1R - 428-65

GENERAL CORRESPONDENCE

YEAR(S):

2007 - 2006

Corrective Action Plan

for E-32-1

Junction Box Site

Hobbs Salt Water Disposal System

NMOCD CASE # 1R0428365

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

January 15, 2007

Corrective Action Plan for E-32-1 Junction Box Site

Hobbs Salt Water Disposal System

NMOCD CASE #: 1R0428-66

R.T. Hicks Consultants, LTD

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▼ 1.0 EXECUTIVE SUMMARY

This Corrective Action Plan presents the results of the characterization activities performed by R.T. Hicks Consultants (Hicks Consultants) and Rice Operating Company (ROC) at the E-32-1 site located in the Hobbs Salt Water Disposal System (SWD). Hydrocarbon constituents are not present in the vadose zone. HYDRUS-1D simulation modeling predicts that the placement of a vegetative cap over the site mitigates any threat to fresh water posed by chloride in the vadose zone. After re-vegetation of the site and two additional quarterly ground water monitoring events, ROC will submit a final closure report.

Data Summary

1. Hicks Consultants and ROC conducted field activities at the E-32-1 Junction Box site in May 2004. This involved general reconnaissance as well as supervision of borehole sampling of the vadose zone from ground surface to ground water.
2. Chloride concentration data from vadose zone samples show that the chloride center of mass resides from near ground surface to 10 feet below ground surface. The maximum chloride concentration is at 10 feet bgs (3,180 mg/kg - laboratory) and the chloride concentration at 5 feet bgs is 1,200 mg/kg (field analysis).
3. Chloride concentrations below the center of mass ranged from 689 mg/kg (field result for 16 feet bgs) to 414 mg/kg (field result at 35 feet bgs).
4. Neither field PID analyses nor observed characteristics of samples (e.g. odor, color) suggest that hydrocarbons are present in the vadose zone. All field PID analyses were 2 ppm. Because of this finding, samples were not submitted to the laboratory for analysis for hydrocarbons.
5. The chloride concentrations in the vadose zone exceeded the delineation limit established by the Investigation Characterization Plan (ICP). Therefore a monitoring well was installed in the soil boring.
6. Three ground water sampling events provided additional data for this Corrective Action Plan.
7. Although the initial ground water sampling event showed that TDS and chloride exceeded WQCC Standards (1,350 and 393 mg/L respectively), this result could not be replicated. The two subse-

quent quarterly monitoring events show that ground water is below WQCC Standards. The most recent sampling result from this well (9/19/06) was 189 mg/L chloride and 740 mg/L TDS.

Conclusions

1. Initial samples from monitoring wells often return anomalous results due to construction issues such as the transport of up-hole constituents to the ground water table. The fact that two consecutive sampling events show results that are 50% of the original finding allows us to conclude that the first analysis is anomalous and is not representative of ground water quality beneath the site.
2. HYDRUS-1D simulations predict that subsurface chloride mass will migrate downward over decades, disperse in the soil column and enter ground water at a very slow rate and that ground water will not exceed WQCC standards.

Recommendations

1. Restore and re-vegetate the ground surface at the E-32-1 Junction Box Site.
2. Continue ground water monitoring for two additional quarters.
3. Upon documentation of surface restoration and verification that ground water quality remains below WQCC Standards and does not show an increasing concentration trend over time, ROC will submit a closure report for the E-32-1 Junction Box site.

The selected remedy is the creation of an infiltration barrier through surface restoration and re-vegetation of the site. This remedy is protective of ground water quality, human health and the environment.

▼ 2.0 BACKGROUND

The Hobbs Salt Water Disposal System (SWD), which managed produced water from the late 1950s to the present, is now closed. Future releases from the system infrastructure are not possible. Closure of facilities like the E-32-1 Junction Box within Hobbs SWD, followed the August 6, 2004 NMOCD-approved junction box investigation plan. This plan calls for delineation of any impact from these sites during the closure process and states:

> *If 12 feet vertical delineation at the source reveals Target Concentrations for TPH or BTEX will not meet NMOCD guidelines or TPH and BTEX will meet guidelines but there is not a significant decline vs. depth in chloride concentration, the site-impact is judged to be outside the scope of this work plan and will become a risk-based corrective action (RBCA) project-site.*

The E-32-1 Junction Box site met these criteria. With the abandonment of the system in 2002, Rice Operating Company (ROC) excavated and removed the E-32-1 Junction Box and the uppermost four feet of the vadose zone. At the time of investigation, the excavation was filled with a mixture of silty loam with some caliche.

2.1 Location

Plate 1 is an aerial photograph of the site when it was active, taken between 1996 and 1998, with the location of the boring and nearby roads noted.

The site is within unit letter E, Section 32, Township 18S Range 38E. To access the site from the intersection of West County Road and Sanger proceed south on West County Road ½ mile and turn left onto the unpaved lease road. Continue east about 100 feet and turn left again off the road. Proceed approximately 200 feet north and then 50 feet east to the site which is situated along the north side of a fenced gas well location.

2.2 Characterization Activities

In May 2006, Hicks Consultants, ROC, and Atkins Drilling mobilized to conduct a series of exploratory drillings at five sites within the Hobbs SWD System. The investigation and characterization used the same protocols as described in the NMOCD-approved work plan for the Section 29 sites and was consistent with the NMOCD-approved ICP submitted for the site (see Appendix A). In order to permit comparison of the results from the boring with the ambient chloride concentrations in the vadose zone, collection of

samples from a background soil boring was a critical element of the ICP. Appendix B shows the results of field chloride measurements from the background soil boring, located in Section 32, Unit A.

At the E-32-1 site, one soil boring was advanced immediately adjacent to the former junction box on May 4, 2006. In the field, ROC evaluated samples from each depth for chloride and used the heated headspace method to measure total organic vapors by PID. Two samples were submitted to the laboratory from depths showing the highest field chloride measurements (9-10 feet bgs) and from (39-40 feet bgs). The boring was completed as a monitoring well due to chloride field tests indicating levels above the threshold specified in the ICP (250 mg/kg). The total depth of the boring is 62 feet bgs and the depth to water is about 43 feet.

▼ 3.0 CHARACTERISTICS OF THE VADOSE ZONE

The upper 4 feet of the 43 foot thick vadose zone at the site is composed of a silty loam that is underlain by 16 feet of caliche and sand. Below these two layers, a fine-grained sand silt composes the vadose zone profile. The lithologic log of the boring/monitoring well is included in Appendix B.

ROC staff performed field chloride measurements and PID measurements every five feet starting at 6 feet bgs. The peak chloride concentration of 2,196 mg/kg, is at 10 feet bgs (Figure 1). Laboratory analyses confirm the results of the field tests (3,180 mg/kg at 9-10 feet bgs and 284 mg/kg at 39-40 feet bgs. Below this center of mass, chloride concentrations declined to 299 mg/kg at 41 feet bgs. Background chloride concentrations in the area, as determined from the background boring located in Section 32, Unit A (Appendix B), are approximately 80 mg/kg.

Neither hydrocarbon odors nor PID measurements above 2 ppm were detected in the boring (Appendix B). Therefore, no laboratory analyses for petroleum hydrocarbons were necessary.

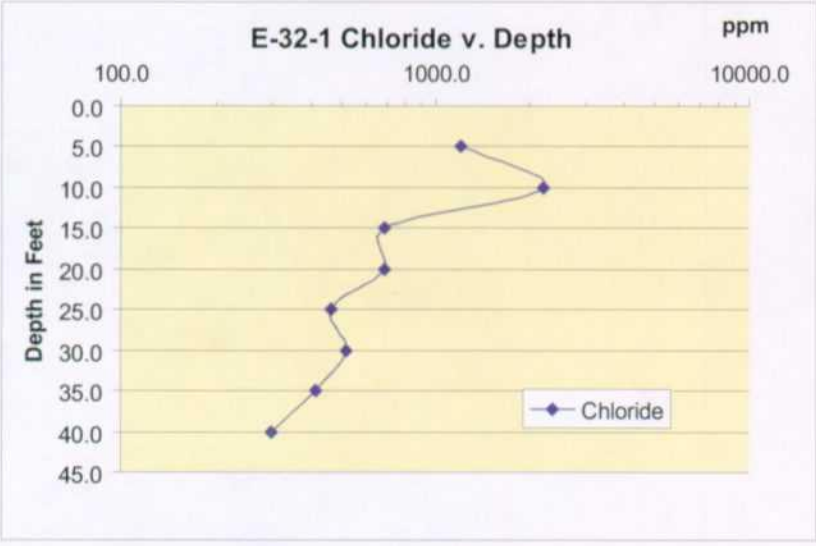


Figure 1: Chloride Concentrations with Depth

▼ 4.0 CHARACTERISTICS OF THE SATURATED ZONE

At the E-32-1 Junction Box site, moist soil was observed at 41 feet bgs and depth to water is at 43 feet bgs.

Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial ground water sampling event, however all constituents of concern were below WQCC standards for the subsequent sampling events. Field data and lab data are summarized in the table below. Analytical Reports for the site are included in Appendix C.

Date Sampled	Depth to Ground Water (Feet bgs)	Constituents in Ground Water (mg/L)		
		Chloride	TDS	BTEX
5/17/06	45.29	393	1,350	<0.001
8/14/06	45.63	134	682	<0.001
9/19/06	45.63	189	740	<0.001

Table 1: Summary of data for the site

Ground water quality data obtained from recently drilled monitoring wells often show "false positives" due to conditions that can cause downward transportation of up-hole sediments and entrained constituents during drilling. The two most recent sampling events show that ground water quality at this site is within the range of values observed in the general area and are 50% less than the initial sampling. Chloride concentrations in domestic supply wells range from 60 mg/L to more than 300 mg/L. From these data we conclude that the initial sampling event returned anomalous results and the subsequent sampling results are representative of ground water quality.

▼ 5.0 EVALUATION OF VERTICAL CHLORIDE FLUX

Data from the boring shows chloride concentrations above background levels throughout the vadose zone. However, the center of chloride mass is at 10 feet bgs, is 30 feet above the water table. Below 10 feet bgs chloride concentrations decline with depth.

The fact that the center of chloride mass resides at 10 feet bgs and concentrations decrease below that depth allow the following conclusions:

1. Operation of the site did not cause saturated flow conditions, and
2. The deep percolation rate beneath the fine-grained uppermost vadose zone (0-9 feet bgs) was not sufficient to evenly distribute the chloride load throughout the vadose zone.

Where the deep percolation rate is relatively high due to releases of produced water, chloride concentrations are generally higher than 1,000 mg/kg throughout the vadose zone and a distinct center of mass is not observed. This is not the case at the E-32-1 junction box site.

Hicks Consultants believes the following release/transport scenario is consistent with the empirical data:

- At the E-32-1 site, periodic releases created sufficient soil moisture to allow chloride transport to a depth of 10 feet, perhaps under saturated or near-saturated flow.
- After the release, evaporation of soil moisture and drying of the upper vadose zone reduced soil moisture and hydraulic conductivity temporarily "stranding" the chloride mass at 10 feet bgs. Unsaturated flow caused downward chloride transport through the entire vadose zone, albeit at a very slow rate/flux.

The fact that ground water is not impaired (i.e. ground water quality does not exceed WQCC standards) by chloride flux from the vadose zone to the aquifer also supports a conclusion that chloride in the vadose zone cannot and will not migrate to ground water and exceed the WQCC Standards because releases are no longer possible and the proposed remedy will limit additional deep percolation.

Nevertheless, Hicks Consultants elected to run a HYDRUS-1D model to provide additional confirmation of our conclusion that the residual chloride mass poses no threat to fresh water. A HYDRUS 1-D model was constructed with site specific data as detailed in Appendix E. The predicted vadose zone solute flux to ground water was used as an input to a simple ground water mixing model. Predicted chloride concentration in a hypothetical monitoring well at the down-gradient edge of the site is shown in Figure 2. The model assumes vegetation within the upper three feet of silt loam at the site and that the initial ground water chloride concentration is 161 mg/L.

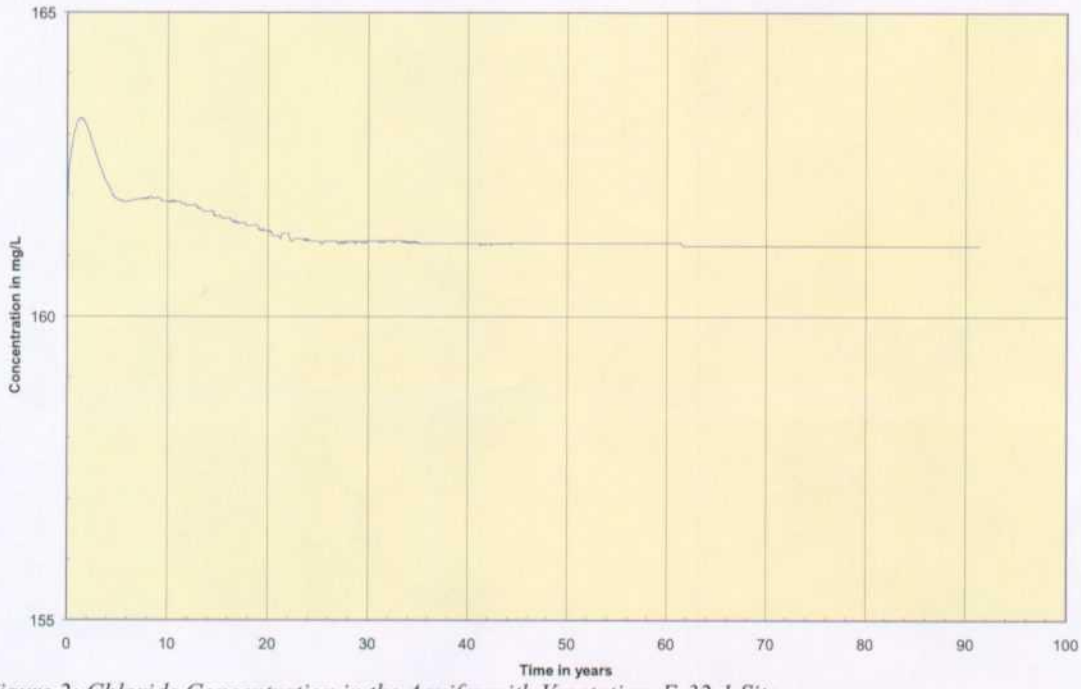


Figure 2: Chloride Concentration in the Aquifer with Vegetation, E-32-1 Site

As can be seen in Figure 2, chloride in the lower vadose zone enters ground water raising chloride concentration to 163 mg/L about two years after re-vegetation of the site. With establishment of vegetation at the site, infiltration is reduced. With "drying" out of the vadose zone soil materials, hydraulic conductivities are reduced. The resultant vadose zone chloride flux to ground water is lowered such that ground water chloride concentration does not rise above 162 mg/L after approximately 20 years (see Appendix D).

▼ 7.0 PROPOSED REMEDY

Experience at similar sites and HYDRUS-1D simulations of the conditions similar to those observed at this site support simple re-vegetation of the surface as an effective corrective action.

This Corrective Action Plan calls for two additional ground water monitoring events (to be completed in March 2007). If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.

▼ 8.0 CRITERIA FOR CLOSURE

Ground water beneath the site is below WQCC standards for the constituents of concern.

The data and HYDRUS-1D modeling shows that water contaminants in the vadose zone will not, with reasonable probability contaminate ground water or surface water in excess of the WQCC standards through leaching, percolation, or other transport mechanisms, or as the water table elevation fluctuates.

After re-vegetation of the site and two additional quarters of ground water monitoring (until March 2007) that confirm no impairment of ground water, ROC will submit a final closure report and request closure of the regulatory file for the site.

R. T. HICKS CONSULTANTS, LTD.

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

December 21, 2006

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

RE: **E-32-1 Junction Box Site (NMOCD CASE #: 1R0428-65)**
Request to Reconsider Regulation under Rule 19

Dear Wayne:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is submitting this request to exclude the above-referenced site from regulation under Rule 19 (see NMOCD letter to ROC dated December 8, 2006. Reproduced below is a portion of the Corrective Action Plan prepared for this site that supports this request.

> Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial groundwater sampling event, however all constituents of concern were below WQCC standards for the subsequent sampling events. Depth to ground water and laboratory data are summarized in the table below.

Date Sampled	Depth to Groundwater (Feet bgs)	Concentrations in mg/L		
		Chloride	TDS	BTEX
5/17/06	45.29	393	1,350	<0.001
8/14/06	45.63	134	682	<0.001
9/19/06	45.63	189	740	<0.001

> Ground water quality data obtained from recently drilled monitoring wells often show "false positives" due to conditions that can cause downward transportation of up-hole sediments and entrained constituents during drilling. Conversely, when drilling requires the introduction of fresh water for borehole stabilization, the laboratory can return "false negative" results for the initial sampling. At this site, fresh water was not introduced into the boring. The ground water sampling data strongly suggest that the initial sampling event did not provide representative ground water samples. The most recent two sampling events show that ground water quality at this site is less than WQCC Standards.

For you reference, the boring log and well completion diagram is attached to this letter. The last two quarterly ground water analyses show concentrations that are 50% less than the initial result. These findings allow us to conclude that the initial

sampling of this well produced a "false positive" analysis. Therefore, we suggest that regulation of this site under Rule 19 may not be appropriate.

In addition to re-vegetation of the ground surface, the Corrective Action Plan for this site provides the following:

> This corrective action plan calls for two additional ground water monitoring events. If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend that suggests WQCC standards will be exceeded, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.
>
> The monitoring well at this site will remain available for sampling and collection of other field data to support future investigations of other Hobbs SWD sites. When the well is of no value for characterization of other Hobbs SWD sites it will be plugged and abandoned.

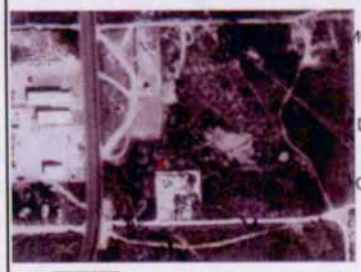
If NMOCD agrees to this request, we will submit the final CAP to NMOCD on or before January 15, 2007 on behalf of ROC. Please contact Kristin Pope of ROC if you have any questions concerning this submission.

Sincerely,
R.T Hicks Consultants, Ltd.

Randall T. Hicks
Principal

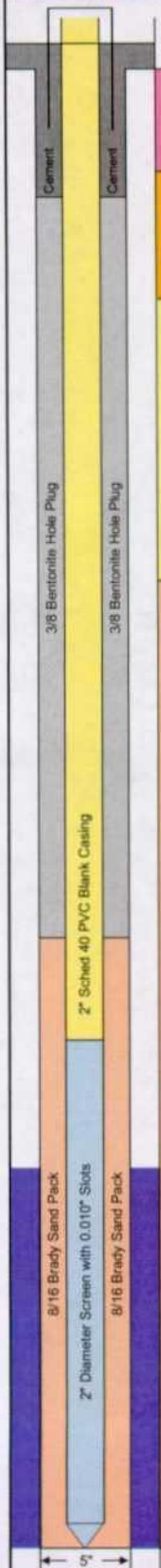
Copy: Kristin Pope, ROC
NMOCD Hobbs
Ed Hanson, NMOCD Santa Fe

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-1
SITE ID: Hobbs E-32-1 Junction Box
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow Stem Auger
START DATE: 5/4/2006
COMPLETION DATE: 5/4/2006
COMMENTS: Located immediately adjacent to former junction box location.

TOTAL DEPTH: 58 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T18S-R38E-Sec 32-Unit E
FIELD REP.: G. Van Deventer / M. Franks



USCS	Depth	Time	Sample Type	Blowcounts (blows - in)	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SM			Surface				Silty loam, moderate yellowish brown (10YR 5/4), dry.
SM/ CAL	5	0850	Split Spoon	22-12"	1204	2	Calcic sand - sandy caliche, very pale orange (10 YR 8/2), moderately hard, dry.
SS/ CAL	10	0855	Split Spoon	50 8"	2196	2	Calcic sandstone, very pale orange (10 YR 8/2) and grayish orange (10 YR 7/4), indurated, consolidated with hard quartz sandstone streaks. Sand component is fine-grained, subangular, moderately well sorted, dry.
	15	0945	Split Spoon	50 - 4"	689	2	
	20	1000	Split Spoon	32 - 12" 42 - 12"	686	2	
SW							Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted.
	25	1006	Split Spoon	50 - 5"	465	2	Light brown (5 YR 5/6) fine sand, slightly moist, unconsolidated, subangular, well sorted.
	30	1019	Split Spoon	50 - 6"	518	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
	35	1031	Split Spoon	50 - 10"	414	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
	40	1045	Split Spoon	50 - 11"	299	2	Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted, with intermittent streaks of sandstone.
	▼						Groundwater encountered at approximately 43 ft below ground surface.
	45						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted, with intermittent streaks of sandstone.
	50						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	55						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	60						Bottom of boring at 58 feet below ground surface.

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to: 12-8-06

Kristen Farris Pope
Ric Operating Company
122 West Taylor
Hobbs, NM 88240

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ✓ Marla Harrington ☐ Agent ☐ Addressee

B. Received by (Printed Name) Marla Harrington C. Date of Delivery 12/12/06

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7001 1940 0004 3929 4418

PS Form 3811, August 2001 Domestic Return Receipt 102595-01-M-2509

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

CERTIFIED MAIL
RETURN RECEIPT NO: 3929 4418

December 8, 2006

Kristen Farris Pope
Rice Operating Company
122 West Taylor
Hobbs, New Mexico 88240

RE: REQUIREMENT TO SUBMIT ABATEMENT PLAN

Dear Ms. Pope:

The New Mexico Oil Conservation Division (OCD) has determined after reviewing your Notification of Groundwater Impact for each of the following five sites:

1) Rice Hobbs SWD Jct E-32-1
Unit E, Section 32, T18S, R38E
Lea County, New Mexico
OCD Case #1R0428-65

2) Rice Vacuum Jct E-2
Unit E, Section 2, T18S, R35E
Lea County, New Mexico
OCD Case #1R0425-01

3) Rice Vacuum K-35-1 Boot
Unit K, Section 35, T17S, R35E
Lea County, New Mexico
OCD Case #1R0425-03

4) Rice N-6-1 Junction Box
Unit N, Section 6, T18S, R35E
Lea County, New Mexico
OCD Case #1R0479

5) Rice BD H-35 Emergency Overflow Pit
Unit H, Section 35, T22S, R37E
Lea County, New Mexico
OCD Case #1R0216

that the Rice Operating Company (ROC) must submit for each of the five sites a separate Stage 1 Abatement Plan in accordance with OCD Rule 19 (19.15.1.19 NMAC) to investigate the ground water contamination at each of these sites. The Stage 1 Abatement Plans must be submitted to the OCD Santa Fe Office with a copy provided to the OCD Hobbs District Office and must meet of all the requirements specified in OCD Rule 19 (19.15.1.19 NMAC), including, but not limited to, the public notice and participation requirements specified in Rule 19G. The Stage 1 Abatement Plan is due sixty (60) days from the receipt by ROC of this written notice.

ROC's Stage 1 Abatement Plans must specifically meet all of the requirements specified in OCD Rule 19E.3, including, but not limited to, a site investigation work plan and monitoring program that will enable it to characterize the release using an appropriate number of isoconcentration maps and cross sections that depict the contamination that has been released from the sites and to provide the data necessary to select and design an effective abatement option. ROC may, if it chooses, concurrently submit a Stage 2 Abatement Plan that addresses appropriate proactive abatement options.

ROC should submit one paper copy and an electronic copy on CD for each of the Plans and for all future workplans and/or reports for each of the Plans. Please be sure to include the current corresponding OCD Case # on each of the respective Abatement Plans. An Abatement Plan # will be assigned as each of the Plans are submitted to the OCD. If you have any questions, please contact Edward J. Hansen of my staff at (505) 476-3489 or mailto:edwardj.hansen@state.nm.us.

Sincerely,

Wayne Price
Environmental Bureau Chief

WP:EJH:ejh

cc: Chris Williams, OCD Hobbs District Supervisor
Larry Johnson, OCD Hobbs

RICE *Operating Company*

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

CERTIFIED MAIL
RETURN RECEIPT NO. 7005 1820 0001 6804 4370

June 21, 2006

Mr. Wayne Price
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: NOTIFICATION OF GROUNDWATER IMPACT
HOBBS E-32-1 junction box
UNIT 'E', SEC. 32, T18S, R38E

Mr. Price:

Rice Operating Company (ROC) takes this opportunity to notify the NMOCD Environmental Bureau Chief of groundwater impact in accordance with NM Rule 116. The remediation of this site may fall under NM Rule 19 procedures.

The following work at this junction box site was performed in accordance with the NMOCD-approved Investigation and Characterization Plan (ICP) submitted by R.T. Hicks Consultants (Hicks) to investigate potential groundwater impacted sites in Sections 32 and 33 of the abandoned Hobbs SWD System. A delineation soil bore was conducted on the referenced site on 5/4/2006 under the supervision of Gilbert Van Deventer of Hicks. Elevated chloride concentrations were observed throughout the depth of the bore by field tests. As outlined in the ICP, the bore hole was completed into a 2-inch diameter monitoring well. Groundwater was encountered at approximately 43 feet and the total depth of the well is 58 feet deep. The well was developed and sampled pursuant to NMOCD guidelines by Arc Environmental (Arc) of Lovington on 5/17/2006. Environmental Lab of Texas performed the analysis which confirmed the Water Quality Control Commission (WQCC) standards for chloride and Total Dissolved Solids were exceeded. Arc will continue to sample the well on a quarterly basis.

Please accept this notification for the referenced site. Should you have any questions or concerns regarding this site or submission, please do not hesitate to contact me.

RICE OPERATING COMPANY

Kristin Farris Pope

Kristin Farris Pope
Project Scientist

cc: LBG, CDH, Hicks, file

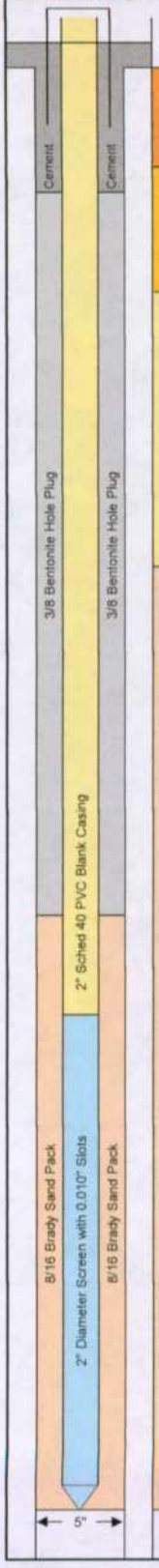
Mr. Daniel Sanchez
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

enclosures: water analysis, well log/construction diagram

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITOR WELL NO.: MW-1
SITE ID: Hobbs E-32-1 Junction Box
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow Stem Auger
START DATE: 05/04/06
COMPLETION DATE: 05/04/06
COMMENTS: Located immediately adjacent to junction box.

TOTAL DEPTH: 58 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T18S-R38E-Sec 32-Unit E
FIELD REP.: G. Van Deventer



USCS	Depth	Time	Sample Type	Blowcounts (blows - in)	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
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	60						Bottom of boring at 58 feet below ground surface.

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: Lea County

Lab Order Number: 6E18018

Report Date: 05/25/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6E18018-01	Water	05/17/06 13:15	05/18/06 12:00

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Benzene	ND	0.00100	mg/L	1	EE62101	05/21/06	05/22/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*114 %*		*80-120*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.2 %*		*80-120*	"	"	"	"	

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122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	*Reporting* Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Total Alkalinity	**250**	2.00	mg/L	1	EE62220	05/22/06	05/22/06	EPA 310.1M	
Chloride	**393**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	
Total Dissolved Solids	**1350**	5.00	"	1	EE61919	05/18/06	05/18/06	EPA 160.1	
Sulfate	**161**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	

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Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Calcium	**192**	0.500	mg/L	50	EE61926	05/19/06	05/19/06	EPA 6010B	
Magnesium	**44.2**	0.0100	"	10	"	"	"	"	
Potassium	**5.38**	0.500	"	"	"	"	"	"	
Sodium	**135**	0.500	"	50	"	"	"	"	

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Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE62101 - EPA 5030C (GC)										
Blank (EE62101-BLK1)				Prepared & Analyzed: 05/21/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.2*		*"*	*40.0*		*80.5*	*80-120*			
LCS (EE62101-BS1)				Prepared & Analyzed: 05/21/06						
Benzene	0.0415	0.00100	mg/L	0.0500		83.0	80-120			
Toluene	0.0421	0.00100	"	0.0500		84.2	80-120			
Ethylbenzene	0.0463	0.00100	"	0.0500		92.6	80-120			
Xylene (p/m)	0.102	0.00100	"	0.100		102	80-120			
Xylene (o)	0.0504	0.00100	"	0.0500		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*42.7*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.2*		*"*	*40.0*		*90.5*	*80-120*			
Calibration Check (EE62101-CCV1)				Prepared & Analyzed: 05/21/06						
Benzene	44.3		ug/l	50.0		88.6	80-120			
Toluene	44.3		"	50.0		88.6	80-120			
Ethylbenzene	55.3		"	50.0		111	80-120			
Xylene (p/m)	99.1		"	100		99.1	80-120			
Xylene (o)	49.1		"	50.0		98.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.6*		*"*	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*34.8*		*"*	*40.0*		*87.0*	*80-120*			
Matrix Spike (EE62101-MS1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0444	0.00100	mg/L	0.0500	ND	88.8	80-120			
Toluene	0.0454	0.00100	"	0.0500	ND	90.8	80-120			
Ethylbenzene	0.0488	0.00100	"	0.0500	ND	97.6	80-120			
Xylene (p/m)	0.108	0.00100	"	0.100	ND	108	80-120			
Xylene (o)	0.0531	0.00100	"	0.0500	ND	106	80-120			
Surrogate: a,a,a-Trifluorotoluene	*45.5*		*ug/l*	*40.0*		*114*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.9*		*"*	*40.0*		*92.2*	*80-120*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE62101 - EPA 5030C (GC)										
Matrix Spike Dup (EE62101-MSD1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0439	0.00100	mg/L	0.0500	ND	87.8	80-120	1.13	20	
Toluene	0.0447	0.00100	"	0.0500	ND	89.4	80-120	1.55	20	
Ethylbenzene	0.0481	0.00100	"	0.0500	ND	96.2	80-120	1.44	20	
Xylene (p/m)	0.107	0.00100	"	0.100	ND	107	80-120	0.930	20	
Xylene (o)	0.0521	0.00100	"	0.0500	ND	104	80-120	1.90	20	
Surrogate: a,a,a-Trifluorotoluene	*46.4*		*ug/l*	*40.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*33.4*		*"*	*40.0*		*83.5*	*80-120*			

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 EE61919 - Filtration Preparation										
Blank (EE61919-BLK1)				Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61919-DUP1)		**Source: 6E18012-01**		Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	1420	5.00	mg/L		1470			3.46	5	
Batch EE62205 - General Preparation (WetChem)										
Blank (EE62205-BLK1)				Prepared & Analyzed: 05/22/06						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EE62205-BS1)				Prepared & Analyzed: 05/22/06						
Sulfate	8.20		mg/L	10.0		82.0	80-120			
Chloride	10.1		"	10.0		101	80-120			
Calibration Check (EE62205-CCV1)				Prepared & Analyzed: 05/22/06						
Chloride	10.1		mg/L	10.0		101	80-120			
Sulfate	9.63		"	10.0		96.3	80-120			
Duplicate (EE62205-DUP1)		**Source: 6E18012-01**		Prepared & Analyzed: 05/22/06						
Sulfate	307	10.0	mg/L		304			0.982	20	
Chloride	343	10.0	"		344			0.291	20	
Duplicate (EE62205-DUP2)		**Source: 6E18015-01**		Prepared & Analyzed: 05/22/06						
Chloride	415	10.0	mg/L		412			0.726	20	
Sulfate	50.3	10.0	"		50.6			0.595	20	

Rice Qperating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
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Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

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 EE62205 - General Preparation (WetChem)										
Matrix Spike (EE62205-MS1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Chloride	565	10.0	mg/L	200	344	110	80-120			
Sulfate	465	10.0	"	200	304	80.5	80-120			
Matrix Spike (EE62205-MS2)	**Source: 6E18015-01**			Prepared & Analyzed: 05/22/06						
Chloride	654	10.0	mg/L	200	412	121	80-120			S-07
Sulfate	200	10.0	"	200	50.6	74.7	80-120			S-07
Batch EE62220 - General Preparation (WetChem)										
Blank (EE62220-BLK1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EE62220-BS1)				Prepared & Analyzed: 05/22/06						
Bicarbonate Alkalinity	214	2.00	mg/L	200		107	85-115			
Duplicate (EE62220-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Total Alkalinity	279	2.00	mg/L		280			0.358	20	
Reference (EE62220-SRM1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	96.0		mg/L	100		96.0	90-110			

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Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Total Metals 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 EE61926 - 6010B/No Digestion										
Blank (EE61926-BLK1)				Prepared & Analyzed: 05/19/06						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EE61926-CCV1)				Prepared & Analyzed: 05/19/06						
Calcium	2.30		mg/L	2.00		115	85-115			
Magnesium	2.21		"	2.00		110	85-115			
Potassium	1.80		"	2.00		90.0	85-115			
Sodium	1.81		"	2.00		90.5	85-115			
Duplicate (EE61926-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/19/06						
Calcium	111	0.500	mg/L		111			0.00	20	
Magnesium	58.3	0.0100	"		56.5			3.14	20	
Potassium	12.2	0.500	"		12.9			5.58	20	
Sodium	266	0.500	"		271			1.86	20	

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Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
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: 5/25/2006

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 Pope kpope@riceswd.com
Project Name: Hobbs Jct. E-32-1
Company Name: RICE Operating Company
Project #:
Company Address: 122 W. Taylor Street
Project Loc: Lea County
City/State/Zip: Hobbs, New Mexico 88240
PO #:
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (2) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: TPH: 418.1 8015M 1006 1006	TOTAL: TPH: 418.1 8015M 1006 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	BTEX 8021B/5030	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
6E18018																	X							X			X					
-01	Monitor Well #1	5/17/2006	13:15	3	X		2			1		X					X	X						X			X					X

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com & mfranks@riceswd.com

Sample Containers Intact? (Y) N
Labels on container? (Y) N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 1.0°C not frozen

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	5/18/06	6:02	James Johnson	5/18/06	6:03
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
James Johnson	5/18/06	12:00	Roland K.	5-18-06	1200

Laboratory Comments:

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

ient: Rice Operating Co.

ate/Time: 05-18-06 @ 1200

rder #: 6E18018

itials: JMM

Sample Receipt Checklist

mperature of container/cooler?	(Yes)	No	1.0 C
ipping container/cooler in good condition?	(Yes)	No	
stody Seals intact on shipping container/cooler?	(Yes)	No	Not present
stody Seals intact on sample bottles?	(Yes)	No	Not present
ain of custody present?	(Yes)	No	
mple Instructions complete on Chain of Custody?	(Yes)	No	
ain of Custody signed when relinquished and received?	(Yes)	No	
ain of custody agrees with sample label(s)	(Yes)	No	
ntainer labels legible and intact?	(Yes)	No	
mple Matrix and properties same as on chain of custody?	(Yes)	No	
mples in proper container/bottle?	(Yes)	No	
mples properly preserved?	(Yes)	No	
mple bottles intact?	(Yes)	No	
eservations documented on Chain of Custody?	(Yes)	No	
ntainers documented on Chain of Custody?	(Yes)	No	
fficient sample amount for indicated test?	(Yes)	No	
l samples received within sufficient hold time?	(Yes)	No	
OC samples have zero headspace?	(Yes)	No	Not Applicable

ther observations:

Variance Documentation:

ontact Person: - Date/Time: Contacted by:

egarding:

orrective Action Taken: