1R - 428-71

Stage 1 AP

WORKPLANS

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September 11, 2008

Hobbs E-4 Junction Box
NMOCD Case #: 1R428-71

Stage 1 Abatement Plan

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Katie Lee

From: Katie Lee [katie@rthicksconsult.com]
Sent: Thursday, September 11, 2008 12:18 PM
To: Edward J. EMNRD Hansen (edwardj.hansen@state.nm.us); Wayne Price (wayne.price@state.nm.us)
Cc: Hack Conder (hconder@riceswd.com); Marvin Burrows; 'Dale Littlejohn' (dale@rthicksconsult.com); Randall Hicks (Randall Hicks)
Subject: Hobbs E-4 NMOCD #1R428-71

Mr. Hansen,

On behalf of Rice Operating Company, R.T. Hicks Consultants is pleased to submit the attached Stage 1 Abatement Plan for the Hobbs E-4 Junction Box Site, NMOCD Case #1R428-71. A hard copy and a cd containing an electronic copy will follow via FedEx. This Stage 1 Abatement Plan is being submitted in response to Wayne Price's letter dated August 12, 2008 to Hack Conder requesting a Stage 1 Abatement Plan for this site.

As always, if you have any questions, please do not hesitate to contact us at our office in Albuquerque, or Hack Conder at the Rice office in Hobbs.

Best regards,

Katie Lee
Project Scientist
R.T. Hicks Consultants, Ltd.
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September 11, 2008

Hobbs E-4 Junction Box
NMOCD Case #: 1R428-71

Stage 1 Abatement Plan

prepared for:

Rice Operating Company
122 West Taylor
Hobbs, NM 88240

R.T. Hicks Consultants, Ltd.

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

1.0 Data Summary

The Rice Operating Company (ROC) retained R.T. Hicks Consultants, Ltd. (Hicks Consultants) to address potential environmental concerns at the inactive Hobbs Salt Water Disposal System "E-4" junction box site located at T19S-R38E-Section 4, Unit Letter E (latitude North 32° 41' 26.0", longitude West 103° 09' 27.8").

Presently the soil below the former junction box area has been excavated and sampled to a depth of approximately 15 feet below ground surface (bgs). Eight additional 12-foot deep sampling trenches were excavated within 15-feet of the initial excavation. Five soil borings were drilled for characterization and one monitoring well was installed down gradient, all within 60 feet of the original excavation. These corrective actions were performed pursuant to the NMOCD approved April 13, 2007 Investigation Characterization Plan (ICP). Characterization of the soil and ground water performed to date indicate the following:

1. Soil in the vadose zone at the site is part of the Tertiary Ogallala formation. It consists of approximately 21 feet of grayish white, generally soft caliche and silt overlying fine to medium grained, well sorted sand, interbedded with sandstone and quartzite.

2. Hydrocarbons in the soil were identified by field screening from approximately 4 feet bgs to the ground water depth within 30 to 40 feet of the E-4 site. Select soil samples were submitted for laboratory analyses for Volatile Organic Constituents (VOCs). The maximum concentrations were observed in a sample taken from the source area soil boring (SB-1) at a depth of 25 to 27 feet (3.8 mg/kg benzene and 98 mg/kg total BTEX, laboratory analysis).

3. Concentrations of chloride greater than 1,000 mg/kg are present in the vadose zone soils from 5 to 10 feet surrounding the site to a maximum depth of 15 feet bgs based on field screening results. The highest chloride concentration measured in the laboratory (800 mg/kg) was from a sample taken 5 feet west of the former junction box at a depth of 12 feet bgs.

4. Shallow ground water (Ogallala aquifer) is located at approximately 35 feet bgs. The site ground water gradient has not yet been established but the regional ground water gradient is 0.002 ft/ft to the southeast. The saturated hydraulic conductivity of the aquifer at the site is approximately 50 to 100 ft/day and the background water quality is about 80 to 100 mg/L chloride.

5. Ground water below the E-4 site has been impacted by hydrocarbons based on samples recovered from MW-1 which is located 30 feet to the southeast of the former junction box. The maximum concentrations observed contain 2.9 mg/L benzene and 9.0 mg/L total BTEX. Chloride concentrations in the ground water do not exceed background levels.

6. Presently, it is assumed by ROC that the impact to the ground water is the result of a release from the E-4 junction box, although the Hobbs SWD system did not historically include hydrocarbon transmission. Other potential source areas in the area will continue to be investigated as the site characterization continues.

2.0 Recommended Actions

ROC and Hicks Consultants recommend that a sufficient number of additional monitoring wells be installed in the area surrounding the site to fully delineate the horizontal extent of the hydrocarbon-impacted ground water. Once delineated, ground water monitoring will be conducted on a quarterly bases for 2 years to determine the plume stability relative to potential receptors. The first annual ground water monitoring report will be prepared and submitted following the spring 2009 sampling event. Recommendations for further corrective actions or remediation will be provided in a Stage 2 Abatement Plan based on the results of the ground water monitoring program.

3.0 Chronology of Events

11-25-02: The Hobbs SWD E-4 junction box was removed and a 10' x 12' x 15' deep pit was excavated to characterize the underlying soil. Soil samples from the pit were recovered for field screening of chloride and hydrocarbons but the horizontal and vertical extent of impacted soil was not determined.

04-13-07: An ICP was submitted to the New Mexico Oil Conservation Division by Hicks Consultants on behalf of ROC, which proposed the excavation of soil sampling trenches surrounding the former junction box area to better characterize the extent of hydrocarbon- or chloride-impacted soil.

07-18-07: The April 13, 2007 ICP was approved by the NMOCD.

08-30-07: Eight 12-foot deep sampling trenches were excavated from 5 to 15 feet from the original excavation. Field screening of the samples delineated the horizontal extent of the chloride-impacted soil to less than 1,000 mg/kg, but did not delineate the vertical extent of the chloride-impacted soil or the extent of hydrocarbon-impacted soil.

02-18-08: A soil boring (SB-1) was advanced to the capillary fringe depth at the location of the original excavation. Field screening of the soil samples indicated that chloride-impacted soil greater than 250 mg/kg was not present below a depth of 30 feet; however, hydrocarbon-impacted soil was present to the ground water depth. A monitoring well (MW-1) was installed 30 feet southeast of SB-1 to characterize the ground water impact.

03-07-08: Ground water monitoring commenced at MW-1 and continues on a quarterly basis. Presently; the concentrations of benzene, toluene, ethylbenzene, and total xylenes exceed the New Mexico Water Quality Standards (NMWQS). Concentrations of chloride and TDS did not exceed the NMWQS.

05-19-08: A ground water sample was recovered from a water well (former windmill) located 225 feet west of MW-1. Laboratory analyses indicated that all BTEX concentrations were below the 0.002 method detection limit. The chloride and TDS concentrations were 84 mg/L and 396 mg/L respectively.

05-23-08: A Notification of Groundwater Impact letter was sent to Mr. Wayne Price of the OCD by ROC.

07-01-08: Soil borings SB-2, SB-3, SB-4, and SB-5 were installed to the west, north, and east of the former junction box site to investigate the potential for a hydrocarbon release from one of the adjacent pipelines. The results of the soil borings indicate that the hydrocarbon-impacted soil appears to be limited to the area near the former E-4 junction box.

08-12-08: A request for a Stage 1 Abatement Plan was sent to ROC by the OCD in response to the May 23, 2008 Notification of Groundwater Impact letter.

4.0 Stage 1 Abatement Plan

4.1 Site Description, Location, and History – Plates 1 and 2

The ROC Hobbs SWD Pipeline System was installed in 1959 and the Hobbs E-4 junction box was added in 1974 to provide control access to the buried pipeline from the surface. The system was utilized by a cooperative of area oil and gas production companies to transport waste water for disposal. The Hobbs system has been out of service since 2002.

Plate 1 shows the location of the site relative to the city of Hobbs on a USGS topographic base map. To reach the E-4 site from the intersection of Stanolind Road and Grimes in Hobbs, go west on Stanolind Road 0.5 miles, turn north on a lease road and travel 0.6 miles. The site is located approximately 80 feet to the south of the lease road.

Plate 2 is a series of aerial photographs that indicate the location of the E-4 site relative to the surrounding oil and gas production operations and livestock activities from 1954 to the present. Of particular concern is a series of tanks located across the lease road to the north approximately 150 feet from the present-day Hobbs E-4 site.

The field investigations performed to date did not identify any potential receptors (human or livestock) that may be in danger of impact from the E-4 release.

4.2 Regional Geology and Hydrogeology – Plates 3 and 4, and Tables 1 and 2

Information from water wells located within a one-mile radius of the site was provided digitally by the Office of the State Engineer (OSE) as shown on Plate 3 and Table 1. Published documents were utilized to determine the regional geology, hydrogeology, and background water quality.

The Hobbs E-4 site is located in the High Plains geographic area, approximately six miles north of what remains of the eroded Mescalero Ridge. The surface is uniformly flat and slopes to the southeast. Drainage is discontinuous and most rainfall runoff collects in one of several shallow playa lakes, one of which is located less than 500 feet to the east of the site.

Rocks exposed at the surface are petrocalcic (caliche) soils of the Tertiary Ogallala formation which are approximately 20 feet thick at the site. Underlying the surface caliche is a fine to medium grained, well sorted calcareous sand that contains interbedded clay and silt and is approximately 140 feet thick. The base of the Ogallala formation is characterized by a gravel unit, which marks an unconformity with the underlying Triassic red shale of the Dockum Group (Nicholson and Clebsch, 1961).

Estimates of the hydraulic conductivity of the Ogallala Aquifer in the Hobbs area range from 51 - 75 ft/day (McAda and Hart, 1984) to 81-100 ft/day (Masharrafieh and Chudnoff, 1999). These values appear consistent with the lithology-based estimates for a generally clean sand aquifer as observed in MW-1 (Fetter, 1988). In our opinion, the saturated hydraulic conductivity at the E-4 site is within the range of 50-100 ft/day.

Depth to Ground Water	Hydraulic Gradient	Hydraulic Conductivity	Saturated Thickness	TDS	Chloride
32 to 56 feet	0.002 SE	50-100 ft/day	125 feet	<400 mg/L	<90 mg/L

Table 2: Selected Characteristics of Regional Aquifer

According to the state well records, most of the area water wells encountered the Ogallala water level between 32 feet (northwest of the site) to 56 feet (southeast of the site), although few of these wells could be accessed (or located) to verify fluid levels and depths. Published information regarding the Ogallala aquifer indicates that the regional ground water gradient is to the southeast. Plate 4 shows the potentiometric surface of the aquifer based upon available regional data from 1996. More recent ROC data was also examined which supports the historic regional ground water gradient and direction.

The chemical quality of the Ogallala ground water is reasonably good. Based on published data and a ground water sample recovered from a well located approximately 225 feet west

of the site, the background water contains less than 400 mg/L total dissolved solids (TDS) and chloride concentrations less than 90 mg/L.

4.4 Site Characteristics and Impacted Media

4.4.1 Vadose Zone Assessment – Plates 5 and 6, Appendices A and B

On November 25, 2002, following the removal of the junction box, a 10 ft x 12 ft excavation was advanced by ROC to a depth of 15 feet bgs in an attempt to characterize the hydrocarbon- and chloride-impacted soil. The results of the field screening indicated that the impacted soil extended beyond the reach of the excavator.

An ICP was submitted to the NMOCD on April 13, 2007 and approved on July 18, 2007. From August 30 to September 5, 2007 a series of eight 12-foot delineation sample trenches were installed by ROC surrounding the original excavation. Plate 5 is a site map that indicates the locations of the original excavation and the sampling trenches, annotated with the field screening and laboratory verification soil sample results. Generally, the excavations and sampling conducted at the E-4 site to this point delineated the horizontal extent of the chloride-impacted soil to less than 1,000 mg/kg. Complete delineation of the horizontal extent of the hydrocarbon-impacted soil and the vertical extent of the hydrocarbon- and chloride-impacted soil was not achieved. All of the excavations and sampling trenches were backfilled with the removed soil.

On February 18, 2008, a soil boring (SB-1) was drilled by ROC and Hicks Consultants at the location of the former junction box to determine the vertical extent of the hydrocarbon- and chloride-impacted soil. The soil field screening results indicate that the chloride concentrations decreased to less than 250 mg/kg at a depth of 30 feet bgs. Hydrocarbon concentrations remained greater than 600 ppm (PID) to the capillary fringe. Based on the results from SB-1, monitoring well MW-1 was installed 30 feet to the south-southeast to characterize the ground water.

Four additional soil borings were drilled by ROC and Hicks Consultants on July 1, 2008 to investigate the other area pipelines for a potential release and complete the horizontal delineation of hydrocarbon-impacted soil. Plate 6 provides a summary of the soil boring and monitoring well installation results. Lithologic and completion logs for the soil borings and monitoring well are provided in Appendix A and all of the soil and ground water laboratory reports are provided in Appendix B.

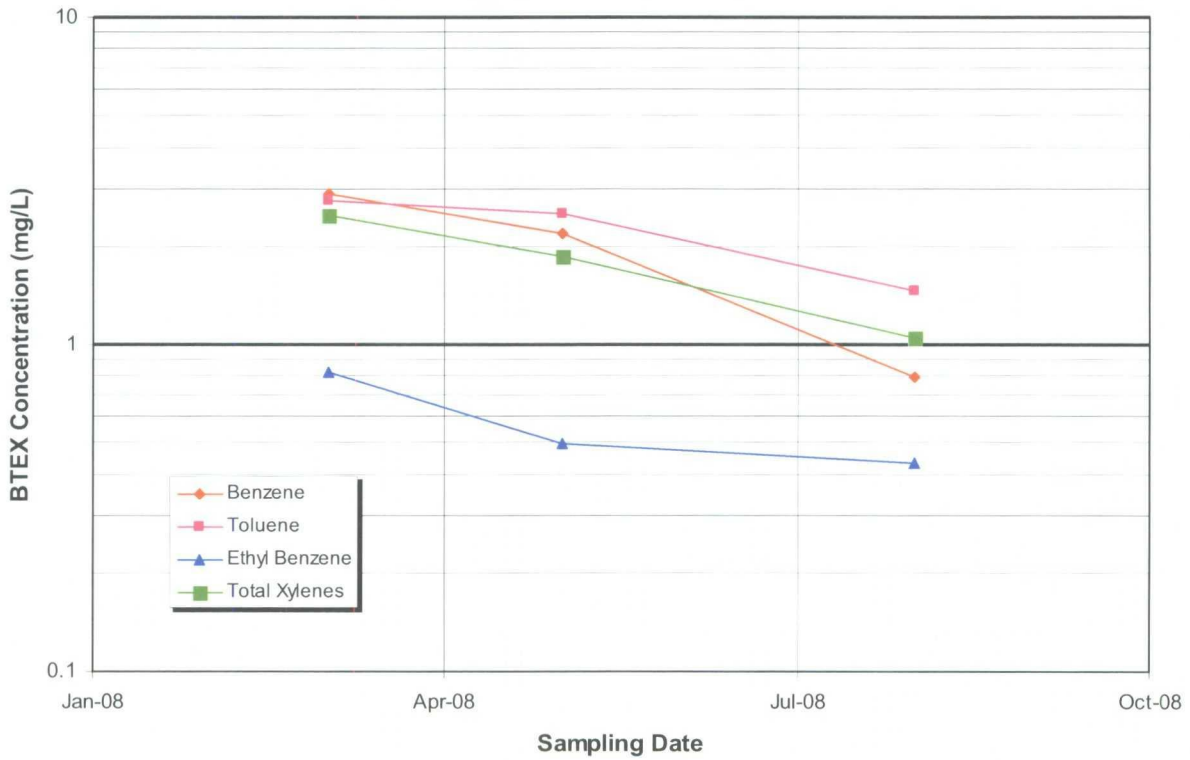
4.4.2 Ground water Assessment – Plates 6 and Figure 1

MW-1 was completed with 4-inch PVC casing with 0.01-inch slotted screens placed from 26 to 46 feet bgs as shown in Appendix A. Three quarterly water samples were recovered from MW-1 on March 7, May 2, and August 8, 2008 by an ROC contractor. In addition a ground

water sample was recovered on May 19, 2008 from an out of service water well located 225 feet west of MW-1 in order to establish the background water quality of the site. The laboratory data from these sampling events are provided with the soil boring monitoring well installation results on Plate 6.

The results of the ground water sampling indicate that the concentrations of benzene, toluene, and total xylenes at the Hobbs E-4 site exceed the NMWQS; however, the levels have decreased over the first three sampling events as shown in Figure 1 below. Concentrations of chloride and TDS in the ground water from MW-1 are less than the ground water standards.

Figure 1
Hobbs E-4 Ground Water Monitoring Results



4.4.3 Further Corrective Actions – Plate 7

In late 2008, ROC and Hicks Consultants will install at least three additional monitoring wells to complete the delineation of the hydrocarbon-impacted ground water plume as shown on Plate 7.

Quarterly ground water monitoring will continue to determine the extent and magnitude of ground water impact and the rate of natural attenuation. The first annual ground water monitoring report will be prepared and submitted following the spring 2009 sampling event. Information from the ground water monitoring program will be utilized to prepare a Stage 2 Abatement Plan to address any further environmental concerns or proposed remedial actions.

5.0 Quality Assurance / Quality Control

Sampling and analytical procedures shall be performed in accordance with Title 20 NMAC 6.3107.B and Section 903 of the Water Quality Standards for Interstate Streams in New Mexico (20 NMAC 6.1). Quality procedures for characterization are included in Appendix C.

6.0 References Sited

Fetter, C. W. 1988. *Applied Hydrogeology – 2nd Edition*, Macmillan Publishing Company, pp. 80.

McAda, D. P, Hart Jr. D. L. 1985. *Geohydrology of the High Plains Aquifer in Southeastern New Mexico*, Hydrologic Investigations Atlas HA-679, US Geological Survey

Masharrafieh, G, and Chudnoff, M. 1999 *Numerical Simulation of Groundwater Flow for Water Rights Administration in the Lea County Underground Water Basin New Mexico*, Technical Report 99-1, New Mexico Office of the State Engineer

Nicholson, A. Jr., Clebsch Jr., A. 1961. *Geology and Ground-Water Conditions in Southern Lea County, New Mexico*, Ground-Water Report 6, State Bureau of Mines and Mineral Resources, New Mexico Institute of Mining & Technology, Socorro, New Mexico

Scholle, P. A. 2003. Geologic Map of New Mexico, New Mexico Bureau of Geology and Mineral Resources, New Mexico Institute of Mining & Technology

Plates and Table 1

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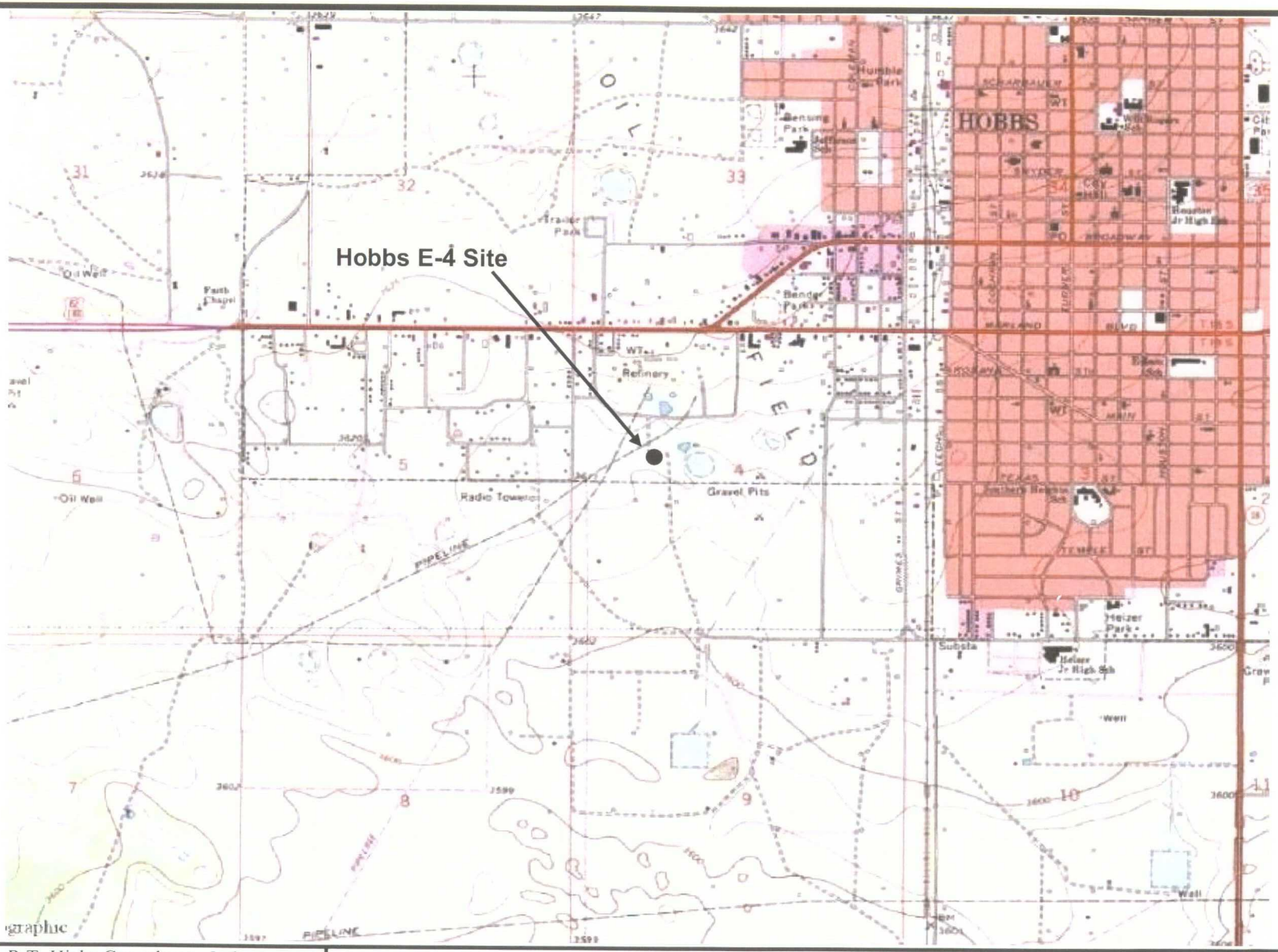
Albuquerque, NM 87104



R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	Site Location Map	Plate 1
	Rice Operating Company - Hobbs E-4 Site	July 2008

R.T. Hicks Consultants, Ltd
PO Box 7624
Midland, Texas 79708
Ph: 432.528-3878

1954 Aerial Photograph

Plate 2A

Rice Operating Company - Hobbs E-4 Site

July 2008

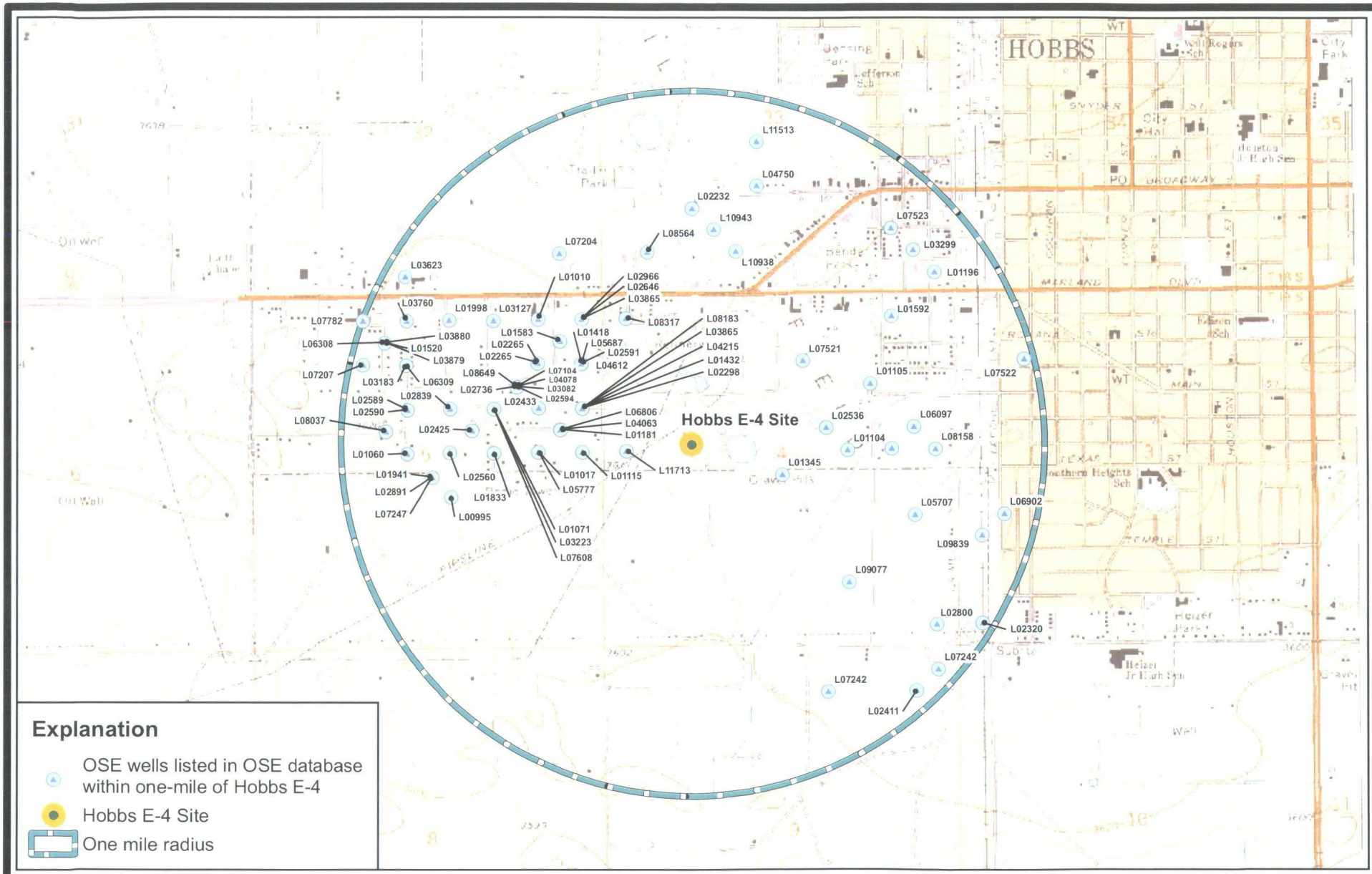
R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	1967 Aerial Photograph	Plate 2B
	Rice Operating Company - Hobbs E-4 Site	July 2008

R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	1977 Aerial Photograph	Plate 2C
	Rice Operating Company - Hobbs E-4 Site	July 2008

R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	1986 Aerial Photograph	Plate 2D
	Rice Operating Company - Hobbs E-4 Site	July 2008

R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	1997 Aerial Photograph	Plate 2E
	Rice Operating Company - Hobbs E-4 Site	July 2008

R.T. Hicks Consultants, Ltd PO Box 7624 Midland, Texas 79708 Ph: 432.528-3878	Current Satellite Image	Plate 2F
	Rice Operating Company - Hobbs E-4 Site	July 2008



Explanation

- OSE wells listed in OSE database within one-mile of Hobbs E-4
- Hobbs E-4 Site
- One mile radius

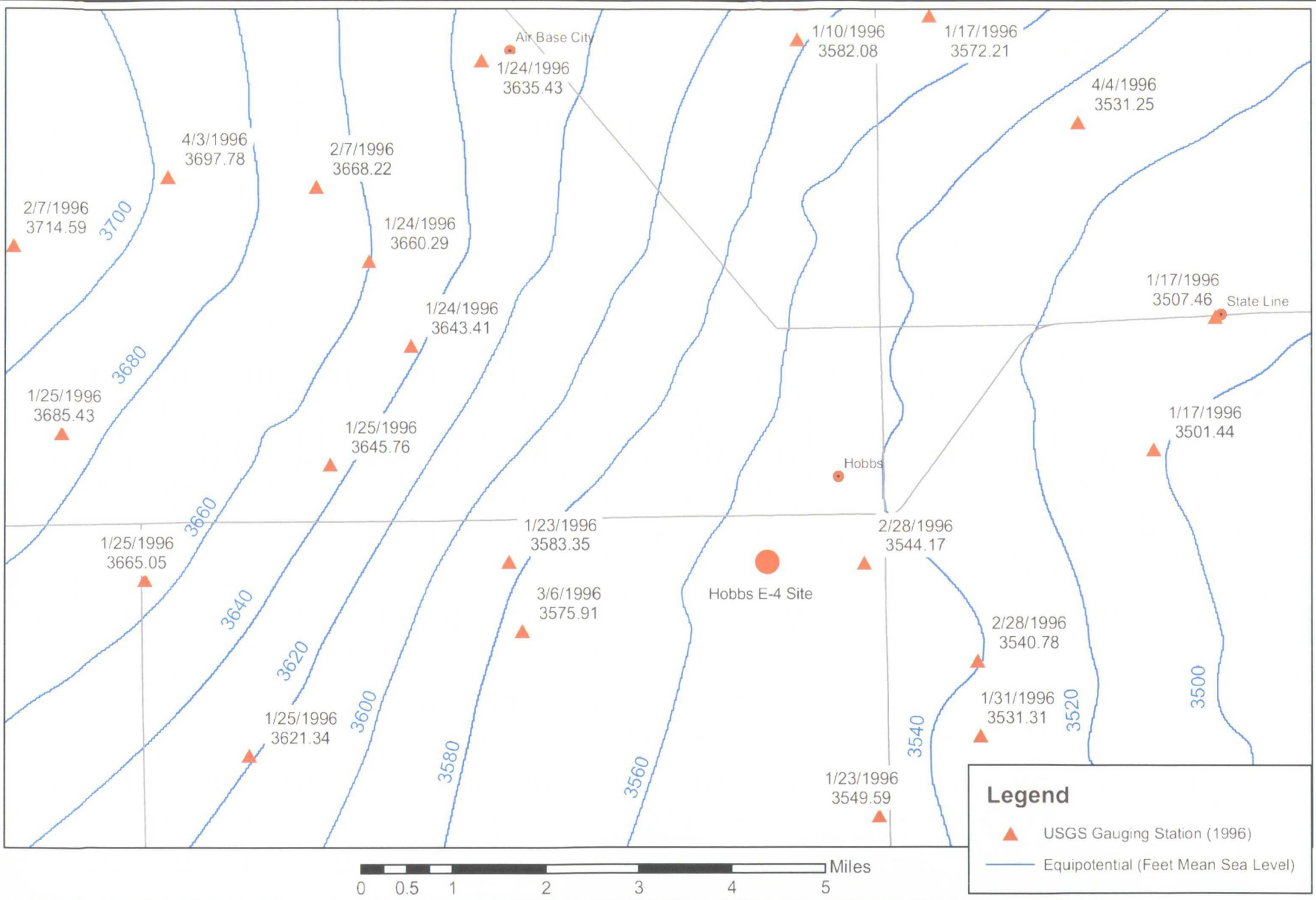
N W E S

0 1,000 2,000 Feet

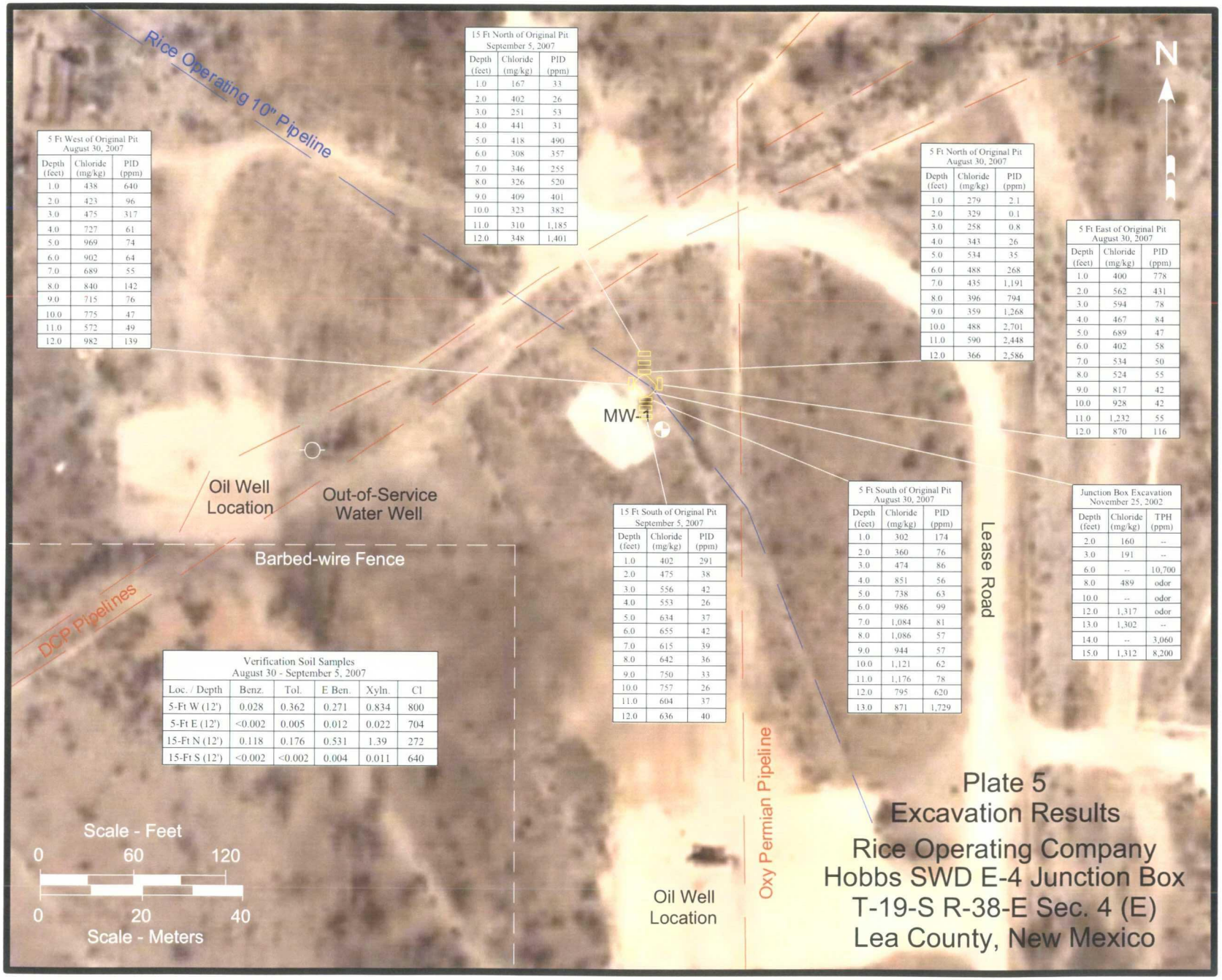
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Water Wells Listed in the NM Office of the State Engineer Database	Plate 3
	Rice Operating Company: Hobbs E-4 Site	September 2008

9/9/2008

S:/PROJECTS/ROC/HOBBS_E4/PLATES/OSE_1MILE.MXD



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	1996 Regional Potentiometric Surface (USGS) Rice Operating Company: Hobbs SWD System	Plate 4 September 2008



5 Ft West of Original Pit
August 30, 2007

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	438	640
2.0	423	96
3.0	475	317
4.0	727	61
5.0	969	74
6.0	902	64
7.0	689	55
8.0	840	142
9.0	715	76
10.0	775	47
11.0	572	49
12.0	982	139

15 Ft North of Original Pit
September 5, 2007

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	167	33
2.0	402	26
3.0	251	53
4.0	441	31
5.0	418	490
6.0	308	357
7.0	346	255
8.0	326	520
9.0	409	401
10.0	323	382
11.0	310	1,185
12.0	348	1,401

5 Ft North of Original Pit
August 30, 2007

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	279	2.1
2.0	329	0.1
3.0	258	0.8
4.0	343	26
5.0	534	35
6.0	488	268
7.0	435	1,191
8.0	396	794
9.0	359	1,268
10.0	488	2,701
11.0	590	2,448
12.0	366	2,586

5 Ft East of Original Pit
August 30, 2007

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	400	778
2.0	562	431
3.0	594	78
4.0	467	84
5.0	689	47
6.0	402	58
7.0	534	50
8.0	524	55
9.0	817	42
10.0	928	42
11.0	1,232	55
12.0	870	116

15 Ft South of Original Pit
September 5, 2007

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	402	291
2.0	475	38
3.0	556	42
4.0	553	26
5.0	634	37
6.0	655	42
7.0	615	39
8.0	642	36
9.0	750	33
10.0	757	26
11.0	604	37
12.0	636	40

5 Ft South of Original Pit
August 30, 2007

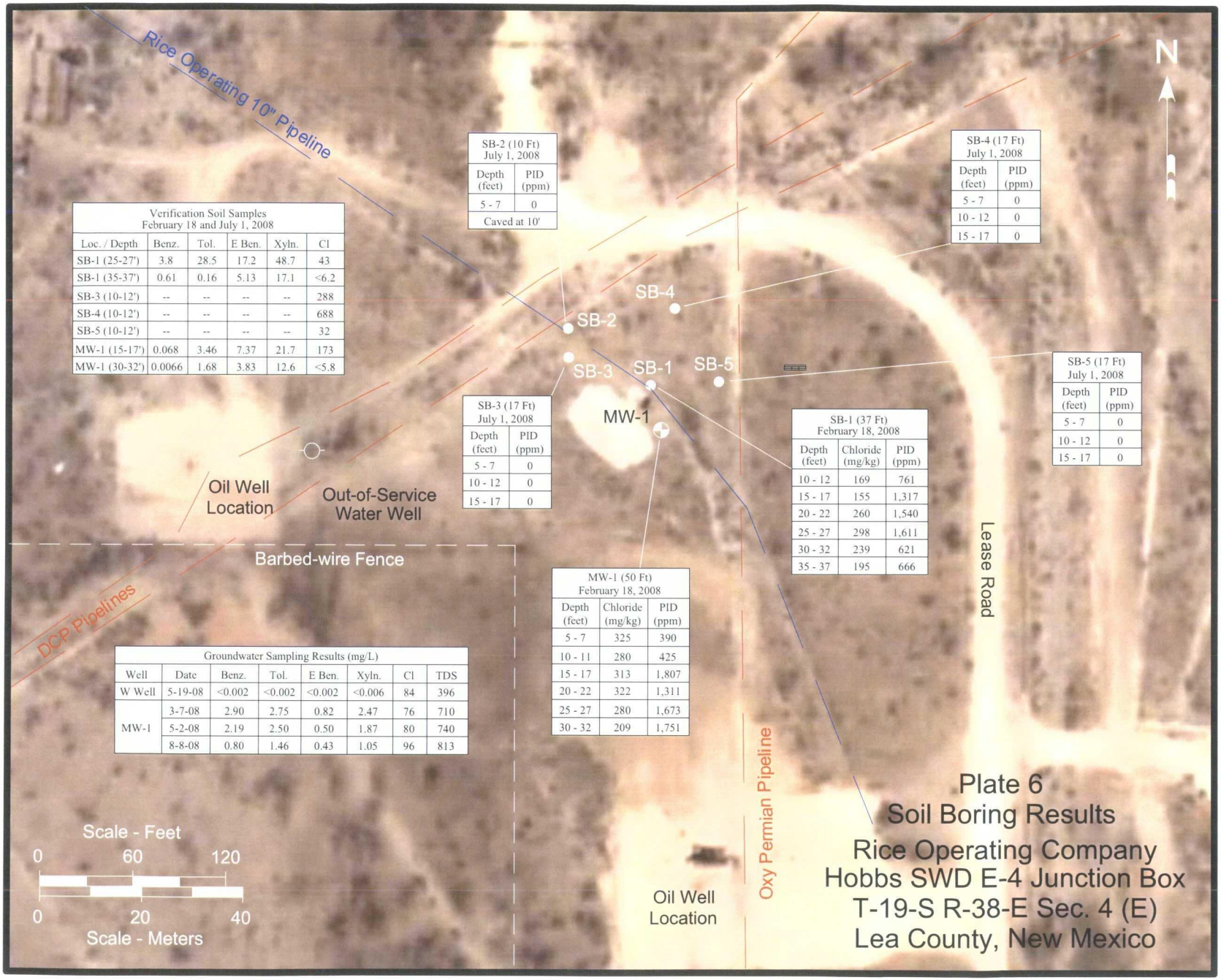
Depth (feet)	Chloride (mg/kg)	PID (ppm)
1.0	302	174
2.0	360	76
3.0	474	86
4.0	851	56
5.0	738	63
6.0	986	99
7.0	1,084	81
8.0	1,086	57
9.0	944	57
10.0	1,121	62
11.0	1,176	78
12.0	795	620
13.0	871	1,729

Junction Box Excavation
November 25, 2002

Depth (feet)	Chloride (mg/kg)	TPH (ppm)
2.0	160	--
3.0	191	--
6.0	--	10,700
8.0	489	odor
10.0	--	odor
12.0	1,317	odor
13.0	1,302	--
14.0	--	3,060
15.0	1,312	8,200

Verification Soil Samples
August 30 - September 5, 2007

Loc. / Depth	Benz.	Tol.	E Ben.	Xyln.	Cl
5-Ft W (12')	0.028	0.362	0.271	0.834	800
5-Ft E (12')	<0.002	0.005	0.012	0.022	704
15-Ft N (12')	0.118	0.176	0.531	1.39	272
15-Ft S (12')	<0.002	<0.002	0.004	0.011	640


Rice Operating 10" Pipeline
N
SB-2 (10 Ft)
July 1, 2008
Depth (feet) | PID (ppm)
5 - 7 | 0
Caved at 10'
SB-4 (17 Ft)
July 1, 2008
Depth (feet) | PID (ppm)
5 - 7 | 0
10 - 12 | 0
15 - 17 | 0
Verification Soil Samples
February 18 and July 1, 2008
Loc. / Depth | Benz. | Tol. | E Ben. | Xyln. | Cl
SB-1 (25-27') | 3.8 | 28.5 | 17.2 | 48.7 | 43
SB-1 (35-37') | 0.61 | 0.16 | 5.13 | 17.1 | <6.2
SB-3 (10-12') | -- | -- | -- | -- | 288
SB-4 (10-12') | -- | -- | -- | -- | 688
SB-5 (10-12') | -- | -- | -- | -- | 32
MW-1 (15-17') | 0.068 | 3.46 | 7.37 | 21.7 | 173
MW-1 (30-32') | 0.0066 | 1.68 | 3.83 | 12.6 | <5.8
SB-4
SB-2
SB-3
SB-1
SB-5
MW-1
SB-5 (17 Ft)
July 1, 2008
Depth (feet) | PID (ppm)
5 - 7 | 0
10 - 12 | 0
15 - 17 | 0
SB-3 (17 Ft)
July 1, 2008
Depth (feet) | PID (ppm)
5 - 7 | 0
10 - 12 | 0
15 - 17 | 0
SB-1 (37 Ft)
February 18, 2008
Depth (feet) | Chloride (mg/kg) | PID (ppm)
10 - 12 | 169 | 761
15 - 17 | 155 | 1,317
20 - 22 | 260 | 1,540
25 - 27 | 298 | 1,611
30 - 32 | 239 | 621
35 - 37 | 195 | 666
Oil Well Location
Out-of-Service Water Well
Barbed-wire Fence
Lease Road
DCP Pipelines
MW-1 (50 Ft)
February 18, 2008
Depth (feet) | Chloride (mg/kg) | PID (ppm)
5 - 7 | 325 | 390
10 - 11 | 280 | 425
15 - 17 | 313 | 1,807
20 - 22 | 322 | 1,311
25 - 27 | 280 | 1,673
30 - 32 | 209 | 1,751
Groundwater Sampling Results (mg/L)
Well | Date | Benz. | Tol. | E Ben. | Xyln. | Cl | TDS
W Well | 5-19-08 | <0.002 | <0.002 | <0.002 | <0.006 | 84 | 396
MW-1 | 3-7-08 | 2.90 | 2.75 | 0.82 | 2.47 | 76 | 710
MW-1 | 5-2-08 | 2.19 | 2.50 | 0.50 | 1.87 | 80 | 740
MW-1 | 8-8-08 | 0.80 | 1.46 | 0.43 | 1.05 | 96 | 813
Scale - Feet
0 60 120
0 20 40
Scale - Meters
Oil Well Location
Oxy Permian Pipeline
Plate 6
Soil Boring Results
Rice Operating Company
Hobbs SWD E-4 Junction Box
T-19-S R-38-E Sec. 4 (E)
Lea County, New Mexico


Rice Operating 10" Pipeline
Proposed Monitoring Well
N
Contingency Monitoring Well
MW-1
Oil Well Location
Out-of-Service Water Well
Barbed-wire Fence
DCP Pipelines
Lease Road
Proposed Monitoring Wells
Contingency Monitoring Well
Oxy Permian Pipeline
Oil Well Location
Scale - Feet
0 60 120
0 20 40
Scale - Meters
Plate 7
Proposed
Monitoring Wells
Rice Operating Company
Hobbs SWD E-4 Junction Box
T-19-S R-38-E Sec. 4 (E)
Lea County, New Mexico

Table 1

NMOSE Listed Water Wells (1-mile Radius of Site)

Well Number	Well Use	Well Location tws	rng	sec	Unit	Completion Date	Well Depth	Water Depth	Datum Elevation
L-00995	DOM	19S	38E	5	J	6/10/50	62	26	3615.45
L-01010	DOM	19S	38E	5	A	7/18/55	95	45	3622.01
L-01017	DOM	19S	38E	5	H	7/7/50	63	0	3612.17
L-01060	DOM	19S	38E	5	F	2/12/51	50	30	3618.73
L-01071	DOM	19S	38E	5	G	2/23/51	65	30	3618.73
L-01104	DOM	19S	38E	4	G	6/23/51	60	33	3612.17
L-01105	DOM	19S	38E	4	NE/4	4/5/52	80	45	3615.45
L-01115	DOM	19S	38E	5	H	6/3/51	61	0	3612.17
L-01181	DOM	19S	38E	5	H	8/8/51	87	26	3612.17
L-01196	DOM	18S	38E	33	P	8/18/51	100	56	3622.01
L-01345	DOM	19S	38E	4		2/7/52	76	56	3607.51
L-01418	DOM	19S	38E	5	A	6/18/52	77	37	3618.73
L-01432	DOM	19S	38E	5	H	6/16/52	75	37	3615.45
L-01520	DOM	19S	38E	5	C	9/14/52	100	30	3625.30
L-01583	DOM	19S	38E	5	A	11/3/52	65	30	3622.01
L-01592	DOM	19S	38E	4	A	10/20/52	82	50	3622.01
L-01833	DOM	19S	38E	5	G	2/7/53	66	28	3615.45
L-01941	DOM	19S	38E	5		3/15/53	145	28	3618.73
L-01998	DOM	19S	38E	5	B	2/26/53	100	50	3622.01
L-02232	DOM	18S	38E	33	SW/4	6/23/53	112	56	3635.14
L-02265	DOM	19S	38E	5	A	5/26/53	50	50	3618.73
L-02265	DOM	19S	38E	5	A	5/26/53	50	50	3618.73
L-02298	DOM	19S	38E	5	H	4/2/54	63	30	3615.45
L-02320	DOM	19S	38E	3	M	8/29/53	65	40	3608.89
L-02411	DOM	19S	38E	9	A	5/31/54	92	44	3605.61
L-02425	DOM	19S	38E	5	G	6/11/56	80	40	3618.73
L-02433	DOM	19S	38E	5	H	1/2/54	60	30	3615.45
L-02536	PRO	19S	38E	4	G	4/28/54	96	42	3608.89
L-02560	DOM	19S	38E	5	G	5/28/54	60	34	3618.73
L-02589	DOM	19S	38E	5	F	9/16/54	105	0	3618.73
L-02590	DOM	19S	38E	5	F	7/25/54	60	30	3618.73
L-02591	DOM	19S	38E	5	A	6/20/54	85	40	3618.73
L-02594	DOM	19S	38E	5	NE/4	7/27/54	115	65	3618.73
L-02646	DOM	19S	38E	5	A	9/18/54	80	35	3622.01
L-02736	DOM	19S	38E	5	NE/4	7/27/56	100	35	3618.73
L-02800	DOM	19S	38E	4	P	4/14/55	85	40	3608.89
L-02839	DOM	19S	38E	5	G	5/30/55	60	29	3618.73
L-02891	DOM	19S	38E	5		8/16/55	100	45	3618.73
L-02966	DOM	19S	38E	5	A	6/29/56	43	27	3622.01
L-02982	DOM	19S	38E	4	H	9/18/55	100	35	3612.17
L-03082	DOM	19S	38E	5	NE/4	3/30/56	80	28	3618.73
L-03127	DOM	19S	38E	5	B	3/29/56	100	40	3622.01
L-03183 -1	DOM	19S	38E	5	C	9/1/56	120	35	3622.01
L-03223	DOM	19S	38E	5	G	6/8/56	42	27	3618.73
L-03299	DOM	18S	38E	33	P	4/7/57	110	61	3622.01
L-03623	MUL	18S	38E	32	N	8/15/57	100	40	3625.30
L-03760	DOM	19S	38E	5	C	2/28/58	100	30	3622.72
L-03865	DOM	19S	38E	5	A	10/8/60	50	29	3622.01
L-03865	DOM	19S	38E	5	H	10/8/60	50	29	3615.45

Table 1

NMOSE Listed Water Wells (1-mile Radius of Site)

Well Number	Well Use	Well Location tws	rng	sec	Unit	Completion Date	Well Depth	Water Depth	Datum Elevation
L-03879	DOM	19S	38E	5	C	7/6/58	60	40	3625.30
L-03880	DOM	19S	38E	5	C	7/4/58	60	40	3625.30
L-04063	DOM	19S	38E	5	H	4/24/59	70	35	3612.17
L-04078	DOM	19S	38E	5	NE/4	4/19/59	65	40	3618.73
L-04215	DOM	19S	38E	5	H	7/28/59	75	35	3615.45
L-04612	DOM	19S	38E	5	A	3/31/61	100	32	3618.73
L-04750	DOM	18S	38E	33	K	12/18/61	86	45	3635.14
L-04758	DOM	19S	38E	5	B	12/6/61	85	42	3622.01
L-05687	DOM	19S	38E	5	A	7/16/65	100	35	3618.73
L-05707	DOM	19S	38E	4	I	8/16/65	121	50	3612.17
L-05777	DOM	19S	38E	5	H	10/11/65	100	40	3612.17
L-06097	DOM	19S	38E	4	H	4/17/67	100	65	3612.17
L-06308	DOM	19S	38E	5	C	4/16/68	95	36	3625.30
L-06309	DOM	19S	38E	5	C	5/4/68	80	35	3622.01
L-06806	DOM	19S	38E	5	H	8/15/71	85	35	3612.17
L-06902	DOM	19S	38E	3	L	8/21/72	150	53	3608.89
L-07104	DOM	19S	38E	5	NE/4	8/12/75	120	30	3618.73
L-07204	DOM	18S	38E	32	P	4/18/74	125	64	3631.86
L-07207	DOM	19S	38E	5	C	5/9/74	80	31	3622.01
L-07242	DOM	19S	38E	9	B	7/1/74	130	60	3605.61
L-07242	DOM	19S	38E	9	A	4/7/86	141	65	3608.89
L-07247	DOM	19S	38E	5		7/2/74	71	36	3618.73
L-07521	DOM	19S	38E	4	B	8/20/75	300	0	3618.73
L-07522	OBS	19S	38E	3	D	2/9/76	350	0	3612.17
L-07523	OBS	18S	38E	33	P	2/2/76	350	0	3625.30
L-07608	DOM	19S	38E	5	G	9/28/76	75	28	3618.73
L-07782	DOM	19S	38E	5	C	11/21/77	150	45	3625.30
L-08037	DOM	19S	38E	5	F	3/20/79	100	50	3618.73
L-08158	DOM	19S	38E	4	H	9/12/79	130	44	3612.17
L-08183	SAN	19S	38E	5	H	1/1/80	12	94	3615.45
L-08223	SAN	18S	38E	33	SW/4	3/14/80	120	52	3635.14
L-08317	SAN	19S	38E	4	D	8/14/80	150	50	3625.30
L-08564	DOM	18S	38E	33	M	10/23/81	125	50	3631.86
L-08649	DOM	19S	38E	5	NE/4	1/28/82	100	29	3618.73
L-09077	STK	19S	38E	4	O	2/5/83	144	95	3606.81
L-09390	SAN	18S	38E	32	P	1/6/84	120	30	3631.86
L-09839	DOM	19S	38E	3	L	9/3/86	150	60	3608.89
L-10938	DOM	18S	38E	33	N		180	0	3631.86
L-10943	DOM	18S	38E	33	N		150	0	3634.75
L-11513	DOM	18S	38E	33	K		150	0	3638.42
L-11713	STK	20S	38E	4	E	10/28/05	62	30	3612.17

Appendix A

Lithologic Logs

Monitoring Well Completion Log

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

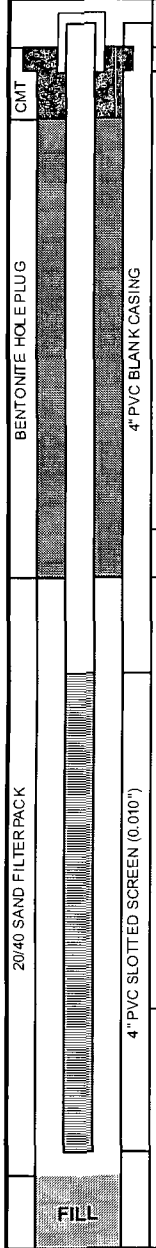
LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: MW-1
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3,611 (USGS MAP)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 2/18/08
WELL PLACEMENT: 35 ft south of frmr jct. box
COMMENTS: Lat. 32° 41' 25.4" North, Long. 103° 9' 28.0" West (Hand-Held GPS)

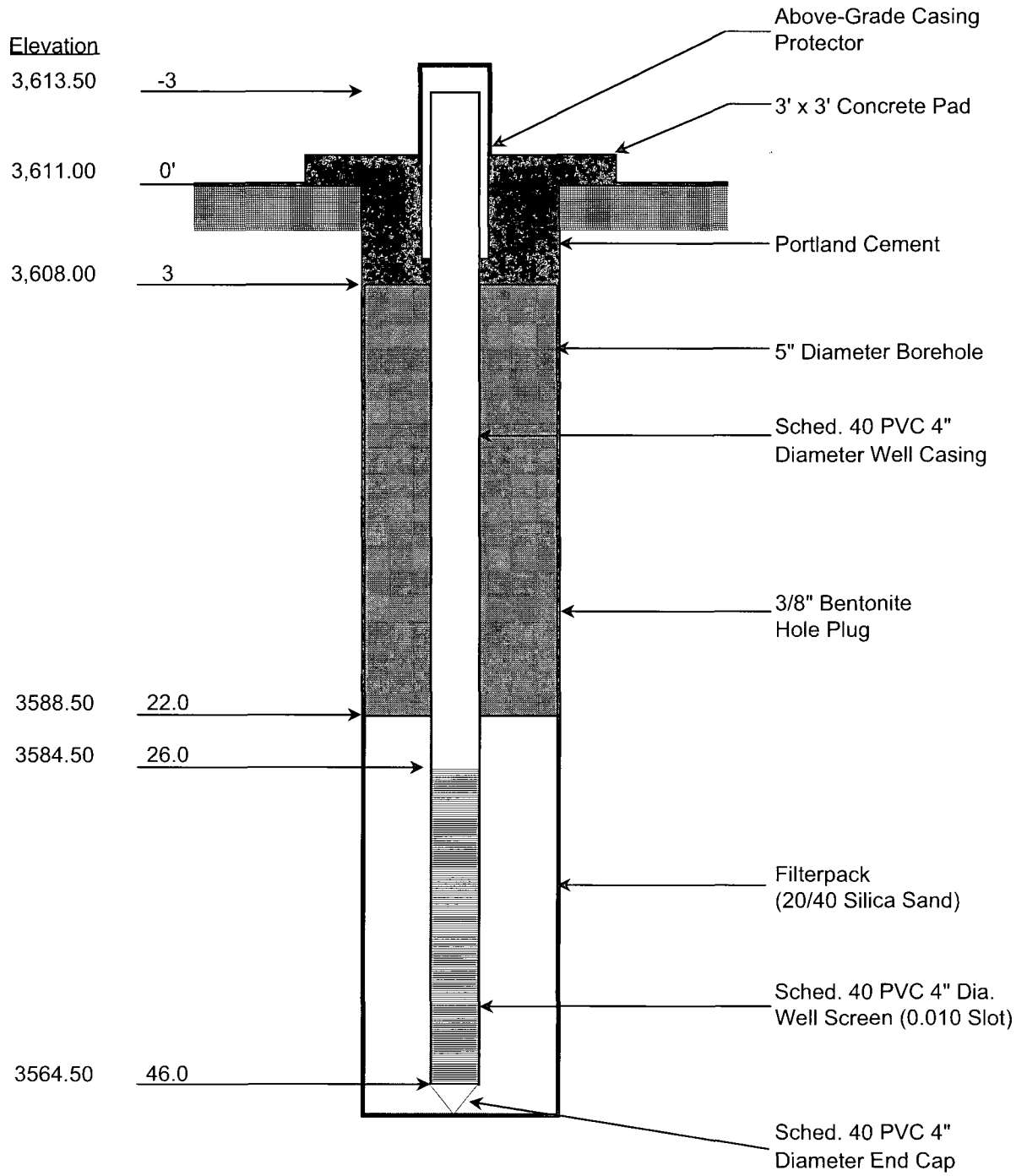
TOTAL DEPTH: 50 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs



Lithology	TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
							SILT brown, thin layer over caliche.
							CALICHE AND SILT Gray to white, soft, becoming siltier below 3 feet.
						5	
	spoon	5-7	20%	390	325		
						10	
	spoon	10-11	10%	425	280		
						15	
	spoon	15-17	50%	1,807	313		Lab Data: Chloride BTEX Benz (mg/kg) 173 32.6 0.07
						20	
× × × × × × × ×	spoon	20-22	80%	1,311	322		QUARTZITE Reddish gray, fine crystilline, hard.
							SAND Brown, fine to medium grain, well-sorted, sub-angular, becoming more rounded with depth.
						25	
	spoon	25-27	100%	1,673	280		
						30	
	spoon	30-32	100%	1,751	209		Lab Data: Chloride BTEX Benz (mg/kg) ND 18.1 0.007
						35	
						40	
							SANDSTONE Grayish brown, well-sorted, medium grain, rounded, hard drilling.
						45	
						50	

TD = 50 Feet

MONITORING WELL CONSTRUCTION DIAGRAM



R T Hicks Consultants Ltd	SITE: Hobbs SWD E-4 Vent		**Monitoring Well No. MW-1**
	DATE: 2/18/08	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: H & C, Inc	FILE: E-4 Lithlogs	

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: SB-1
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3,612 (USGS Map)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 2/18/08
WELL PLACEMENT: 6 ft north of frmr jct. box
COMMENTS: Lat. 32° 41' 26.0" North, Long. 103° 9' 27.8" West (Hand-Held GPS)

TOTAL DEPTH: 37 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs

Lithology	SAMPLE DATA (PPM) TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
						5	CALICHE Gray to white, soft, with some silt.
	spoon	10-12	10%	761	169	10	CALICHE Gray (discolored) with some silt (5%) and sand (5%).
	spoon	15-17	20%	1,317	155	15	
	spoon	20-22	10%	1,540	260	20	
							QUARTZITE Reddish brown, fine crystilline, hard drilling.
	spoon	25-27	90%	1,611	298	25	SAND Dark brown, medium grain, well-sorted, sub-angular, strong hydrocarbon odor but no discoloration. Lab Data: Chloride 43.1 (mg/kg) BTEX 98.2 Benz 3.82
	spoon	30-32	90%	621	239	30	QUARTZITE Reddish brown, fine crystilline, hard drilling.
	spoon	35-37	70%	666	195	35	SAND Brown, medium grain, well-sorted, sub-angular, strong hydrocarbon odor but no discoloration. Lab Data: Chloride ND (mg/kg) BTEX 23 Benz 0.61

BENTONITE
CMT
BENT

TD = 37 Feet

Saturated Formation at 36 to 37 feet.

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: SB-2
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3,612 (USGS Map)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 7/1/08
WELL PLACEMENT: 55 ft WNW of fmr jct. box
COMMENTS: Lat. 32° 41' 26.1" North, Long. 103° 9' 28.6" West (Hand-Held GPS)

TOTAL DEPTH: 10 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs

	Lithology	SAMPLE DATA (PPM) TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
BENTONITE & CUTTINGS								SILT Brown (top soil)
							5	CALICHE Light brown to gray, with silt, loose, soft drilling, possible fill material.
		spoon	5-7	10%	0	--	10	CALICHE Light grayish white, with some silt, harder drilling, fill material from above caving into hole.

TD = 10 Feet

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: SB-3
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3612 (USGS Map)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 7/1/08
WELL PLACEMENT: 20 ft south of SB-2
COMMENTS: Lat. 32° 41' 25.8" North, Long. 103° 9' 28.6" West (Hand-Held GPS)

TOTAL DEPTH: 17 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs

	Lithology	SAMPLE DATA (PPM) TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
BENTONITE								SILT Brown (top soil)
								CALICHE Light grayish brown, with some silt.
							5	CALICHE Light grayish brown, with some silt, soft drilling.
		spoon	5-7	20%	0	--	10	
		spoon	10-12	25%	0	--	15	
		spoon	15-17	5%	0	--		

Lab Data: Chloride
(mg/kg) 288

TD = 17 Feet

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: SB-4
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3612 (USGS Map)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 7/1/08
WELL PLACEMENT: 46 ft NNE of Fmr Jct. Box
COMMENTS: Lat. 32° 41' 26.2" North, Long. 103° 9' 28.0" West (Hand-Held GPS)

TOTAL DEPTH: 17 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs

Lithology	SAMPLE DATA (PPM) TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
							SILT Light brown (top soil)
							CALICHE Light grayish brown, with some silt.
BENTONITE							CALICHE & SILT Light brown to pinkish brown.
						5	
	spoon	5-7	25%	0	--		
						10	
	spoon	10-12	25%	0	--		
						15	
	spoon	15-17	5%	0	--		

Lab Data: Chloride
(mg/kg) 688

TD = 17 Feet

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: SB-5
SITE ID: Hobbs SWD E-4 Vent
SURFACE ELEVATION: 3612 (USGS Map)
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air-Rotary
INSTALLATION DATE: 7/1/08
WELL PLACEMENT: 44 ft east of Fmr Jct. Box
COMMENTS: Lat. 32° 41' 25.7" North, Long. 103° 9' 27.5" West (Hand-Held GPS)

TOTAL DEPTH: 17 Ft
CLIENT: Rice Operating Company
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-19-S, R-38-E, Sec. 4 (E)
FIELD REP.: Dale Littlejohn
FILE NAME: \Hobbs SWD\E-4 Lithlogs

Lithology	SAMPLE DATA (PPM) TYPE	DEPTH	% REC	PID	Cl (Fld)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE SORTING, ROUNDING, CONSOL., DIST. DEATURES
							SILT Light brown (top soil)
							CALICHE Light grayish brown, with some silt.
BENTONITE							CALICHE & SILT Light brown to pinkish brown.
						5	
	spoon	5-7	30%	0	--		
						10	
	spoon	10-12	30%	0	--		
						15	
	spoon	15-17	5%	0	--		

Lab Data: Chloride
(mg/kg) 32

TD = 17 Feet

Appendix B

Analytical Laboratory Results

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

CARDINAL LABORATORIES

PHONE (325) 673-7001 · 2111 BEECHWOOD · ABILENE, TX 79603
PHONE (505) 393-2326 · 101 E. MARLAND · HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN POPE
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 09/06/07
Reporting Date: 09/11/07
Project Number: NOT GIVEN
Project Name: HOBBS E-4 VENT
Project Location: HOBBS E-4 VENT

Sampling Date: 08/30/07 & 09/05/07
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: KS

LAB NUMBER	SAMPLE ID	Cl* (mg/Kg)
ANALYSIS DATE		09/07/07
H13249-1	5' Trench West @ 12' bgs	800
H13249-2	5' Trench East @12' bgs	704
H13249-3	15' Trench North @12' bgs	272
H13249-4	15' Trench South @ 12' bgs	640
Quality Control		500
True Value QC		500
% Recovery		100
Relative Percent Difference		<0.1

METHODS: Std. Methods 4500-Cl'B
*Analyses performed on 1:4 w:v aqueous extracts.

Chemist

09/11/07
Date

H13249CL RICE

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN POPE
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 09/06/07
Reporting Date: 09/11/07
Project Number: NOT GIVEN
Project Name: HOBBS E-4 VENT
Project Location: HOBBS E-4 VENT

Sampling Date: 08/30/07 & 09/05/07
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: CK

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		09/07/07	09/07/07	09/07/07	09/07/07
H13249-1	5' Trench West @ 12' bgs	0.028	0.362	0.271	0.834
H13249-2	5' Trench East @12' bgs	<0.002	0.005	0.012	0.022
H13249-3	15' Trench North @12' bgs	0.118	0.176	0.531	1.39
H13249-4	15' Trench South @ 12' bgs	<0.002	<0.002	0.004	0.011
Quality Control		0.107	0.104	0.104	0.317
True Value QC		0.100	0.100	0.100	0.300
% Recovery		107	104	104	106
Relative Percent Difference		1.4	2.1	2.0	1.8

METHOD: EPA SW-846 8021B

Chemist

09/11/07
Date

H13249 RICE

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(325) 673-7001 Fax (325) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Rice Operating Company	BILL TO	
Project Manager:	Kristi Pope	P.O. #:	
Address:	122 W Taylor	Company:	
City:	Hobbs	State: NM Zip: 88240	Attn:
Phone #:	393-9174	Fax #: 397-1471	Address:
Project #:		Project Owner:	City:
Project Name:	Hobbs E-4 vent		State: Zip:
Project Location:	Hobbs E-4 vent		Phone #:
Sampler Name:	Lee Weinheimer		Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX	Chlorides
H13279-1	5' trench west @ 12' bgs	G	1			X					X		8-30-07	2:17 p.m.	X	X
-2	5' trench east @ 12' bgs	G	1			X					X		8-30-07	2:35 p.m.	X	X
-3	15' trench North @ 12' bgs	G	1			X					X		8-30-07	1:40 p.m.	X	X
-4	15' trench South @ 12' bgs	G	1			X					X		8-30-07	1:22 p.m.	X	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	Phone Result: ☐ Yes ☐ No
	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date: 9/6/07	Received By: (Lab Staff)	REMARKS: email reports Kpope@riceswd.com Lweinheimer@riceswd.com
	Time: 3:40 PM	Barbara A Cook	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Temp. °C: acl; Intact? ☒ Yes ☐ No	Checked By: (Initials)	

† Cardinal cannot accept verbal changes. Please fax written changes to (325) 673-7020.

Analytical Report 298147

for

Rice Operating Co.

Project Manager: Kristin Pope

Hobbs SWD E-4 Junction Box

Hobbs SWD System

28-FEB-08

12600 West I-20 East Odessa, Texas 79765

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta

28-FEB-08

Project Manager: **Kristin Pope**
Rice Operating Co.
122 West Taylor
Hobbs, NM 88240

Reference: XENCO Report No: **298147**
Hobbs SWD E-4 Junction Box
Project Address: T19S, R38E, Sec 4, Unit Letter E

Kristin Pope:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 298147. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 298147 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II
Odessa Laboratory Manager

Sample Cross Reference 298147

Rice Operating Co., Hobbs, NM

Hobbs SWD E-4 Junction Box

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB-1	S	Feb-18-08 09:13	25 - 27 ft	298147-001
SB-1	S	Feb-18-08 09:35	35 - 37 ft	298147-002
MW-1	S	Feb-18-08 10:40	15 - 15 ft	298147-003
MW-1	S	Feb-18-08 11:07	30 - 32 ft	298147-004

Certificate of Analysis Summary 298147
Rice Operating Co., Hobbs, NM

Project Name: Hobbs SWD E-4 Junction Box

Project Id: Hobbs SWD System
Contact: Kristin Pope
Project Location: T19S, R38E, Sec 4, Unit Letter E

Date Received in Lab: Feb-22-08 10:20 am
Report Date: 28-FEB-08
Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	298147-001		298147-002		298147-003		298147-004	
		Field Id:	SB-1		SB-1		MW-1		MW-1	
		Depth:	25-27 ft		35-37 ft		15-15 ft		30-32 ft	
		Matrix:	SOIL		SOIL		SOIL		SOIL	
		Sampled:	Feb-18-08 09:13		Feb-18-08 09:35		Feb-18-08 10:40		Feb-18-08 11:07	
Anions by EPA 300/300.1	Extracted:									
	Analyzed:	Feb-23-08 10:52		Feb-23-08 10:52		Feb-23-08 10:52		Feb-23-08 10:52	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		43.1	6.06	ND	6.20	173	5.55	ND	5.79
BTEX by SW 8260B	Extracted:	Feb-26-08 14:30		Feb-26-08 14:32		Feb-26-08 11:24		Feb-27-08 10:32	
	Analyzed:	Feb-26-08 19:44		Feb-26-08 20:06		Feb-26-08 13:38		Feb-27-08 11:12	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Toluene		28.47 D	0.6062	0.1586	0.0620	3.462	0.0555	1.684 D	0.0579
Total BTEX		98.20		23.0108		32.56		18.11	
Benzene		3.819	0.0606	0.6122	0.0620	0.0677	0.0555	0.0066	0.0058
Total Xylenes		48.71		17.114		21.65		12.59	
Ethylbenzene		17.20 D	0.6062	5.126	0.0620	7.374	0.0555	3.834 D	0.0579
o-Xylene		8.917 D	0.6062	3.374	0.0620	4.292	0.0555	2.774 D	0.0579
Naphthalene		2.14	0.606	1.04	0.620	1.61	0.555	1.14 D	0.5790
m,p-Xylenes		39.79 D	1.212	13.74	0.1239	17.36 D	1.109	9.814 D	0.1159
Percent Moisture	Extracted:								
	Analyzed:	Feb-23-08 17:00		Feb-23-08 17:00		Feb-23-08 17:00		Feb-23-08 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL
Percent Moisture		17.5		19.3		9.84		13.7	

Brent Barron
Odessa Laboratory Director

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

* Outside XENCO'S scope of NELAC Accreditation

Form 2 - Surrogate Recoveries

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147 **Project ID:** Hobbs SWD System

Lab Batch #: 715658 **Sample:** 298147-001 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0556	0.0500	111	74-121	
Dibromofluoromethane	0.0501	0.0500	100	80-120	
1,2-Dichloroethane-D4	0.0470	0.0500	94	80-120	
Toluene-D8	0.0574	0.0500	115	81-117	

Lab Batch #: 715658 **Sample:** 298147-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0586	0.0500	117	74-121	
Dibromofluoromethane	0.0433	0.0500	87	80-120	
1,2-Dichloroethane-D4	0.0462	0.0500	92	80-120	
Toluene-D8	0.0642	0.0500	128	81-117	**

Lab Batch #: 715658 **Sample:** 298147-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0526	0.0500	105	74-121	
Dibromofluoromethane	0.0423	0.0500	85	80-120	
1,2-Dichloroethane-D4	0.0468	0.0500	94	80-120	
Toluene-D8	0.0741	0.0500	148	81-117	**

Lab Batch #: 715658 **Sample:** 298147-003 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0524	0.0500	105	74-121	
Dibromofluoromethane	0.0526	0.0500	105	80-120	
1,2-Dichloroethane-D4	0.0492	0.0500	98	80-120	
Toluene-D8	0.0565	0.0500	113	81-117	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147 **Project ID:** Hobbs SWD System

Lab Batch #: 715658 **Sample:** 298147-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0575	0.0500	115	74-121	
Dibromofluoromethane	0.0425	0.0500	85	80-120	
1,2-Dichloroethane-D4	0.0480	0.0500	96	80-120	
Toluene-D8	0.0723	0.0500	145	81-117	**

Lab Batch #: 715658 **Sample:** 298147-004 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0527	0.0500	105	74-121	
Dibromofluoromethane	0.0459	0.0500	92	80-120	
1,2-Dichloroethane-D4	0.0471	0.0500	94	80-120	
Toluene-D8	0.0585	0.0500	117	81-117	

Lab Batch #: 715658 **Sample:** 298150-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0502	0.0500	100	74-121	
Dibromofluoromethane	0.0527	0.0500	105	80-120	
1,2-Dichloroethane-D4	0.0493	0.0500	99	80-120	
Toluene-D8	0.0511	0.0500	102	81-117	

Lab Batch #: 715658 **Sample:** 298150-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0535	0.0500	107	74-121	
Dibromofluoromethane	0.0500	0.0500	100	80-120	
1,2-Dichloroethane-D4	0.0467	0.0500	93	80-120	
Toluene-D8	0.0521	0.0500	104	81-117	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147 **Project ID:** Hobbs SWD System

Lab Batch #: 715658 **Sample:** 505131-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0497	0.0500	99	74-121	
Dibromofluoromethane	0.0521	0.0500	104	80-120	
1,2-Dichloroethane-D4	0.0527	0.0500	105	80-120	
Toluene-D8	0.0512	0.0500	102	81-117	

Lab Batch #: 715658 **Sample:** 505131-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0538	0.0500	108	74-121	
Dibromofluoromethane	0.0519	0.0500	104	80-120	
1,2-Dichloroethane-D4	0.0496	0.0500	99	80-120	
Toluene-D8	0.0507	0.0500	101	81-117	

Lab Batch #: 715681 **Sample:** 298147-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0637	0.0500	127	74-121	**
Dibromofluoromethane	0.0494	0.0500	99	80-120	
1,2-Dichloroethane-D4	0.0515	0.0500	103	80-120	
Toluene-D8	0.0648	0.0500	130	81-117	**

Lab Batch #: 715681 **Sample:** 298147-004 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0692	0.0500	138	74-121	**
Dibromofluoromethane	0.0510	0.0500	102	80-120	
1,2-Dichloroethane-D4	0.0435	0.0500	87	80-120	
Toluene-D8	0.0688	0.0500	138	81-117	**

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147 **Project ID:** Hobbs SWD System

Lab Batch #: 715681 **Sample:** 298147-004 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0604	0.0500	121	74-121	
Dibromofluoromethane	0.0498	0.0500	100	80-120	
1,2-Dichloroethane-D4	0.0492	0.0500	98	80-120	
Toluene-D8	0.0661	0.0500	132	81-117	**

Lab Batch #: 715681 **Sample:** 505161-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0515	0.0500	103	74-121	
Dibromofluoromethane	0.0490	0.0500	98	80-120	
1,2-Dichloroethane-D4	0.0481	0.0500	96	80-120	
Toluene-D8	0.0513	0.0500	103	81-117	

Lab Batch #: 715681 **Sample:** 505161-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg

BTEX by SW 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0487	0.0500	97	74-121	
Dibromofluoromethane	0.0505	0.0500	101	80-120	
1,2-Dichloroethane-D4	0.0488	0.0500	98	80-120	
Toluene-D8	0.0519	0.0500	104	81-117	

** Surrogates outside limits: data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Blank Spike Recovery

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147 **Project ID:** Hobbs SWD System

Lab Batch #: 715658 **Sample:** 505131-1-BKS **Matrix:** Solid
Date Analyzed: 02/26/2008 **Date Prepared:** 02/26/2008 **Analyst:** WEW
Reporting Units: mg/kg **Batch #:** 1

BTEX by SW 8260B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
		BLANK /BLANK SPIKE RECOVERY STUDY				
Benzene	ND	0.0500	0.0496	99	66-142	
Toluene	ND	0.0500	0.0517	103	59-139	
Ethylbenzene	ND	0.0500	0.0507	101	75-125	
m,p-Xylenes	ND	0.1000	0.1003	100	75-125	
o-Xylene	ND	0.0500	0.0497	99	75-125	

Lab Batch #: 715681 **Sample:** 505161-1-BKS **Matrix:** Solid
Date Analyzed: 02/27/2008 **Date Prepared:** 02/27/2008 **Analyst:** WEW
Reporting Units: mg/kg **Batch #:** 1

BTEX by SW 8260B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
		BLANK /BLANK SPIKE RECOVERY STUDY				
Benzene	ND	0.0500	0.0477	95	66-142	
Toluene	0.0012	0.0500	0.0507	101	59-139	
Ethylbenzene	ND	0.0500	0.0478	96	75-125	
m,p-Xylenes	ND	0.1000	0.0970	97	75-125	
o-Xylene	ND	0.0500	0.0420	84	75-125	

Lab Batch #: 715578 **Sample:** 715578-1-BKS **Matrix:** Solid
Date Analyzed: 02/23/2008 **Date Prepared:** 02/23/2008 **Analyst:** IRO
Reporting Units: mg/kg **Batch #:** 1

Anions by EPA 300/300.1 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
		BLANK /BLANK SPIKE RECOVERY STUDY				
Chloride	ND	10.0	9.95	100	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

Form 3 - MS Recoveries

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147
Lab Batch #: 715578
Date Analyzed: 02/23/2008
QC- Sample ID: 298134-001 S
Reporting Units: mg/kg

Date Prepared: 02/23/2008
Batch #: 1

Project ID: Hobbs SWD System
Analyst: IRO
Matrix: Soil

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	987	210	1120	63	75-125	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

ENVIRONMENTAL LAB OF

Form 3 - MS / MSD Recoveries

Project Name: Hobbs SWD E-4 Junction Box

ACCREDITED IN ACCORDANCE WITH nelac

Work Order # : 298147 **Project ID:** Hobbs SWD System

Lab Batch ID: 715658 **QC- Sample ID:** 298150-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/26/2008 **Date Prepared:** 02/26/2008 **Analyst:** WEW

Reporting Units: mg/kg

BTEX by SW 8260B Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0.2629	0.2682	102	0.2655	0.2555	96	6	66-142	25	
Toluene	0.0058	0.2629	0.2761	103	0.2655	0.2761	102	1	59-139	25	
Ethylbenzene	ND	0.2629	0.2732	104	0.2655	0.2680	101	3	75-125	25	
m,p-Xylenes	ND	0.5258	0.5345	102	0.5311	0.5300	100	2	75-125	25	
o-Xylene	ND	0.2629	0.2619	100	0.2655	0.2564	97	3	75-125	25	

Lab Batch ID: 715681 **QC- Sample ID:** 298147-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/27/2008 **Date Prepared:** 02/27/2008 **Analyst:** WEW

Reporting Units: mg/kg

BTEX by SW 8260B Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	0.0066	0.2897	0.2909	98	0.2897	0.3072	104	6	66-142	25	
Toluene	0.9707	0.2897	1.513	187	0.2897	1.104	46	121	59-139	25	XF
Ethylbenzene	2.324	0.2897	2.981	227	0.2897	2.273	0	200	75-125	25	XF
m,p-Xylenes	5.129	0.5794	6.316	205	0.5794	4.928	0	200	75-125	25	XF
o-Xylene	1.703	0.2897	2.135	149	0.2897	1.688	0	200	75-125	25	XF

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*(D-G)/(D+G)

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Sample Duplicate Recovery

Project Name: Hobbs SWD E-4 Junction Box

Work Order #: 298147

Lab Batch #: 715578 **Project ID:** Hobbs SWD System

Date Analyzed: 02/23/2008 **Date Prepared:** 02/23/2008 **Analyst:** IRO

QC- Sample ID: 298134-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Anions by EPA 300/300.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	987	991	0	20	

Lab Batch #: 715411

Date Analyzed: 02/23/2008 **Date Prepared:** 02/23/2008 **Analyst:** WRU

QC- Sample ID: 298133-001 D **Batch #:** 1 **Matrix:** Sludge

Reporting Units: %

Percent Moisture	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	45.6	45.7	0	20	

Spike Relative Difference RPD 200 * |(B-A)/(B+A)|
All Results are based on MDL and validated for QC purposes.

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
Email results to: dale@rthicksconsult.com, Lweinheimer@riceswd.com,and kpope@riceswd.com
Sampler Signature: Dale T. Littlefield

Project Name: Hobbs SWD E-4 Junction Box
Project #: Hobbs SWD System
Project Location: T19S, R38E, Sec 4, Unit Letter E
ROC Billing Code

LAB # (lab use only)	GIS CODE	FIELD CODE	Sample Depth (soils only) Begin (ft)	End (ft)	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: 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	BTEX (EPA 8260)	PCB	N O R M	Total Dissolved Solids	Chloride	Moisture Percent	RUSH TAT (Pre-Schedule)	Standard TAT
298147																			TCLP / TOTAL:														
-01		SB-1	25.0	27.0	2/18/08	0913	1	X									X									X				X		X
-02		SB-1	35.0	37.0	2/18/08	0935	1	X									X									X				X		X
-03		MW-1	15.0	15.0	2/18/08	1040	1	X									X									X				X		X
-04		MW-1	30.0	32.0	2/18/08	1107	1	X									X									X				X		X

Special Instruction

Sample Containers Intact? (Y) N
Temperature Upon Receipt - 2.0
Laboratory Comments:

Relinquished by:	Date	Time	Received by	Date	Time
Dale T Littlefield	2/22/08	10:20			
Relinquished by	Date	Time	Received by ELOT:	Date	Time
			Andrea Lam	2.22.08	10:20

4 oz glass w/seal on cooler

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice

Date/ Time: 2.22.08 10:20

Lab ID # : 218147

Initials: AL

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	-2.0 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	(Yes)	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	(Not Present)	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	*Chain of Custody signed when relinquished/ received?*	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	(Not Applicable)	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	(Yes)	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

CARDINAL LABORATORIES

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

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

Receiving Date: 07/01/08
Reporting Date: 07/01/08
Project Number: NOT GIVEN
Project Name: HOBBS E-4 JUNCTION BOX
Project Location: T-19-S, R-38-E, SEC 4 (E)

Analysis Date: 07/01/08
Sampling Date: 07/01/08
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: KS

LAB NO.	SAMPLE ID	Cl^- (mg/kg)
H15088-1	SB - 3 (10')	288
H15088-2	SB - 4 (10')	688
H15088-3	SB - 5 (10')	32
Quality Control		510
True Value QC		500
% Recovery		102
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-ClB

Note: Analyses performed on 1:4 w:v aqueous extracts.

Kristy Dupree
Chemist

07/02/08
Date

H15088 RICE

CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240
(575) 393-2326 Fax (575) 393-2476

Company Name:	Rice Operating Company
Project Manager:	Hack Conder
Address:	122 West Taylor
City:	Hobbs
State:	NM
Zip:	88240
Phone #:	575/~~393~~ 393-9174
Fax #:	575/397-1471
Project #:	
Project Owner:	
Project Name:	Hobbs E-4 Junction Box
Project Location:	T-19-S, R-38-E, Sec 4 (E)
Sampler Name:	Dale Littlejohn

BILL TO

P.O. #:	
Company:	ROC
Attn:	Hack Conder
Address:	122 W. Taylor
City:	Hobbs
State:	NM
Zip:	88244
Phone #:	393-9174
Fax #:	397-1471

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Chloride
H15088-1	SB-3 (10')	G	1			✓					✓		7/1/08	0913	✓
-2	SB-4 (10')	G	1			✓					✓		"	0953	✓
-3	SB-5 (10')	G	1			✓					✓		"	1018	✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date: 7-1-08	Received By:	
Dale Littlejohn	Time: 1245		
Relinquished By:	Date:	Received By:	
	Time:		

Phone Result:	☐	No	Add'l Phone #:
Fax Result:	☐	No	Add'l Fax #:
REMARKS:			

Delivered By: (Circle One)	Temp.	Sample Condition: Cool	Sample Condition: Intact	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:		☑ Yes ☐ No	☑ Yes ☐ No	MC/JB

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

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: 05/21/08
Reporting Date: 05/28/08
Project Number: NOT GIVEN
Project Name: WINDMILL (HOBBS JCT. E-4)
Project Location: T19S R38E SEC4E~LEA COUNTY, NM

Sampling Date: 05/19/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/KS

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u S/cm)	T-Alkalinity ($mgCaCO_3$/L)
ANALYSIS DATE:	05/27/08	05/27/08	05/27/08	05/27/08	05/23/08	05/23/08
H14850-1 WINDMILL	143	45	13	10.1	984	332
Quality Control	NR	52.1	51.0	2.84	1,428	NR
True Value QC	NR	50.0	50.0	3.00	1,413	NR
% Recovery	NR	104	102	94.7	101	NR
Relative Percent Difference	NR	< 0.1	4.8	2.4	1.3	NR
METHODS:		SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	05/23/08	05/27/08	05/23/08	05/23/08	05/23/08	05/22/08
H14850-1 WINDMILL	84	38.0	0	405	8.03	396
Quality Control	510	64.3	NR	976	7.02	NR
True Value QC	500	60.0	NR	1000	7.00	NR
% Recovery	102	107	NR	97.6	100	NR
Relative Percent Difference	< 0.1	7.0	NR	< 0.1	0.7	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Kristin Farris-Pope
Chemist

05/30/08
Date

H14850 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 ST.
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 05/21/08
Reporting Date: 05/30/08
Project Number: NOT GIVEN
Project Name: WINDMILL (HOBBS JCT. E-4)
Project Location: T19S R38E SEC4E ~ LEA CO., NM

Sampling Date: 05/19/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: CK/BC

LAB NUMBER SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	05/30/08	05/30/08	05/30/08	05/30/08
H14850-1 WINDMILL	<0.002	<0.002	<0.002	<0.006
Quality Control	0.096	0.094	0.103	0.316
True Value QC	0.100	0.100	0.100	0.300
% Recovery	96.2	93.7	103	105
Relative Percent Difference	0.7	6.3	5.5	3.1

METHOD: EPA SW-846 8260B

Chemist

05/30/08
Date

H14850WB RICE

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 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#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Windmill (Hobbs Jct. E-4)
Project Location: T19S R38E Sec4E ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)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	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2008)	TIME
1-14850-1	Windmill	G	3	X								1		5-19	17:45

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		

Relinquished by: Rozanne Johnson	Date: 5/21/08	Time: 9:25	Received by: Misty LeBus	Date: 5/21/08	Time: 9:25
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

Phone Results		Yes		No	
Fax Results		Yes		No	Additional Fax Number:

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

Sample Condition: Cool: Yes ☑ / No ☐ — Intact: Yes ☑ / No ☐

CHECKED BY: (Initials) MCLB

REMARKS:

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

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: 03/10/08
Reporting Date: 03/14/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E~LEA COUNTY, NM

Sampling Date: 03/07/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/KS

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (uS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	03/13/08	03/13/08	03/13/08	03/13/08	03/11/08	03/11/08
H14415-1 MONITOR WELL #1	104	94.5	45.2	2.16	1,150	520
Quality Control	NR	50.6	50.8	3.12	1,424	NR
True Value QC	NR	50.0	50.0	3.00	1,413	NR
% Recovery	NR	101	102	104	101	NR
Relative Percent Difference	NR	2.8	< 0.1	2.6	1.1	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:	03/13/08	03/13/08	03/11/08	03/11/08	03/11/08	03/12/08
H14415-1 MONITOR WELL #1	76	23.5	0	634	7.23	710
Quality Control	500	25.6	NR	988	7.05	NR
True Value QC	500	25.0	NR	1000	7.00	NR
% Recovery	100	102	NR	98.8	101	NR
Relative Percent Difference	2.0	4.7	NR	1.2	< 0.1	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Kristin Farris-Pope
Chemist

03/14/08
Date

H14415 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: 03/10/08
Reporting Date: 03/11/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E ~ LEA COUNTY - NM

Sampling Date: 03/07/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: AB

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		03/10/08	03/10/08	03/10/08	03/10/08
H14415-1	MONITOR WELL #1	2.90	2.75	0.820	2.47
Quality Control		0.100	0.093	0.087	0.276
True Value QC		0.100	0.100	0.100	0.300
% Recovery		100	93.2	86.7	91.9
Relative Percent Difference		0.5	1.4	1.5	1.1

METHOD: EPA SW-846 8021B

Chemist

03/11/08
Date

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 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#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Hobbs Junction E-4
Project Location: T19S-R38E-Sec4 E ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)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	NaHSO4	H_2SO_4	ICE (1-1Liter HDPE)	NONE		SAMPLING: DATE (2008)	TIME
H4415-1	Monitor Well #1	G	3	X					2				1			3-7	17:10

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		

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Rozanne Johnson	3-10-08	9:40	Cathy Winthrop	3-10-2008	9:41
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:
Cathy Winthrop	3/10/08	14:35	Maty LeBert	3/10/08	2:20P

Delivered By: (Circle One)	Sample Condition	CHECKED BY:
Sampler - UPS - Bus - Other:	Cool: Yes ☑ No ☐ Intact: Yes ☑ No ☐	(Initials) MCAB

Phone Results		Yes		No	
Fax Results		Yes		No	Additional Fax Number:

REMARKS:

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

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: 05/05/08
Reporting Date: 05/08/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E ~ LEA COUNTY, NM

Sampling Date: 05/02/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: NF
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		05/08/08	05/08/08	05/08/08	05/08/08
H14750-1	MONITOR WELL #1	2.19	2.50	0.497	1.87
Quality Control		0.089	0.084	0.086	0.280
True Value QC		0.100	0.100	0.100	0.300
% Recovery		88.9	83.9	86.3	93.3
Relative Percent Difference		3.7	6.2	4.9	4.8

METHOD: EPA SW-846 8260

Chemist

05/12/08
Date

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: 05/05/08
Reporting Date: 05/09/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E~LEA COUNTY, NM

Sampling Date: 05/02/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: NF
Analyzed By: HM/KS

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (uS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	05/09/08	05/09/08	05/09/08	05/07/08	05/07/08	05/07/08
H14750-1 MONITOR WELL #1	113	96	44	1.78	1,140	552
Quality Control	NR	52.9	48.6	2.57	1,410	NR
True Value QC	NR	50.0	50.0	3.00	1,413	NR
% Recovery	NR	106	97.2	85.7	99.8	NR
Relative Percent Difference	NR	3.1	7.7	4.0	0.1	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:	05/07/08	05/08/08	05/07/08	05/07/08	05/07/08	05/06/08
H14750-1 MONITOR WELL #1	80	< 10	0	673	7.28	740
Quality Control	500	44.9	NR	1000	7.05	NR
True Value QC	500	40.0	NR	1000	7.00	NR
% Recovery	100	112	NR	100	101	NR
Relative Percent Difference	4.1	3.1	NR	2.4	< 0.1	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

05-12-08
Date

H14750 RICE

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2328
Fax (575) 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#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174 — Fax #: (575) 397-1471	
Project #: — Project Name: Hobbs Junction E-4	
Project Location: T19S-R38E-Sec4 E ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

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 (2008)	TIME	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
119750-1	Monitor Well #1	G	3	X				2				1		5-2	11:15		X																X	X	X		

Relinquished by: Rozanne Johnson	Date: 5/4/08	Time: 13:30	Received by: [signature] — Date: 5/5/08 — Time: 1:30PM
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) — Date: — Time:

Phone Results		Yes		No
Fax Results		Yes		No — Additional Fax Number:

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

Sample Condition: Cool — Yes [X] No [ ]; Intact — Yes [X] No [ ]

CHECKED BY: (Initials) MF

REMARKS:

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

CARDINAL LABORATORIES

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

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

Receiving Date: 08/11/08
Reporting Date: 08/13/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E ~ LEA CO., NM

Sampling Date: 08/08/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: ZL

LAB NUME SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	08/12/08	08/12/08	08/12/08	08/12/08
H15693-1 MONITOR WELL #1	0.796	1.46	0.432	1.05
Quality Control	0.049	0.048	0.050	0.146
True Value QC	0.050	0.050	0.050	0.150
% Recovery	98.8	96.2	100	97.3
Relative Percent Difference	0.4	1.0	1.6	7.4

METHOD: EPA SW-846 8021

TEXAS NELAP CERTIFICATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Lab Director

08/13/08
Date

H15693WB RICE

CARDINAL LABORATORIES

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

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

Receiving Date: 08/11/08
Reporting Date: 08/15/08
Project Number: NOT GIVEN
Project Name: HOBBS JUNCTION E-4
Project Location: T19S-R38E-SEC4 E ~ LEA COUNTY, NM

Sampling Date: 08/08/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/TR

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u S/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	08/14/08	08/14/08	08/14/08	08/14/08	08/13/08	08/13/08
H15693-1 MONITOR WELL #1	76	156	41.3	2.8	1,140	560
Quality Control	NR	52.1	51.0	3.20	1,400	NR
True Value QC	NR	50.0	50.0	3.00	1,413	NR
% Recovery	NR	104	102	105	99.1	NR
Relative Percent Difference	NR	< 0.1	4.8	6.5	0.6	NR
METHODS:		SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	08/14/08	08/14/08	08/13/08	08/13/08	08/13/08	08/13/08
H15693-1 MONITOR WELL #1	96	31	0	683	7.46	813
Quality Control	510	45.1	NR	1000	6.99	NR
True Value QC	500	40.0	NR	1000	7.00	NR
% Recovery	102	113	NR	100	99.9	NR
Relative Percent Difference	< 0.1	2.4	NR	1.2	0.7	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

08-18-08
Date

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 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: Hack Conder	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#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Hobbs Junction E-4
Project Location: T19S-R38E-Sec4 E ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)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 (2008)	TIME
H151693-1	Monitor Well #1	G	3	X				2				1		8-8	9:40

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		

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by: Rozanne Johnson	Date: 8-11-08	Time: 10:40	Received by: Date: 8/11/08 Time: 10:40
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) Date: Time:

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

REMARKS:

Email Results to: hconder@riceswd.com; lweinheimer@riceswd.com; rozanne@valornet.com

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

Sample Condition: Cool: Yes [✓] No [ ] — Intact: Yes [✓] No [ ]

CHECKED BY: (Initials) MCRB

Appendix C

Quality Procedures

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Rice Operating Company

QUALITY PROCEDURE - 03
Sampling and Testing Protocol - Chloride Titration Using .282 Normal Silver Nitrate Solution

1.0 Purpose
This procedure is to be used to determine the concentration of chloride in soil.

2.0 Scope
This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. Ifnecessary, prepare a composite san1ple for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.2 The soil sample(s) shall be immediately inserted into a one-quart or large polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.

3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.

4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.

4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 m1 extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops potassium chromate (K:zcrO4) to mixture.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (HZO2) to mixture.

5.4 Using a 10 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.

5.5 Record the ml of silver nitrate used.

6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

$$\frac{0.282 \times 35{,}450 \times \text{ml } AgNO_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

Rice Operating Company

Quality Procedure -04
Development of Cased Water-Monitoring Wells

1.0 Purpose
This procedure outlines the methods to be employed to develop cased monitoring wells.

2.0 Scope
This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Sample Collection and Preparation

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D. C. probe or a steel engineer's tape and water sensitive paste.

3.2 All measurements will be recorded within a field log notebook.

3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

4.0 Purging

4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.

4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

6.0 Records

6.1 Rice Operating Company will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

Rice Operating Company

Quality Procedure-05
Procedure for Obtaining Water Samples (Cased Wells) Using One Liter Bailer

1.0 Purpose
This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

2.0 Scope
This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Contianer	Teflon Lined	HCl	7 days
TPH	1 liter	clear glass	Teflon Lined	HCl	28 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	clear glass	Teflon Lined	None	28 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO_3	28 days
TDS	300 ml	clear glass	Any Plastic	Ice	7 days

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

5.0 Bailing Procedure

5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.

5.2 Using a dedicated one liter Teflon bailer, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.

5.3 Take care to insure that the bailing device and string do not become cross-contaminated. A clean pair of robber gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

6.0 Sampling Procedure

6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.

6.2 Note the time of collection on the sample jar with a fine Sharpie.

6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

A. Project and sample name.
B. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results

Calculation for Determining the Minimum Bailing Volume for Monitor Wells

Formula $V = (\pi r^2 h)$

2" well [V/0.231=gallon] X 3 = Purge Volume

V = Volume
π = pi
r = inside radius of the well bore
h = maximum height of well bore in water table

Example:

π	r^2	h (in)	V (cu.in)	V (gal)	x 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	> 10 gal

Rice Operating Company

Quality Procedure
Composite Sampling of Excavation Sidewalls and Bottoms For TPH and Chloride Analysis

1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for TPH and Chloride analysis.

2.0 Scope

This procedure is to be used in conjunction with ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** and will be inserted at subparagraph 5.2 of Section 5.0: Sampling Procedure.

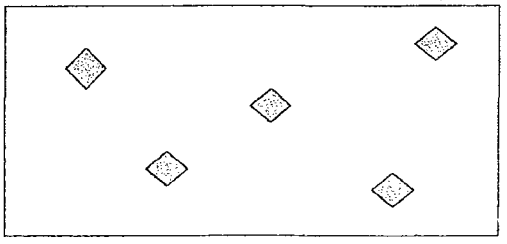
3.0 Sampling Procedure

Follow ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** for all Sections and subparagraphs until subparagraph 5.2 of Section 5.0: Sampling Procedure. Instead of 5.2 instructions, perform the composite sample collection procedure as follows:

3.1 Go to the excavation with a clean large blending bowl or new plastic baggie. If not analyzing for ions or metals, use a trowel to obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point, bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

3.2 Sidewall samples

3.2.1 On each sidewall, procure a 5oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



3.2.2 Thoroughly blend these five samples in the blending bowl.
3.2.3 Pour blended sample into sifter and sift into labeled baggie.
3.2.4 Repeat steps 3.2.1 through 3.2.4 for each remaining sidewall, using a clean blending bowl for each sidewall.
3.2.5 From each labeled baggie, procure a 5 oz portion and pour into a baggie labeled "Sidewall Composite". Blend this soil mixture completely.
3.2.6 Obtain proper laboratory sample container for "Sidewall Composite" and continue with subparagraph 5.3 of QP – 02.

3.3 Bottom Sample
3.3.1 From bottom of excavation, procure a 5oz sample from each of five distinct points with distinct points resembling the "W" pattern as illustrated above.
3.3.2 Thoroughly blend these five samples in a clean blending bowl.
3.2.3 Pour blended sample into sifter and sift into baggie labeled "Bottom Composite".
3.2.6 Obtain proper laboratory sample container for "Bottom Composite" and continue with subparagraph 5.3 of QP – 02.

Rice Operating Company

QUALITY PROCEDURE -07
Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77° F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar pro-type instrument. (Device will be identified on VOC Field

Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with QP-O2 and QP-O6. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing fur BTEX is necessary. File the Field Test Report Form in the project file.

4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal, IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.