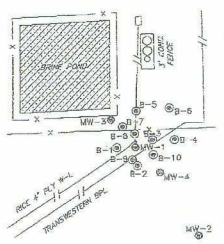
Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-9
Notes: Boring located 41 feet south-southwest of former junction box. Just south of Transwestern (10" high pressure gas) pipeline.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
5	5-7	1525	Split Spoon	112	0		SM/CAL	Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
10	10-12	1527	Split Spoon	758	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
15	15-17	1530	Split Spoon	573	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
20	20-22	1534	Split Spoon		0		SM	Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
25	25-27	1542	Split Spoon	511	0			Light brown (5 YR 6/4) fine-grained sand, some cherty gravel, subrounded grains, unconsolidated, dry.
30	30-32	1549	Split Spoon	629	0			Light brown (5 YR 6/4) fine-grained sand with some cherty gravel, subrounded grains, unconsolidated. Moist (groundwater) at 31 ft bgs.
32								Boring terminated at 32 feet.



Geologist:	Gil Van Deventer	RICE *Operating Company*	Borehole ID:
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary	Project Name:	
Start Date:	04/11/06	EME D-1 Junction Box Site	
End Date:	04/11/06	Location:	B-10
Notes: Boring located 48 feet southeast of former junction box. Just south of Transwestern (10" high pressure gas) pipeline.		EME SWD System	
		unit 'D', Sec. 1, T20S, R36E	
		Lea County, NM	

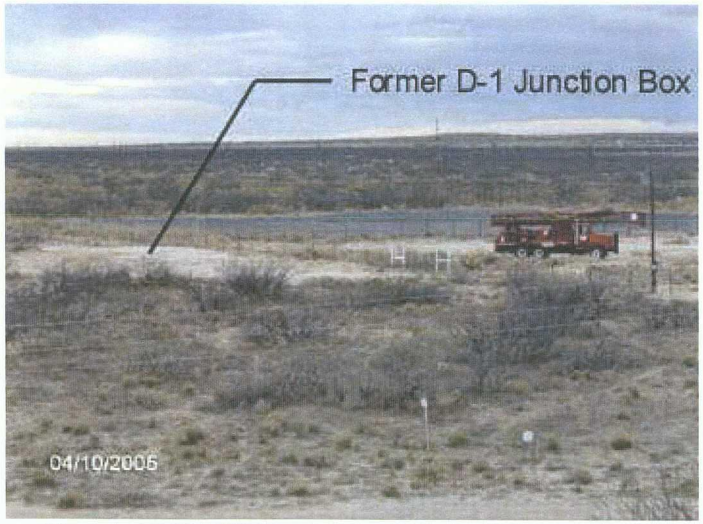
Depth (feet)	Sample Interval	Time	Type	Chloride (ppm)	OVM (ppm)	Color	USCS Symbol	Description: Color, Grain size, Sorting, rounding, Consolidation, Distinguishing Features
0								
1								
2							SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, subrounded grains, unconsolidated, dry
3								
4								
5	5-7	1438	Split Spoon	966	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
6								
7								
8							SM/CAL	
9								
10	10-12	1440	Split Spoon	1242	0			Very pale orange (10 YR 8/2) fine-grained sand, subrounded grains, unconsolidated, dry. Soft caliche in matrix.
11								
12								
13								
14								
15	15-17	1443	Split Spoon	2106	0		CAL/SM	Very pale orange (10 YR 8/2) caliche (soft) with grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
16								
17								
18								
19								
20	20-22	1447	Split Spoon	4882	0			Grayish-orange (10 YR 7/4) fine-grained sand, subrounded grains, unconsolidated, dry.
21								
22								
23								
24								
25	25-27	1453	Split Spoon	2271	0		SM	Light brown (5 YR 6/4) fine-grained sand, some cherty gravel, subrounded grains, unconsolidated, dry.
26								
27								
28								
29								
30	30-32	1503	Split Spoon	940	0			Light brown (5 YR 6/4) fine-grained sand with some cherty gravel, subrounded grains, unconsolidated. Moist (groundwater) at 31 ft bgs.
31								
32								Boring terminated at 32 feet.
33								
34								
35								
36								
37								
38								
39								
40								



APPENDIX B

PHOTODOCUMENTATION

EME Jct. D-1 Site (AP-67)



View facing WNW showing Jct. D-1 site (left-center) with Monument Gas Plant brine pond in background (04/10/2006).

View facing north showing MW-1 (foreground) and plate marking location of former junction box (center) on 04/06/2006.

View facing east showing soil boring activities at B-4 (background) located ~83 ft east of former junction box on 04/10/2006.

View facing northwest showing installation of MW-4 on 12/14/2006.

APPENDIX C

LABORATORY ANALYTICAL REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System D-1 Junction Box Site

Project Number: EME D-1

Location: T20S, R36E, Sec 1, Unit Letter D

Lab Order Number: 6D14016

Report Date: 04/21/06

Rice Operating Co.	Project: EME System D-1 Junction Box Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME D-1	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	04/21/06 12:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-3 (15')	6D14016-01	Soil	04/10/06 10:52	04/14/06 11:45
MW-2 (10')	6D14016-02	Soil	04/10/06 14:00	04/14/06 11:45
MW-3 (5')	6D14016-03	Soil	04/10/06 16:05	04/14/06 11:45
MW-3 (20')	6D14016-04	Soil	04/10/06 16:15	04/14/06 11:45

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System D-1 Junction Box Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME D-1	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	04/21/06 12:05

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-3 (15') (6D14016-01) Soil									
Chloride	**1930**	25.0	mg/kg	50	ED62005	04/18/06	04/18/06	EPA 300.0	
MW-2 (10') (6D14016-02) Soil									
Chloride	**899**	10.0	mg/kg	20	ED62005	04/18/06	04/18/06	EPA 300.0	
MW-3 (5') (6D14016-03) Soil									
Chloride	**7750**	100	mg/kg	200	ED62005	04/18/06	04/18/06	EPA 300.0	
MW-3 (20') (6D14016-04) Soil									
Chloride	**6130**	100	mg/kg	200	ED62005	04/18/06	04/18/06	EPA 300.0	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ED62005 - Water Extraction										
Blank (ED62005-BLK1)				Prepared & Analyzed: 04/18/06						
Chloride	ND	0.500	mg/kg							
LCS (ED62005-BS1)				Prepared & Analyzed: 04/18/06						
Chloride	9.08		mg/L	10.0		90.8	80-120			
Calibration Check (ED62005-CCV1)				Prepared & Analyzed: 04/18/06						
Chloride	8.90		mg/L	10.0		89.0	80-120			
Duplicate (ED62005-DUP1)		**Source: 6D14016-01**		Prepared & Analyzed: 04/18/06						
Chloride	1960	25.0	mg/kg		1930			1.54	20	

Notes and Definitions

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

Report Approved By: Raland K Tuttle Date: 4/21/2006

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

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: Rice Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174 Fax No: 505-397-1471
Sampler Signature: Gilbert Van Ryt

Project Name: EME System D-1 Junction Box Site
Project #: EME D-1
Project Location: T20S, R36E, Sec 1, Unit Letter D
COC #: V118D1-0406

Analyze For: (TCLP: / TOTAL:)

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl BTEX only	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEXN 8021B/5030 or BTEXN 8260	RCI	N.O.R.M.	Total Dissolved Solids	SPLP 1312	Chloride		RUSH TAT (Pre-Schedule)	Standard TAT
6D140106																														
-01	B-3 (15')	04-10-06	1052	1	✓									✓													✓			✓
-02	MW-2 (10')	04-10-06	1400	1	✓									✓													✓			✓
-03	MW-3 (5')	04-10-06	1605	1	✓									✓													✓			✓
-04	MW-3 (20')	04-10-06	1615	1	✓									✓													✓			✓

Special Instructions:
Email results to gil@rthicksconsult.com and mfranks@riceswd.com

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 3.0°C
Laboratory Comments: 4oz glass

Relinquished by:	Date	Time	Received by:	Date	Time
Gilbert Van Ryt	4/14/06	11:45			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Celeste Keene	4/14/06	11:45

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

Client: Rice Operating

Date/Time: 4/14/06 11:45

Order #: 6D140116

Initials: COK

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	3.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	(Yes)	No	Not present
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	Yes	No	(Not Applicable)

Other observations:

Variance Documentation:

Contact Person: - _____ Date/Time: _____ Contacted by: _____

Regarding:

Corrective Action Taken:

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/08/07
Reporting Date: 11/19/07
Project Number: NOT GIVEN
Project Name: EME JUNCTION D-1 LEAK
Project Location: T20S R36E SEC1 D - LEA COUNTY, NM

Sampling Date: 11/06/07
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: SB
Analyzed By: CK

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		11/08/07	11/08/07	11/08/07	11/08/07
H13667-1	MONITOR WELL # 1	<0.001	<0.001	<0.001	<0.003
H13667-2	MONITOR WELL # 2	<0.001	<0.001	<0.001	<0.003
H13667-3	MONITOR WELL # 3	<0.001	<0.001	<0.001	<0.003
H13667-4	MONITOR WELL # 4	<0.001	<0.001	<0.001	<0.003
Quality Control		0.111	0.109	0.110	0.331
True Value QC		0.100	0.100	0.100	0.300
% Recovery		111	109	110	110
Relative Percent Difference		10.6	3.9	2.9	3.8

METHOD: EPA SW-846 8021B

Chemist

11/19/07
Date

H13667b Rice

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/08/07
Reporting Date: 11/15/07
Project Number: NOT GIVEN
Project Name: EME JUNCTION D-1 LEAK
Project Location: T20S-R36E-SEC1 D~LEA COUNTY, NM

Sampling Date: 11/06/07
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: SB
Analyzed By: HM/KS

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (μS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:		11/14/07	11/14/07	11/14/07	11/14/07	11/09/07	11/09/07
H13667-1	MONITOR WELL #1	9,608	506	339	135	41,300	492
H13667-2	MONITOR WELL #2	7,893	323	222	90.0	31,500	464
H13667-3	MONITOR WELL #3	10,997	432	363	190	44,900	528
H13667-4	MONITOR WELL #4	9,271	419	274	84.3	37,800	468
Quality Control		NR	49.2	52.4	3.10	1,389	NR
True Value QC		NR	50.0	50.0	3.00	1,404	NR
% Recovery		NR	98.4	105	103	98.9	NR
Relative Percent Difference		NR	< 0.1	1.5	12.7	0.5	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		11/09/07	11/12/07	11/09/07	11/09/07	11/09/07	11/13/07
H13667-1	MONITOR WELL #1	13,400	4,180	0	600	6.87	29,255
H13667-2	MONITOR WELL #2	9,200	5,350	0	566	7.10	22,905
H13667-3	MONITOR WELL #3	14,900	5,001	0	644	6.96	32,095
H13667-4	MONITOR WELL #4	11,900	5,001	0	571	7.04	26,419
Quality Control		500	24.3	NR	1000	6.99	NR
True Value QC		500	25.0	NR	1000	7.00	NR
% Recovery		100	97.0	NR	100	99.9	NR
Relative Percent Difference		< 0.1	3.5	NR	< 0.1	< 0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Kristen Farris-Pope
Chemist

11/15/07
Date

101 East Marland - Hobbs, New Mexico 88240
Tel (505) 393-2326
Fax (505) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Kristin Farris-Pope, Project Scientist	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (505) 393-9174 Fax#: (505)397-1471
Phone #: (505) 393-9174	Fax #: (505)397-1471
Project #:	Project Name: EME Junction D-1 Leak
Project Location: T20S-R36E-Sec1 D ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (505)631-9310 rozanne@valornet.com

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2007)	TIME
H13667-1	Monitor Well #1	G	3	X					2				1		11-6	11:15
2	Monitor Well #2	G	3	X					2				1		11-6	9:40
3	Monitor Well #3	G	3	X					2				1		11-6	12:45
4	Monitor Well #4	G	3	X					2				1		11-6	10:20

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content		Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																X	X	X		
	X																X	X	X		
	X																X	X	X		
	X																X	X	X		

Relinquished by: Rozanne Johnson Date: 11-8-2007 Time: 11:20

Received by: Date: Time:

Relinquished by: Date: Time:

Received By: (Laboratory Staff) Sabinas 11/08/07 11:20

Delivered By: (Circle One) Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ✓ / No; Intact: Yes ✓ / No

CHECKED BY: (Initials) Sac

Phone Results: Yes / No

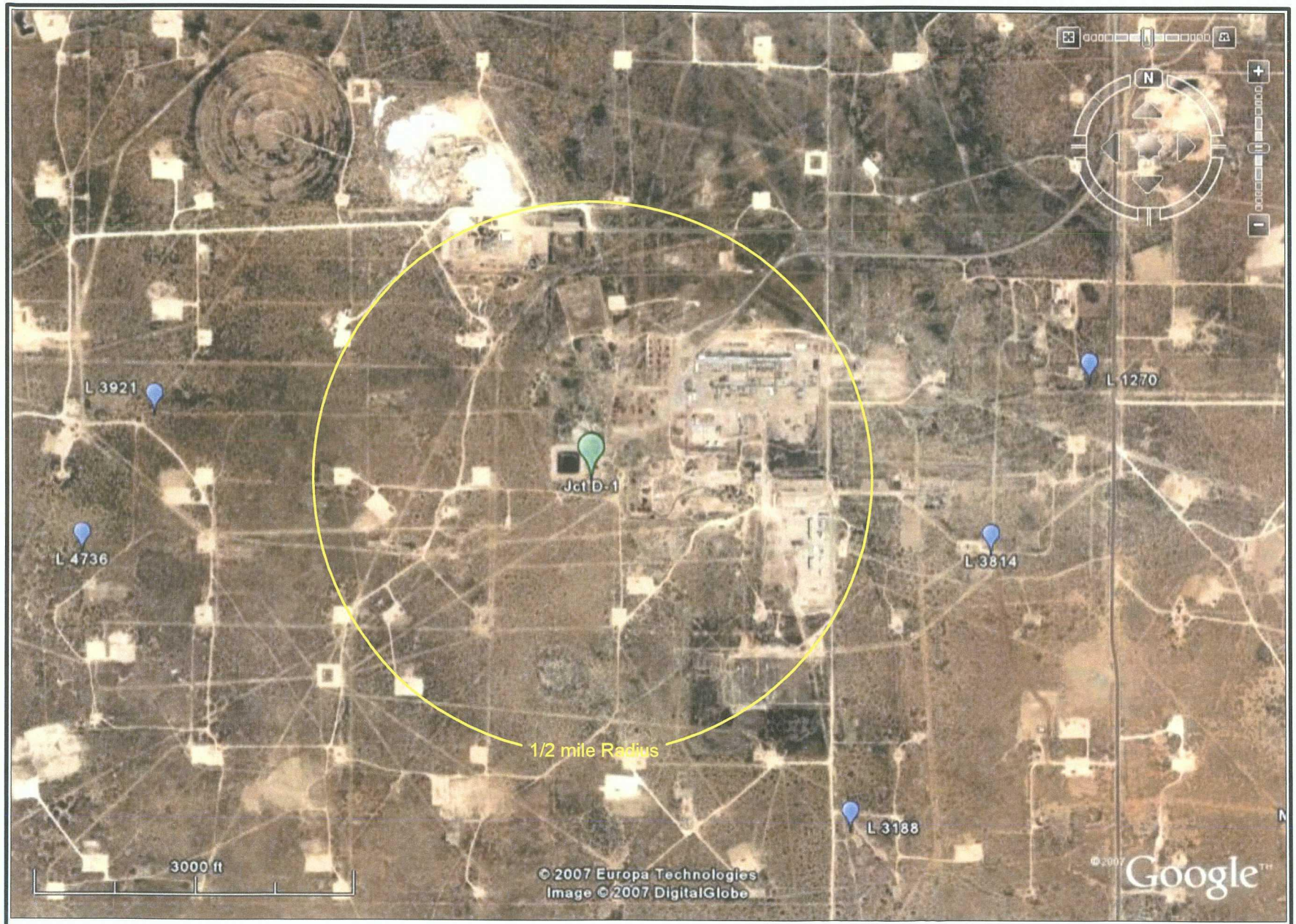
Fax Results: Yes / No Additional Fax Number:

REMARKS:

Email Results to: kpope@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com

APPENDIX D

WATER WELL INVENTORY



COLOR KEY: Blue = State well number of water well identified from NM State Engineer Office website (location approximate)
Green = EME Jct. D-1 site location

New Mexico Office of the State Engineer

POD Reports and Downloads

Township: 20S Range: 36E Sections: 1,2

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) ○ Non-Domestic ○ Domestic ◉ All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 04/15/2008

(acre ft per annum)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest

DB File Nbr	Use	Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q
L 03188	PRO	3	AMERADA PETROLEUM CORPORATION	L 03188		20S	36E	01	4	1	2
				L 03188 APPRO		20S	36E	01	4	1	2
L 03814	DOM	3	W. C. BYRD	L 03814	Shallow	20S	36E	01	2	2	2
				L 03814 APPRO	Shallow	20S	36E	01	2	2	2
L 04736	DOM	3	CLIMAX CHEMICAL COMPANY	L 04736	Shallow	20S	36E	02	1	1	
				L 04736 APPRO	Shallow	20S	36E	02	1	1	

Record Count: 6

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 19S Range: 36E Sections: 35,36

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) ○ Non-Domestic ○ Domestic ◉ All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 04/15/2008

(acre ft per annum)

DB File Nbr	Use	Diversion	Owner
L 01270	MUL	0	GULF OIL CORPORATION
L 03921	STK	3	T. E. MUSICK
L 04715	DOM	3	CLIMAX CHEMICAL COMPANY
L 04716	DOM	3	CLIMAX CHEMICAL COMPANY
L 04755	EXP	0	CLIMAX CHEMICAL COMPANY
L 04756	EXP	3	CLIMAX CHEMICAL COMPANY

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest

POD Number	Source	Tws	Rng	Sec	q	q	q
L 01270		19S	36E	36	4	4	2
L 03921	Shallow	19S	36E	35	3	4	
L 03921 APPRO	Shallow	19S	36E	35	3	4	
L 04715		19S	36E	35	4	3	
L 04715 APPRO EXP		19S	36E	35	4	3	
L 04716		19S	36E	36	3		
L 04716 APPRO EXP		19S	36E	36	3		
L 04755 EXPL		19S	36E	35	4	4	
L 04756 EXPL	Shallow	19S	36E	35	2		

Record Count: 9

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 20S Range: 36E Sections: 1,2

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) ○ Non-Domestic ○ Domestic ◉ All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

WATER COLUMN REPORT 04/15/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column (in feet)
L 03814	20S	36E	01	2	2	2				60	40	20
L 03814 APPRO	20S	36E	01	2	2	2				60	40	20
L 03815 APPRO EXP	20S	36E	01	2	2	2				60	40	20
L 03188 APPRO	20S	36E	01	4	1	2						
L 04736 APPRO	20S	36E	02	1	1					92	92	
L 04736	20S	36E	02	1	1					92	92	

Record Count: 6

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 19S Range: 36E Sections: 35,36

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) ○ Non-Domestic ○ Domestic ◉ All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

WATER COLUMN REPORT 04/15/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column (in feet)
L 04756 EXPL	19S	36E	35	2						250	70	180
L 03921 APPRO	19S	36E	35	3	4					75	50	25
L 03921	19S	36E	35	3	4					75	50	25

Record Count: 3

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 204123 **Trn_desc:** L 03188 **File Date:** 04/12/1956

Primary status: PMT Permit
Secondary status: APR Approved
Person assigned: *******
Applicant: AMERADA PETROLEUM CORPORATION

Events

Date	Type	Description	Comment	Processed By
04/12/1956	APP	Application Received	*	******
05/10/1956	FIN	Final Action on application		******
05/10/1956	WAP	General Approval Letter		******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 03188	0	3	0	PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURC

Point of Diversion
L 03188 20S 36E 01 SE NW NE in Lea County

Remarks
ET FILED 4/11/57PLUGGING RECORD DUE ON OR BEFORE 4/30/58.
ET FILED 3/19/58PLUGGING RECORD DUE ON OR BEFORE 3/31/59.
ET FILED 3/26/59PLUGGING RECORD DUE ON OR BEFORE 3/31/60.
ET FILED 3/21/60PLUGGING RECORD DUE ON OR BEFORE 4/30/61.
ET FILED 3/20/61PLUGGING RECORD DUE ON OR BEFORE 4/30/62.
THIS IS AN OLD WATER WELL COMPLETED IN NOV.,1951. WE HAVE A LOCATION IN THIS IMMEDIATE AREA & REQUEST PERMISSION TO REENTER THIS WATER WELL FOR DRILLING PURPOSES ONLY.

Conditions
A :The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

6A :The oil well is to be plugged upon completion of the oil well drilling operations.

Action of the State Engineer
PLUGGING RECORD DUE ON OR BEFORE 4/30/57

Approval Code: A Approved
Action Date: 05/10/1956
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 205030 **Trn_desc:**L 03814 **File Date:**03/14/1958

Primary status: PMT Permit
Secondary status: LOG Well Log Received
Person assigned: *******
Applicant: W. C. BYRD

Events

Date	Type	Description	Comment	Processed By
03/14/1958	APP	Application Received	*	******
04/02/1958	FIN	Final Action on application		******
04/02/1958	WAP	General Approval Letter		******
09/15/1958	LOG	Well Log Received	*	******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 03814	0	3	0	DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Point of Diversion
L 03814 20S 36E 01 NE NE NE in Lea County

Remarks
WELL ALSO USED FOR LIVESTOCK WATERING

Conditions

A :The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.

B :The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated. A licensed driller shall not be required for the construction of a driven well; provided, that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter (Section 72-12-12).

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

Action of the State Engineer
Approval Code: A Approved
Action Date: 04/02/1958
log due date: 04/02/1959
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 206246 **Trn_desc:** L 04736 **File Date:** 10/13/1961

Primary status: PMT Permit
Secondary status: LOG Well Log Received
Person assigned: *******
Applicant: CLIMAX CHEMICAL COMPANY

Events

Date	Type	Description	Comment	Processed By
10/13/1961	APP	Application Received	*	******
10/17/1961	FIN	Final Action on application		******
10/17/1961	WAP	General Approval Letter		******
11/01/1961	LOG	Well Log Received	*	******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 04736	0	3	0	DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Point of Diversion
L 04736 20S 36E 02 NW NW in Lea County

Remarks

THE ABOVE WATER WLL BE USED BY APPLICANT IN CONNECTION WITH THE USE OF ITS CHEMICAL PLANT TO BE CONSTRUCTED UPON THE PREMISES FOR USE BY EMPLOYEES. THE WATER TO BE USED FOR SANITARY AND OFFICE PURPOSES AND NOT TO BE USED FOR THE ACTUAL FUNCTION OF THE PLANT. IN THIS CONNECTION APPLICANT INTENDS TO WITHDRAW APPLICATION L-4715 BY REASON OF THE FACT THAT WATER WAS UNOBTAINABLE IN SAID LOCATION.

Conditions

4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

1B :Depth of the well shall not exceed the thickness of the Ogallala formation.

3 :Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.

Action of the State Engineer
Approval Code: A Approved
Action Date: 10/17/1961
log due date: 10/17/1962
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 200456 **Trn_desc:**L 01270 **File Date:**10/01/1951

Primary status: CAN Cancelled Permit
Secondary status: FIN Finalized
Person assigned: *******
Applicant: GULF OIL CORPORATION

Events

Date	Type	Description	Comment	Processed By
10/01/1951	APP	Application Received	*	******
05/10/1953	FIN	Final Action on application		******
05/10/1953	WAP	General Approval Letter		******
05/13/1953	FCN	Finalize Cancel of permit		******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 01270	0	3	0	MUL 72-12-1 MULTIPLE DOMESTIC HOUSEHOLDS

Point of Diversion
L 01270 19S 36E 36 SE SE NE in Lea County

Remarks
EXISTING WELL ORIGINALLY DRILLED FOR DEVELOPMENT OF LEASE. WATER NOW USED FOR DOSMESTIC PURPOSES SERVING COMPANY HOUSES LOCATED ON THE LEASE. PCW RECEIVED 12/02/52

Conditions
A :The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

6 :The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer
Approval Code: A Approved
Action Date: 05/10/1953
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 205239 **Trn_desc:** L 03921 **File Date:** 07/11/1958

Primary status: PMT Permit
Secondary status: LOG Well Log Received
Person assigned: *******
Applicant: T. E. MUSICK

Events

Date	Type	Description	Comment	Processed By
07/11/1958	APP	Application Received	*	******
07/11/1958	FIN	Final Action on application		******
07/11/1958	WAP	General Approval Letter		******
07/25/1958	LOG	Well Log Received	*	******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 03921	0	3	0	STK 72-12-1 LIVESTOCK WATERING

Point of Diversion
L 03921 19S 36E 35 SW SE in Lea County

Conditions

4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

1A :Depth of the well shall not exceed the thickness of the valley fill.

1B :Depth of the well shall not exceed the thickness of the Ogallala formation.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

3 :Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.

Action of the State Engineer
Approval Code: A Approved
Action Date: 07/11/1958
log due date: 07/30/1959
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 206194 **Trn_desc:** L 04715 **File Date:** 09/06/1961

Primary status: PMT Permit
Secondary status: APR Approved
Person assigned: *******
Applicant: CLIMAX CHEMICAL COMPANY

Events

Date	Type	Description	Comment	Processed By
09/06/1961	APP	Application Received	*	******
09/07/1961	FIN	Final Action on application		******
09/07/1961	WAP	General Approval Letter		******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 04715	0	3	0	DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Point of Diversion
L 04715 19S 36E 35 SE SW in Lea County

Remarks

THE ABOVE WATER WILL BE USED BY THE APPLICANT FOR PURPOSES IN CONNECTION WITH THE USE OF ITS PLANT TO BE CONSTRUCTED UPON THE PERMISES FOR USE BY EMPLOYEES. THE PROPOSED WELL IS TO BE USED FOR SANITARY AND OFFICE PURPOSES AND NOT TO BE USED WITH THE ACTUAL FUNCTION OF THE PLANT.

Conditions

4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

1B :Depth of the well shall not exceed the thickness of the Ogallala formation.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

3 :Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.

Action of the State Engineer
Approval Code: A Approved
Action Date: 09/07/1961
log due date: 09/30/1962
State Engineer:
By:

New Mexico Office of the State Engineer
Transaction Summary

Back

72121 All Applications Under Statute 72-12-1

Trn_nbr: 206197 **Trn_desc:** L 04716 **File Date:** 09/06/1961

Primary status: PMT Permit
Secondary status: APR Approved
Person assigned: *******
Applicant: CLIMAX CHEMICAL COMPANY

Events

Date	Type	Description	Comment	Processed By
09/06/1961	APP	Application Received	*	******
09/07/1961	FIN	Final Action on application		******
09/07/1961	WAP	General Approval Letter		******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
L 04716	0	3	0	DOM 72-12-1 DOMESTIC ONE HOUSEHOLD

Point of Diversion
L 04716 19S 36E 36 SW in Lea County

Remarks
APPLICANT WILL RECEIVE FROM THE STATE OF NM, A BUSINESS LEASE UPON THE ABOVE DESCRIBED PROPERTY WITH PERMISSION TO PLACE THEREON ITS OFFICE BUILDING AND WATER TO BE APPLIED FOR DOMESTIC PURPOSES AROUND THE OFFICE SITE.

nditions
4 :Use shall be limited to household, non-commercial trees, lawn and garden not to exceed one acre and/or stock use.

D :The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.

1B :Depth of the well shall not exceed the thickness of the Ogallala formation.

3 :Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.

Action of the State Engineer
Approval Code: A Approved
Action Date: 09/07/1961
log due date: 09/30/1962
State Engineer:
By:

APPENDIX E

NMOCD CORRESPONDENCE

Gil Van Deventer

From: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
To: "Kristin Pope" <kpope@riceswd.com>
Cc: "Price, Wayne, EMNRD" <wayne.price@state.nm.us>; "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
Sent: Wednesday, February 13, 2008 12:34 PM
Subject: Administrative Completeness and Public Notice Approval for AP-67 (Rice EME Jct. D-1 Site)

Dear Ms. Pope:

The NMOCD has reviewed the submitted Stage 1 Final Investigation Report and Stage 2 Abatement Plan (AP-67) and draft Public Notice, dated November 23, 2007, for the above referenced site. The NMOCD hereby conditionally deems the Stage 2 Abatement Plan (AP-67) administratively complete.

Please keep in mind that the NMOCD cannot approve of the Plan until at least 30 days after you have provided public notice (which must be provided within 15 days). However, to expedite the approval process, the NMOCD recommends that the following amendments are made to the Plan:

1. The Corrective Action to the Vadose Zone must include that at least 4 feet of clean soil will be used for the cover material, including selected topsoil to encourage native plant growth.
2. The Corrective Action to the Vadose Zone must include that the 4 feet of clean soil have a concentration of less than 500 mg/Kg chloride (i.e., no soils used for cover material over the clay liner shall be blended if the chloride concentration is greater than 500 mg/Kg).
3. The Corrective Action to the Vadose Zone must include that the area around borehole, B-10, will be part of the area covered by the proposed infiltration barrier.
4. The Corrective Action to the Groundwater must include that an estimation of the chloride mass that has contaminated the groundwater by the release at the Rice EME Jct. D-1 Site and a plan for the removal of that chloride mass from the groundwater. An existing groundwater monitoring well may be used for this purpose. Also, please propose a treatment and / or disposal method for that chloride mass.

Also, the NMOCD hereby conditionally approves the Public Notice for the Stage 2 Abatement Plan (AP-67):

1. Please add the underscored phrase in the last line of the submitted draft Public Notice, "...Division shall allow at least thirty (30) days after the date of publication of this notice during which written requests for a public hearing that includes reasons why a hearing should be held and written comments may be submitted to him."

Also, please be advised that NMOCD approval of this plan does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

P.S.: Please use the referenced OCD case # on future correspondence regarding the site listed above.