# AP - <u>008</u>

## STAGE 1 & 2 REPORTS

# DATE: Sept. 10, 1999

## **R** I C E Operating Company

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

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#### CERTIFIED MAIL RETURN RECEIPT NO. Z 577 009 521

September 13, 1999

Mr. Roger C. Anderson State of NM Energy and Minerals Dept. Oil Conservation Division 2040 South Pacheco St. Santa Fe, NM 87505

> Re: Stage I Abatement Plan Report: Junction I-9 Release Site Hobbs Salt Water Disposal System NE/4 SE/4 Section 09-T19S-R38E Lea County, New Mexico

Dear Mr. Anderson:

Upon receipt of NMOCD approval for the Stage I Abatement Plan for the I-9 Release Site, Rice Operating Company (ROC) bid and then contracted with ARCADIS Geraghty & Miller to perform a sampling event and compose the Stage I Abatement Plan Report.

The sampling event of July 7, 1999 did confirm the presence of BTEX in levels higher than the NM WQCC limits in the two down-gradient monitor wells. Because of this result and because the NMOCD subsequently requested (August 10, 1999), ROC contracted through Arcadis Geraghty & Miller to drill an additional down-gradient monitor well in order to more exactly define groundwater impact. The results of the new boring (MW4) and its groundwater analytical results are included in the enclosed Stage I Abatement Report.

The enclosed ARCADIS Geraghty & Miller report compiles information acquired since the discovery of groundwater impact at the I-9 Release Site and incorporates the NMOCD requests described in the May 24, 1999 letter and the August 10, 1999 letter.

ROC I-9 Release Site Stage I Abatement Plan Report September 13, 1999 Page 2

ROC and Arcadis Geraghty & Miller concur that the area of groundwater impact has been adequately delineated with the drilling, completion, and sampling of MW4. The results of water samples from MW4 indicate that BTEX concentrations are non-detectable at this location.

ROC and ARCADIS Geraghty & Miller concur that the vadose zone impact has been adequately delineated with the previous borings. Further evaluation will be conducted and documented as excavation occurs during the Stage II Abatement Work Plan.

ROC will await the NMOCD's response to this Stage I Abatement Report before any further activities will be scheduled for this site. Upon approval of the Stage I Abatement Report, ROC will prepare and submit a Stage II Abatement Work Plan, describing the remedial activities planned for this site.

As always, the Hobbs and Santa Fe offices of the NMOCD will be notified at least 48 hours in advance of any significant event scheduled for this site.

If you have any questions, please contact me at 505-393-9174.

Sincerely,

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Carolyn Doren Haynes

Carolyn Doran Haynes Operations Engineer

Enclosures Cc: KH, LBG, F. McCallum, file, Mr. Chris Williams, OCD Hobbs Office

## **Junction 1-9 Release Site**

**Stage 1 Abatement Report** (Site Assessment Investigation)

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10 September 1999

PREPARED FOR

RECEIVED SEP 1 4 1999 Environmental Bureau Oil Conservation Division

#### Junction 1-9 Release Site

#### Stage 1 Abatement Report (Site Assessment Investigation)

#### Prepared for:

Rice Operating Company Hobbs, New Mexico

#### Prepared by:

ARCADIS Geraghty & Miller Inc 1030 Andrews Hwy. Suite 120 Midland Texas 79701 Tel 915 699 1381 Fax 915 699 1978

Our Ref.: MT000591.0001

Date: 10 September 1999

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#### 1. INTRODUCTION

The subject site is a former pipeline connection point on the Rice Operating Company Hobbs Salt Water Disposal System. The pipeline transports produced water from oil and gas leases to a permitted well for disposal by subsurface injection. The site is located in southwest Hobbs, New Mexico approximately 0.6 miles south of the intersection of Grimes Street and Stanolind Road (NE ¼ of the NE ¼ of Section 4, T19S-R38E, Lea County) (Figure 1).

#### 2. SITE HISTORY

A pipeline leak was discovered and repaired at the subject site on June 5, 1998. Notification of an unauthorized release was submitted to the New Mexico Oil Conservation Division (NMOCD) District I Office located in Hobbs, New Mexico. A Stage I Abatement Plan was submitted to NMOCD on January 19, 1999. Interim abatement site activities including assessment of impacts to soil and groundwater and excavation of impacted soil were conducted from August 24, 1998 to September 2, 1999. Recovery of phase-separated hydrocarbons from groundwater has been conducted from January 18 to May 7, 1999. A total of four monitor wells, one recovery well and nine boreholes was installed at the subject site (Figure 2). Correspondence between Rice Operating and the NMOCD is included in Appendix A.

#### 3. GEOLOGY AND HYDROGEOLOGY

The Ogallala Formation is the principal source of groundwater in the subject area. Depth to groundwater in Lea County ranges from approximately 12 feet below ground surface (bgs) to approximately 300 feet bgs. The Ogallala consists of predominantly coarse fluvial conglomerate and sandstone and fine-grained Eolian siltstone and clay. Where present in the subject area, the Ogallala unconformably overlies Triassic redbeds. The regional and site groundwater gradient (Figure 3) is to the south/southeast.

Depth to groundwater at the subject site is approximately 31 feet bgs. Groundwater elevations measured in the three monitor wells at the subject site are shown in Table 1.

Subsurface geology in the subject area consists of approximately one foot of light brown, fine-grained, calcareous sand underlain by white to gray caliche to a depth of approximately 15 feet bgs. The caliche is underlain by predominantly gray limestone and silty caliche to a depth of approximately 32 feet and red-brown and light brown to pink fine-grained sand. Boring lithology logs are included in this report in Appendix B.

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Rice Operating Company Hobbs, New Mexico

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#### Stage 1 Abatement Report (Site Assessment Investigation)

Rice Operating Company Hobbs, New Mexico

Rice Operating Company conducted a field search and review of the New Mexico State Engineer water well database. No evidence of impact to surface water bodies was identified. Two stock wells were located near the subject. One well is located approximately 1200 feet northwest of the site, and one well is located approximately 3500 feet southeast of the site.

| Table 1                       |
|-------------------------------|
| <b>GROUNDWATER ELEVATIONS</b> |
| <b>Junction I-9 Site</b>      |
| HOBBS, NEW MEXICO             |

| MONITORING<br>WELL | TOP OF<br>CASING | DATE     | DEPTH TO<br>GROUNDWATER | WATER ELEVATION |
|--------------------|------------------|----------|-------------------------|-----------------|
|                    | (feet)*          |          | (feet)*                 | (feet)*         |
| MW-1               | 3595.37          | 01/12/99 | 31.75                   | 3563.62         |
| MW-1               | 3595.37          | 01/16/99 | 32.04                   | 3563.33         |
| MW-1               | 3595.37          | 08/31/99 | 29.03                   | 3566.34         |
| MW-2               | 3595.58          | 01/12/99 | 31.82                   | 3563.76         |
| MW-2               | 3595.58          | 01/16/99 | 32.04                   | 3563.54         |
| MW-2               | 3595.58          | 08/31/99 | 28.89                   | 3566.69         |
| MW-3               | 3595.62          | 01/12/99 | 30.58                   | 3565.04         |
| MW-3               | 3595.62          | 01/16/99 | 31.85                   | 3563.77         |
| MW-3               | 3595.62          | 08/31/99 | 26.24                   | 3569.38         |
| MW-4               | 3595.15          | 09/02/99 | 28.98                   | 3566.17         |

\*Based on survey data provided by Rice Operating Company. Used surveyed benchmark = top of casing on MW-3.

#### 4. FIELD ACTIVITIES AND METHODOLOGY

Field activities were conducted between August 12, 1998 and September 2, 1999. Field activities included drilling and soil sampling of nine boreholes, drilling and sampling of four monitor wells, drilling of one recovery well and recovery of phaseseparated hydrocarbons from the recovery well. All field activities were performed in accordance with the Stage 1 Abatement Plan (Site Assessment Investigation) as approved by the NMOCD. Photographs of field activities are included in Appendix C.

#### 4.1 Excavation of Soil

Excavation activities were performed at the site between August 24, 1998 and September 21, 1998 to identify the vertical extent of impact. Where excavated, impacted soils were observed to a depth of at least 16 feet bgs. The soil sample

obtained from the deepest point of the excavation exhibited an organic vapor meter (OVM) reading of 264 parts per million (ppm). The area of excavation is shown in Figure 4.

#### 4.2 Installation and Sampling of Boreholes

A total of nine boreholes (B-1 through B-9) was drilled at this location (Figure 2). Boreholes B-1 through B-7 were drilled under the direction of Enercon Services Inc. Borehole lithology descriptions are included in Appendix B. Soil samples were screened in the field for volatile organic compounds (VOCs) using an OVM, and were inspected for the presence of staining or odor. The soil borings encountered groundwater at depths ranging from approximately 31 feet to 33 feet bgs. Borings B-1 and B-2 encountered phase-separated hydrocarbons on top of the groundwater.

A minimum of two soil samples was collected from each of the boreholes and submitted for analysis for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) using USEPA Method 8021B and 8015B, respectively.

Boreholes B-8 and B-9 were installed under the direction of Rice Operating Company for the purpose of identifying the recovery well location. No soil samples from boreholes B-8 and B-9 were submitted for laboratory analysis.

#### 4.3 Installation and Sampling of Monitor Wells

A total of four monitor wells and one recovery well was installed in the subject area. Monitor well locations are shown in Figure 2.

Monitor wells were constructed using 2-inch inside-diameter Schedule 40 PVC casing. The recovery well was constructed of 4-inch inside-diameter Schedule 40 PVC casing. The wells were constructed with fifteen feet of slotted PVC casing, 10 feet below top of groundwater and five feet above top of groundwater. The wells were sand-packed with a five-foot bentonite plug placed immediately above the sand pack. The wells were grouted above the bentonite plug with cement containing 3-5% bentonite and completed with a flush-mounted cover. Monitor well construction diagrams are included in Appendix D.

Groundwater samples were collected from MW-1, MW-2 and MW-3 on January 16, 1999 and analyzed for volatile organics, semi-volatile organics, general chemistry and

metals using USEPA Methods 8260, 8270 C, 325.3, 4500, 150.1, 120.1, 375.4, 160.1, and 6010B.

MW-1 and MW-2 were resampled on July 7, 1999 to determine if BTEX concentrations were representative of downgradient aquifer conditions. The groundwater samples were submitted for analysis for BTEX using USEPA Method 8021B.

MW-4 was sampled on September 2, 1999 and analyzed for volatile organics, semi-volatile organics, general chemistry and metals using USEPA Methods 8260, 8270 C, 325.3, 4500, 150.1, 120.1, 375.4, 160.1, and 6010B.

#### 5. LABORATORY ANALYTICAL RESULTS

#### 5.1 Soil Sample Analytical Results

Soil sample analytical results are summarized in Table 2. Laboratory analytical results are included in Appendix E.

|        |                 | OIL SAMI       | ULANADI          | IICALINE         |                       |                  |              |
|--------|-----------------|----------------|------------------|------------------|-----------------------|------------------|--------------|
| Boring | Depth<br>(feet) | OVM<br>Reading | Benzene<br>mg/kg | Toluene<br>mg/kg | Ethylbenzene<br>mg/kg | Xylenes<br>mg/kg | TPH<br>mg/kg |
|        |                 | (ppm)          |                  |                  |                       |                  |              |
| B-1    | 20-20.6         | 54             | 0.684            | 0.759            | 11.000                | 21.700           | 1,070        |
|        | 28              | 261            | 0.285            | 1.000            | 9.170                 | 24.600           | 1,200        |
|        | 30              | 195            | 1.130            | 1.030            | 13.800                | 19.500           | 1,130        |
| B-2    | 25-26           | 274            | 0.477            | 0.716            | 11.300                | 25.200           | 520          |
|        | 30-31           | 174            | <.050            | 0.070            | 0.870                 | 2.510            | 278          |
| B-3    | 25              | 214            | <0.200           | 1.520            | 6.950                 | 15.900           | 369          |
|        | 31-33           | 8              | < 0.050          | < 0.050          | <0.050                | < 0.150          | <10          |
| B-4    | 20              | 177            | < 0.050          | 0.207            | 0.178                 | 0.764            | 50           |
|        | 30              | 6.2            | < 0.050          | < 0.050          | <0.050                | < 0.150          | 47           |
| B-5    | 20              | 174            | < 0.050          | 0.288            | 0.188                 | 0.759            | 22           |
|        | 25              | 81             | <0.050           | 0.268            | 0.264                 | 0.566            | 69           |
|        | 30              | 28             | < 0.050          | < 0.050          | <0.050                | <0.150           | 18           |
| B-6    | 20-21           | 290            | < 0.050          | 1.390            | 1.440                 | 4.660            | 71           |
|        | 25-26           | 237            | 0.460            | 4.260            | 12.200                | 26.400           | 234          |
|        | 30-31           | 255            | 0.581            | 0.130            | 2.900                 | 4.170            | 25           |
| B-7    | 25-26           | 125            | < 0.050          | 0.100            | < 0.050               | <0.150           | 106          |
|        | _30             | 145            | < 0.050          | 0.214            | 0.865                 | 2.190            | 10           |

#### TABLE 2 SOIL SAMPLE ANALYTICAL RESULTS

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Rice Operating Company Hobbs, New Mexico

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Benzene concentrations range from not detected to 1.130 milligrams per kilogram (mg/kg). Toluene concentrations range from not detected to 4.260 mg/kg. Ethlybenzene concentrations range from not detected to 13.800 mg/kg. Xylene concentrations range from not detected to 26.400 mg/kg. TPH concentrations (diesel range organics) range from not detected to 1,200 mg/kg.

Boreholes B-8 and B-9 were drilled on January 7, 1998 under the direction of a Rice Operating Company representative to identify the location for placement of a recovery well. No soil or groundwater samples were collected for analysis from B-8 and B-9.

All boreholes were plugged to surface with a cement grout containing a minimum of 3-5% bentonite.

#### 5.2 Groundwater Sample Analytical Results

Groundwater analytical results are summarized in Table 3. Laboratory analytical results are included in Appendix E. Groundwater samples were collected from MW-1, MW-2 and MW-3 on January 16, 1999 and analyzed for volatile organics, semi-volatile organics, general chemistry and metals. Groundwater samples were collected from boreholes B-3 and B-4 on October 21, 1998 and analyzed for BTEX, chlorides and TDS. MW-1 and MW-2 were resampled on July 7, 1999 and analyzed for BTEX to identify if BTEX concentrations detected in the January 16, 1999 downgradient samples were representative of aquifer conditions. MW-4 was sampled September 2, 1999 and submitted for analysis of BTEX, polyaromatic hydrocarbons (PAH), general chemistry and metals.

Benzene was detected in the samples collected from MW-1 and MW-2 on January 16, 1999 and July 7, 1999 at a concentration of 0.008 milligrams per liter (mg/L), 0.017 mg/L, 0.262 mg/L and 0.289 mg/L, respectively. Benzene was detected in the samples collected from B-3 and B-4 at a concentration of 14.2 mg/L and 0.618 mg/L, respectively. Toluene was detected in the samples collected from MW-1 on July 7, 1999 and B-4 at a concentration of 0.01 mg/L and 0.331 mg/L, respectively. Ethylbenzene was detected in the samples collected from MW-1 on January 16, 1999 and July 7, 1999 at a concentration of 0.032 mg/L, 0.007 mg/L, 0.286 mg/L and 0.061 mg/L, respectively. Ethylbenzene was detected in the samples collected in the samples collected from B-3 and B-4 at a concentration of 1.31 mg/L and 0.182 mg/L, respectively. Xylenes were detected in the samples collected from MW-2 on January 16, 1999 and July 7, 1999 at a concentration of 0.012 mg/L, 0.012 mg/L, 0.131 mg/L, and 0.008 mg/L, respectively. Xylenes were detected in the samples collected from B-3 and B-4 at a concentration of 0.012 mg/L, 0.012 mg/L, 0.131 mg/L, and 0.008 mg/L, respectively. Xylenes were detected in the samples collected from B-3 and B-4 at a concentration of 0.012 mg/L, 0.121 mg/L, 0.131 mg/L, and 0.008 mg/L, respectively. Xylenes were detected in the samples collected from B-3 and B-4 at a concentration of 0.012 mg/L, 0.012 mg/L, 0.131 mg/L, and 0.008 mg/L, respectively. Xylenes were detected in the samples collected from B-3 and B-4 at a concentration of 0.012 mg/L, 0.012 mg/L, 0.131 mg/L, and 0.008 mg/L, respectively. Xylenes were detected in the samples collected from B-3 and B-4 at a concentration of 0.026 mg/L, respectively. 1,2,4-trimethylbenzene

#### Stage 1 Abatement Report (Site Assessment Investigation)

was detected in the January 1999 sample collected from MW-1 at a concentration of 0.007 mg/L. No other analyzed organic compounds were detected.

No BTEX or PAH compounds were detected in the water sample collected from MW-4 on September 2, 1999.

Naturally-occurring inorganic analytes (metals, chlorides, pH, sulfate, TDS, calcium, potassium, bicarbonate, manganese and sodium) were detected in the groundwater samples collected from MW-1, MW-2, MW-3 and MW-4.

#### 6. HEALTH AND SAFETY

All site activities were performed in accordance with Occupational Safety and Health Administration (OSHA) standards. All on-site personnel were required to wear a hard hat, safety glasses and steel-toe shoes during work activities.

#### 7. CONCLUSIONS

#### 7.1 Soil

The vertical extent of hydrocarbon-impacted soil ranges from approximately 25 to 31 feet bgs. Based on analytical data and field screening (OVM readings, odor and staining) the horizontal extent of hydrocarbon-impacted soil has been identified north, south and east of the release site. Delineation of the extent of hydrocarbon-impacted soil to the west will be performed in conjunction with Stage II Abatement activities. Figure 5 is a map of TPH concentrations in soil at a depth of 20-25 feet bgs. If more than one sample was analyzed from this interval (for example 20 feet bgs and 25 feet bgs), the analytical results from the deepest sample were used.

#### 7.2 Groundwater

The regional and site groundwater gradient is to the south/southeast. Depth to groundwater at the subject site is approximately 31 feet bgs.

Phase-separated hydrocarbons were measured in Boreholes B-1 and B-2 and are present in recovery well RW-1. To date, approximately 0.796 gallons of phase-separated hydrocarbons have been removed from RW-1. A summary of recovery volumes is included in Appendix F.

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Benzene was detected at a concentration above the New Mexico Water Quality Control Commission (20 NMAC 6.2 3-103) standard of 0.01 mg/L in the sample collected from MW-2 on January 16, the samples collected from MW-1 and MW-2 on July 7, 1999 and the samples collected from B-3 on B-4. Figure 6 is an isopleth map showing benzene concentrations. Because all of the wells/boreholes were not sampled during each sampling event, the highest concentration of benzene detected in each well/borehole was used.

Ethylbenzene and xylenes were detected in the sample collected from B-3 at concentrations above the 20 NMAC 6.2 3-103 standard of 0.75 mg/L and 0.62 mg/L, respectively.

No BTEX or PAH compounds were detected in the sample collected from monitor well MW-4.

No other organic compounds analyzed were detected above 20 NMAC 6.2 3-103 standards.

Naturally-occurring inorganic analytes (metals, chlorides, pH, sulfate, total dissolved solids, calcium, potassium, bicarbonate, manganese and sodium) were detected in the groundwater samples collected from MW-1, MW-2 and MW-3 on January 16, 1999. Aluminum, iron and manganese were detected in MW-1, MW-2 and MW-3 above 20 NMAC 6.2 3-103 standards of 5.0 mg/L, 1.0 mg/L, and 0.2 mg/L, respectively. Barium was detected above the 20 NMAC 6.2 3-103 standard of 1.0 mg/L in the sample collected from MW-3. Total dissolved solids were detected above the 20 NMAC 6.2 3-103 standard of 1000 mg/L in the samples collected from MW-2 and MW-2 and MW-2 and MW-3 and B-3 and B-4. Chlorides were detected in the sample collected from B-4 above the 20 NMAC 6.2 3-103 standard of 250 mg/L.

The same inorganic analytes (metals, chlorides, pH, sulfate, total dissolved solids, calcium, potassium, bicarbonate, manganese and sodium) were detected in the groundwater sample collected from new well MW-4 on September 2, 1999. Iron was detected at a concentration above the 20 NMAC 6.23-103 standard of 1.0 mg/L. Total dissolved solids for MW-4 were reported at 770 parts per million (ppm), which is below the NMAC standard of 1000 ppm.

No other inorganic compounds analyzed were detected above 20 NMAC 6.2 3-103 standards.

#### Stage 1 Abatement Report (Site Assessment Investigation)

#### 8. **RECOMMENDATIONS**

The drilling of an additional downgradient monitor well, referred to as MW-4, has delineated the horizontal extent of benzene concentrations above 20 NMAC 6.2 3-103 standards. Following review of this data and approval by NMOCD that no further assessment activities be performed at the subject site, Rice Operating Company will submit a Stage II Abatement Plan to NMOCD for remedial activities at the site. Remedial activities will likely include continued recovery of phase-separated hydrocarbons, excavation of hydrocarbon-impacted soil and semi-annual monitoring of groundwater.

#### 9. **REFERENCES**

Groundwater Handbook; United States Environmental Protection Agency, Office of Research and Development, Center for Environmental Research Information; 1992

Hydrology and Hydrochemistry of the Ogallala Aquifer, Southern High Plains, Texas Panhandle and Eastern New Mexico; Report Number 177; Bureau of Economic Geology; 1988

Hydrogeochemistry and Water Resources of the Lower Dockum Group in the Texas Panhandle and Eastern New Mexico; Report Number 161: Bureau of Economic Geology; 1986

New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I

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## TABLE 3GROUNDWATER ANALYTICAL RESULTS

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| Well Name                   | MW-1    |                | MW-2     |               | MW-3  | MW-4   | B-3      | B-4      |
|-----------------------------|---------|----------------|----------|---------------|---|--------|----------|----------|
| Date Sampled                | 1/16/99 | 7/7/99         | 1/16/99  | 7/7/99        | 1/16/99                                       | 9/2/99 | 10/21/98 | 10/21/98 |
| Compound Name               | (mg/L)  | (mg/L)         | (mg/L)   | (mg/L)        | (mg/L)  | (mg/L) | (mg/L)   | (mg/L)   |
| VOCs                        |         | <u>``_``_'</u> | <u> </u> | <u>`_``_`</u> | <u>, , , , , , , , , , , , , , , , , , , </u> |        | <u> </u> | <u>`</u> |
| Benzene                     | 0.008   | 0.262          | 0.017    | 0.289         | ND  | ND     | 14.200   | 0.618    |
| Bromobenzene                | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Bromochloromethane          | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Bromodichloromethane        | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Bromoform                   | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Bromomethane                | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| n-butylbenzene              | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| sec-butylbenzene            | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| tert-butylbenzene           | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Carbon tetrachloride        | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Chlorobenzene               | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Chlorodibromomethane        | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Chloroethane                | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Chloroform                  | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Chloromethane               | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 2-Chlorotoluene             | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 4-Chlorotoluene             | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,2-Dibromo-3-chloropropane | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,2-Dibromoethane           | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Dibromomethane              | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,2-Dichlorobenzene         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,3-Dichlorobenzene         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,4-Dichlorobenzene         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Dichlorodifluoromethane     | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,1-Dichloroethane          | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,2-Dichlorethane           | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,1-Dichloroethene          | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| cis-1,2-dichloroethene      | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| trans-1,2-dichloroethene    | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,2-Dichloropropane         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,3-Dichloropropane         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 2,2-Dichloropropane         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,1-Dichloropropene         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Ethylbenzene                | 0.032   | 0.286          | 0.007    | 0.061         | ND  | ND     | 1.310    | 0.182    |
| Hexachlorobutadiene         | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Isopropylbenzene            | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| p-isopropytoluene           | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Methylene chloride          | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Naphthalene                 | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| n-propylbenzene             | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Styrene                     | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,1,1,2-Tetrachloroethane   | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| 1,1,2,2-Tetrachloroethane   | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |
| Tetrachloroethene           | ND      | NA             | ND       | NA            | ND  | NA     | NA       | NA       |

2

1

## TABLE 3 GROUNDWATER ANALYTICAL RESULTS

i.

| Well Name                   | MW-1     |          | MW-2    |         | MW-3    | MW-4   | B-3      | B-4      |
|-----------------------------|----------|----------|---------|---------|---------|--------|----------|----------|
| Date Sampled                | 1/16/99  | 7/7/99   | 1/16/99 | 7/7/99  | 1/16/99 | 9/2/99 | 10/21/98 | 10/21/98 |
| Compound Name               | (mg/L)   | (mg/L)   | (mg/L)  | (mg/L)  | (mg/L)  | (mg/L) | (mg/L)   | (mg/L)   |
| Toluene                     | ND       | 0.01     | ND      | < 0.005 | ND      | ND     | < 0.050  | 0.331    |
| 1,2,3-Trichlorobenzene      | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,2,4-Trichlorobenzene      | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,1,1-Trichloroethane       | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,1,2-Trichloroethane       | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Trichloroethene             | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Trichlorofluoromethane      | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,2,3-Trichloropropane      | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,2,4-Trimethylbenzene      | 0.007    | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 1,3,5-Trimethylbenzene      | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Vinyl chloride              | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Xylenes, total              | 0.012    | 0.131    | 0.012   | 0.008   | ND      | ND     | 0.78     | 0.226    |
| Acetone                     | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Carbon disulfide            | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Vinyl acetate               | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 2-Butanone                  | ND       | NA       | · ND    | NA      | ND      | NA     | NA       | NA       |
| 1,2-Dichloroethene          | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 2-Chloethylvinylether       | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 4-Methyl-2-pentanone        | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| cis-1,3-dichloropropene     | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| trans-1,3-dichloropropene   | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| 2-Hexanone                  | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Methyl tert butyl ether     | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
|                             |          |          |         |         |         |        | · · · ·  |          |
| <u>SVOCs</u>                |          |          |         |         |         |        |          |          |
| Acenaphthene                | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Acenaphthylene              | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Aniline                     | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Anthracene                  | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Benzo(a)anthracene          | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Benzo(b)fluoranthene        | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Benzo(k)fluoranthene        | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Benzo(a)pyrene              | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Benzoic acid                | ND       | NA       | ND      | NA      | ND      | NA     | NA       | NA       |
| Benzo(g,h,1)perylene        | ND       | NA       | ND      | NA      | ND      | ND     | NA       | NA       |
| Benzyl alcohol              | ND       | NA       | ND      |         | ND      | NA     | NA       | NA       |
| 4-Bromophenylphenyl ether   | ND       | NA       | ND ·    | NA NA   | ND      | NA     | NA       | NA       |
| Butybenzylphthalate         | ND       |          | ND      |         | ND      | NA     | NA       | NA       |
| di-n-butyl phthalate        | ND       |          | ND      |         |         | NA     | NA       | NA       |
|                             |          |          |         |         |         | NA     | NA       |          |
| 4-Chloroaniline             | ND       |          |         |         |         | NA     | NA       | NA       |
| bis(2-chloroethoxy)methane  |          |          |         |         | ND      | NA     |          | NA<br>NA |
| Dis(2-chloroethyl)ether     | ND<br>ND | NA<br>NA |         |         |         |        |          |          |
| Dis(2-chloroisopropyl)ether |          |          |         |         |         |        |          |          |
| 4-Unioro-3-methylphenol     | ND       | NA       | ND      | NA      | ND      | NA     | NA NA    | I NA     |

## TABLE 3GROUNDWATER ANALYTICAL RESULTS

| Well Name                  | MV      | V-1    | MV      | W-2    | MW-3    | MW-4   | B-3      | B-4      |
|----------------------------|---------|--------|---------|--------|---------|--------|----------|----------|
| Date Sampled               | 1/16/99 | 7/7/99 | 1/16/99 | 7/7/99 | 1/16/99 | 9/2/99 | 10/21/98 | 10/21/98 |
| Compound Name              | (mg/L)  | (mg/L) | (mg/L)  | (mg/L) | (mg/L)  | (mg/L) | (mg/L)   | (mg/L)   |
| 2-Chloronaphthalene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2-Chlorophenol             | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 4-Chlorophenylphenyl ether | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Chrysene                   | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Dibenz(a,h)anthracene      | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Dibenzofuran               | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 1,2-Dichlorobenzene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 1,3-Dichlorobenzene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 1,4-Dichlorobenzene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 3,3-Dichlorobenzidine      | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4-Dichlorophenol         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Diethylphthalate           | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4-Dimethylphenol         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Dimethyl phthalate         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 4,6-Dinitro-2-methylphenol | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4-Dinitrophenol          | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4-Dinitrotoluene         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,6-Dinitrotoluene         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 1,2-Diphenylhydrazine      | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| bis(2-ethylhexyl)phthalate | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Fluoranthene               | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Fluorene                   | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Hexachlorobenzene          | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Hexachlorobutadiene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Hexachloroethane           | ND      | NA     | ND      | NA     | ND      | NA     | · NA     | NA       |
| Hexachlorocyclopehtadiene  | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Indeno(1,2,3-cd)pyrene     | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Isophorone                 | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2-Methylnaphthalene        | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2-Methylphenol             | ND      | NA     | ND_     | NA     | ND      | NA     | NA       | NA       |
| 4-Methylphenol             | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Naphthalene                | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| 2-Nitroaniline             | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 3-Nitroaniline             | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 4-Nitroaniline             | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Nitrobenzene               | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2-Nitrophenol              | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 4-Nitrophenol              | ND      | NA     | ND_     | NA     | ND      | NA     | NA       | NA       |
| N-nitrosodiphenylamine     | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| N-nitroso-di-n-propylamine | ND      | NA     | ND      | NA     | ND      | • NA   | NA       | NA       |
| Di-n-octyl phthalate       | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Pentachlorophenol          | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Phenanthrene               | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Phenol                     | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| Pyrene                     | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |

## TABLE 3GROUNDWATER ANALYTICAL RESULTS

| Well Name                        | MW-1    |        | MW-2    |        | MW-3    | MW-4   | B-3      | B-4      |
|----------------------------------|---------|--------|---------|--------|---------|--------|----------|----------|
| Date Sampled                     | 1/16/99 | 7/7/99 | 1/16/99 | 7/7/99 | 1/16/99 | 9/2/99 | 10/21/98 | 10/21/98 |
| Compound Name                    | (mg/L)  | (mg/L) | (mg/L)  | (mg/L) | (mg/L)  | (mg/L) | (mg/L)   | (mg/L)   |
| Pyridine                         | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 1,2,4-Trichlorobenzene           | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4,5-Trichlorophenol            | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| 2,4,6-Trichlorophenol            | ND      | NA     | ND      | NA     | ND      | NA     | NA       | NA       |
| · · · · · ·                      |         |        |         |        |         |        |          |          |
| <u>General Chemistry</u>         |         |        |         |        |         |        |          |          |
| Resistivity                      | 0.74    | NA     | 0.58    | NA     | 0.53    | 0.0009 | NA       | NA       |
| Specific Gravity                 | 0.982   | NA     | 0.985   | NA     | 0.996   | NA     | NA       | NA       |
| Chloride                         | 128     | NA     | 230     | NA     | 195     | 100    | 230      | 2400     |
| Carbonate (CaCO <sub>3</sub> )   | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Bicarbonate (CaCO <sub>3</sub> ) | 332     | NA     | 322     | NA     | 370     | 220    | NA       | NA       |
| pH                               | 7.29    | NA     | 7.51    | NA     | 7.51    | NA     | NA       | NA       |
| Sulfate                          | 318     | NA     | 372     | NA     | 483     | 180    | NA       | NA       |
| Total dissolved solids           | 890     | NA     | 1190    | NA     | 1340    | 770    | 1710     | 5460     |
| Calcium                          | 727     | NA     | 578     | NA     | 1255    | 93     | NA       | NA       |
| Potassium                        | 3       | NA     | 30      | NA     | 8       | 2.4    | NA       | NA       |
| Sodium                           | 144     | NA     | 171     | NA     | 310     | 124    | NA       | NA       |
|                                  |         |        |         |        |         |        |          |          |
| <u>Metals</u>                    |         |        |         |        |         |        |          |          |
| Silver                           | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Aluminum                         | 12.3    | NA     | 16.5    | NA     | 32.7    | 3.1    | NA       | NA       |
| Arsenic                          | 0.019   | NA     | 0.025   | NA     | 0.028   | 0.03   | NA       | NA       |
| Barium                           | 0.87    | NA     | 0.970   | NA     | 3.91    | 0.11   | NA       | NA       |
| Cadmium                          | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Cobalt                           | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Chromium                         | ND      | NA     | 0.02    | NA     | 0.03    | ND     | NA       | NA       |
| Copper                           | 0.02    | NA     | 0.02    | NA     | 0.02    | 0.03   | NA       | NA       |
| Iron                             | 9.34    | NA     | 11.6    | NA     | 26.4    | 2.4    | NA       | NA       |
| Mercury                          | ND      | NA     | ND      | NA     | ND      | ND     | NA       | NA       |
| Manganese                        | 0.214   | NA     | 0.288   | NA     | 0.535   | 0.03   | NA       | NA       |
| Molybdenum                       | ND      | NA     | ND      | NA     | 0.03    | 0.02   | NA       | NA       |
| Nickel                           | 0.02    | NA     | ND      | NA     | 0.05    | 0.1    | NA       | NA       |
| Lead                             | 0.005   | NA     | 0.007   | NA     | 0.013   | 0.008  | NA       | NA       |
| Selenium                         | ND      | NA     | ND      | NA     | ND      | 0.02   | NA       | NA       |
| Zinc                             | 0.05    | NA     | 0.04    | NA     | 0.04    | 0.04   | NA       | NA       |

All results are reported in milligrams per liter (mg/L)

NA - Not analyzed

ND - Not detected













## APPENDIX A

## INTERIM ABATEMENT COMMUNICATIONS



### NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

May 24, 1999

#### CERTIFIED MAIL RETURN RECEIPT NO: Z 357 870 129

RICE OPERATING HOBBS, NM

Carolyn Doran Haynes Operations Engineer Rice Operating Company 122 West Taylor Hobbs, New Mexico 88240

RE: Stage 1 Abatement Plan Junction I-9 Release Site NE 1/4 SE 1/4 Section 09-Ts19s-R38e Hobbs Salt Water Disposal System Lea County, New Mexico

Dear Ms. Haynes:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of Rice Operating Company's (ROC) letter dated April 23, 1999 concerning public notice requirements for the above captioned Stage 1 Abatement Plan. As of this date, NMOCD has not received any response to the public notices issued. The interim investigation and remediation activities conducted to date are satisfactory and the Stage 1 Abatement Plan i.e. (Investigation Plan) submitted on January 19, 1999 is hereby approved with the following conditions:

1. All final soil samples submitted for laboratory analyses shall be sampled for BTEX (8021), TPH (418.1 or 8015 GRO & DRO) and Chlorides.

2. ROC shall complete the new monitor well(s) as follows:

- a. At least 15 feet of well screen shall be placed across the water table interface with 5 feet of the well screen above the water table and 10 feet of the well screen below the water table.
- b. An appropriately sized gravel pack shall be set in the annulus around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.
- c. A 2-3 foot bentonite plug shall be placed above the gravel pack.
- d. The remainder of the hole shall be grouted to the surface with cement containing 3-5% bentonite.
- e. A concrete pad shall be placed at the surface around the well. The well shall be installed with a suitable protective locking device.
- f. The well(s) shall be developed after construction using EPA approved procedures.

#### Carolyn Doran Haynes May 24, 1999 Page 2

- 3. No less than 48 hours after the well(s) are developed, ground water from all monitor well(s) shall be purged, sampled and analyzed for concentrations of benzene, toluene, ethylbenzene, xylene, polycyclic aromatic hydrocarbons (PAH), total dissolved solids (TDS) and New Mexico Water Quality Control Commission (WQCC) metals and major cations and anions using EPA approved methods and quality assurance/quality control (QA/QC) procedures.
- 4. All wastes generated during the investigation shall be disposed of at an OCD approved facility.
- 5. ROC shall submit the results of the investigation to the OCD Santa Fe Office by July 23, 1999 with a copy provided to the OCD Hobbs District Office and shall include the following investigative information:
  - a. A description of all investigation, remediation and monitoring activities which have occurred including conclusions and recommendations.
  - b. A geologic/lithologic log and well completion diagram for each monitor well.
  - c. A water table potentiometric map showing the location of the leaks and spills, excavated areas, monitor wells, and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient.
  - d. Isopleth maps for contaminants of concern which were observed during the investigations.
  - e. Summary tables of all ground water quality sampling results and copies of all laboratory analytical data sheets and associated QA/QC data taken within the past year.
  - f. The quantity and disposition of all recovered product and/or wastes generated.
- 6. ROC will notify the OCD Santa Fe office and the OCD District office at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples during OCD's normal business hours.

Please be advised that NMOCD approval of this plan does not relieve ROC of liability should their investigations and/or operations fail to adequately investigate and/or remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve ROC of responsibility for compliance with any other federal, state, or local laws and/or — regulations.

If you have any questions, please contact Wayne Price of my staff at (505) 827-7155.

Sincerely,

Roger C. Anderson Environmental Bureau Chief

RCA/wp cc: OCD Hobbs Office Bill McNeil-Landowner

## **RICE** Operating Company

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

#### CERTIFIED MAIL RETURN RECEIPT NO: P 622 726 279

January 19, 1999

Mr. Wayne Price New Mexico Energy and Minerals Department Oil Conservation Division 2040 South Pacheco Street Santa Fe, New Mexico 87505

Re: Stage I Abatement Plan Junction I-9 Release Site Unit Letter I, Section 9 of T19S R38E Hobbs Salt Water Disposal System Lea County, New Mexico

#### Mr. Price:

Enclosed is the Stage I Abatement Plan required by your letter dated December 17, 1998. I have also enclosed a draft Notice of Publication. Within 15 days after the New Mexico Oil Conservation Division (OCD) determines that the Stage I Abatement Plan is administratively complete, Rice Operating Company will issue public notice in a form approved by OCD in a newspaper of general circulation in the county in which the release occurred, and in a newspaper of general circulation in the State. Prior to public notice, Rice shall give written notice, as approved by the OCD, of this Stage I Abatement Plan to the following persons:

- Surface owners of record within 1 mile of the perimeter of the geographic area where the standards and requirements are exceeded.
- The County Commission for the geographic area where the standards and requirements are exceeded is located.
- The appropriate city official(s) for the geographic area where the standards and requirements are exceeded is located.

- Those persons, as identified by the Director, who have requested notification.
- The New Mexico Trustee for Natural Resources, and any other local, state, or federal governmental agency affected, as identified by the Director, which shall be notified by certified mail.
- The appropriate Governor or President of any Indian Tribe, Pueblo or Nation if the geographic area where the standards and requirements are exceeded is located or partially located within tribal boundaries or within 1 mile of the tribal boundaries, who shall be notified by certified mail.

Please contact me at (505) 393-9174 with your comments or suggested changes.

Sincerely,

Cc.

7. Wesley Root

F. Wesley Root Projects Manager

Enclosure: Notice of Publication

Mr. Chris Williams, NMOCD District I Office Mr. Loy Goodheart, Rice Operating Company Mr. Ken Hasten, Rice Operating Company File

#### NOTICE OF PUBLICATION

#### State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following Stage I Abatement Plan has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

Rice Operating Company, F. Wesley Root (505) 393-9174, 122 West Taylor, Hobbs, New Mexico 88240, has submitted a Stage I Abatement Plan Proposal for Pipeline Junction I-9, Hobbs Salt Water Disposal System, 0.6 miles southwest of Hobbs in the NE/4, SE/4 of Section 09, Township 19 South, Range 38 East, Lea County, New Mexico. The site is approximately one acre where Rice Operating Company operates a saltwater disposal pipeline. Light Non-Aqueous Phase Liquid (LNAPL) has been observed on the ground water. The Stage I Abatement Plan presents the following subsurface investigation activities: determine site geology and hydrogeology, and physical properties of the aquifer; conduct a registered water well search within a one mile radius of the site; installation of monitoring wells to delineate impact at the site; collect soil and groundwater samples for laboratory analysis from each monitor well to determine the magnitude of impact to ground water; survey all well locations to establish a relative datum; obtain depth to ground water measurements; calculate the ground water gradient and flow direction; and prepare a report summarizing field activities and laboratory results.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The Stage I Abatement Plan may be viewed at the above address or at the Oil Conservation Division District Office, 1000 West Broadway, Hobbs, New Mexico 88240, Telephone (505) 392-4046, between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed Stage I Abatement Plan, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

## **RICE** Operating Company

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

April 23, 1999

Mr. Wayne Price NM Energy, Minerals, and Natural Resources Department Oil Conservation Division, Environmental Bureau 2040 S. Pacheco Santa Fe, NM 87505

Stage I Abatement Plan Junction I-9 Release Site Unit Letter I, Section 9 of T19S, R38E Hobbs Salt Water Disposal System Lea County, New Mexico

Mr. Price:

RE:

Attached please find the proof of notification for Rice Operating Company's Stage I Abatement Plan for the junction I-9 Release Site. Included in this package are the affidavits of publication from the three newspapers that were required: Albuquerque Journal, Hobbs News Sun, Lovington Daily Leader; copies of the certified mail return cards from the notification mailed to owners of record within one mile radius of the site; and copies of the certified mail return cards from the notification mailed to "those persons as identified by the Director, who have requested notification."

The public notice was published in these three newspapers on April 9, 1999. It is understood that there is a 30-day waiting period for public comment, and that after the 30 days, the Stage I Abatement Plan will be reviewed for approval or approval with conditions. Rice Operating Company will expect to hear from you the week of May 10, 1999.

Sincerely,

Carolyn Roman Harpen

Carolyn Doran Haynes Operations Engineer

Attachment Cc: KH, JC, LG, file, Mr. Chris Williams, OCD Hobbs District Office



#### NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

March 25, 1999

CERTIFIED MAIL RETURN RECEIPT NO: Z 357 870 113



Carolyn Doran Haynes Operations Engineer Rice Operating Company 122 West Taylor Hobbs, New Mexico 88240

RE: Stage I Abatement Plan Junction I-9 Release Site NE 1/4 SE 1/4 Section 09-Ts19s-R38e Hobbs Salt Water Disposal System Lea County, New Mexico

Dear Ms. Haynes:

The New Mexico Oil Conservation Division (OCD) has reviewed Rice Operating Company 's (ROC) January 19, 1999 Stage I Abatement Plan for the above referenced site. This document contains ROC's Stage 1 Abatement Plan Proposal for investigating ground water contamination resulting from a salt water disposal pipeline spill at ROC's Junction I-9 Release site.

The OCD has determined that the Stage 1 Abatement Plan Proposal is administratively complete. Before the OCD can issue approval of the Stage 1 proposal, the OCD requires that:

- 1. ROC issue by April 9, 1999 the attached public notice of the Stage 1 proposal in the Albuquerque Journal, Hobbs News Sun and the Lovington Daily Leader pursuant to OCD Rule 19.G.(2).
- 2. Prior to issuing the public notice, ROC will also issue written notice of the Stage 1 proposal pursuant to OCD Rule 19.G.(1). For written notification of "those persons, as identified by the Director, who have requested notification" pursuant to OCD Rule 19.G.(1).(d), enclosed you will find a 3.5" disk containing a "WordPerfect" listing of those persons.

Please provide the OCD with proof of notice upon completing issuance of the written and public notice. If you have any questions, please contact Wayne Price of my staff at (505) 827-7155.

Sincerely,

- alin la

Roger C. Anderson Environmental Bureau Chief

xc: Chris Williams, OCD Hobbs District Office Bill McNeill- Landowner

#### NOTICE OF PUBLICATION

#### STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following Stage 1 Abatement Plan Proposal has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

Rice Operating Company, Carolyn Doran Haynes, Operations Engineer, Telephone (505) 393-9174, 122 West Taylor, Hobbs, New Mexico 88240, has submitted a Stage 1 Abatement Plan Proposal for the Pipeline Junction I-9, Hobbs Salt Water Disposal System, located approximately .6 miles southwest of Hobbs, NM in the NE 1/4, SE 1/4 of Section 09, Township 19 South, Range 38 East, NMPM, Lea County, New Mexico. Rice Operating Company operates a salt water disposal pipeline at the site. Phase-separated hydrocarbon (PSH) has been observed on the ground water. The Stage 1 Abatement Plan Proposal presents the following subsurface investigation activities: determine site geology and hydrogeology; conduct a registered water well search within a 1 mile radius of the site; install a minimum of 3 monitoring wells; if necessary, install additional wells; collect soil samples for field screening and/or laboratory analysis from each boring; collect ground water samples for laboratory analysis from each monitoring well; obtain depth to ground water measurements and calculate the ground water gradient and direction; survey all well locations by a professional land surveyor registered in the State of New Mexico; and prepare a report summarizing field activities and laboratory results.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The Stage 1 Abatement Plan Proposal may be viewed at the above address or at the Oil Conservation Division Hobbs District Office, 1625 N. French Drive, Hobbs, New Mexico 88240, Telephone (505) 393-6161 between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed Stage 1 Abatement Plan Proposal, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which written comments may be submitted. 122 West Taylor, Hobbs NM phone: (505) 393-9174 fax: (505) 397-1471

## **Rice Operating Company**



| To:  | Mr. Chris Williams                       | From: | F. Wesley Root                   |  |  |
|------|--|-------|----------------------------------|--|--|
|      | NMOCD District I Office                  | ····· |                                  |  |  |
| Fax: | <b>ax:</b> (505) 393-0720 <b>Pages</b> 1 |       |                                  |  |  |
| Phon | <b>e</b> (505) 393-6161                  | Date: | 01/14/99                         |  |  |
| Re:  | Interim Abatement                        | CC:   | Mr. Roger Anderson / Wayne Price |  |  |
|      | Jct I-9, 09-T19S-R38E                    |       | NMOCD Environmental Bureau       |  |  |
|      | Lea County, NM                           |       | NMOCD Santa Fe Office            |  |  |

• Comments: 48 hour Ground Water Sampling Notification.

The three monitor wells installed on January 7 and 8, 1999 at the above listed site will be sampled by an independent contractor on January 16, 1999. Sampling will be conducted pursuant to item 4 of the NMOCD abatement approval letter dated December 17, 1998 with the following exception. A separate PAH analysis will not be performed since PAH compounds will be included in the volatile and semi-volatile analysis.

7. Weller Root

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| TRANSACTION REPORT                       |                           |  |
|--|---------------------------|--|
| Transmission<br>Transaction(s) completed |                           |  |
| NO. TX DATE/TIME DESTINATION             | DURATION PGS. RESULT MODE |  |
| 206 JAN. 6 15:46 15053930720             | 0°00'38"001 OK Normal     |  |

| RICE OPERATING COMPANY |
|------------------------|
| 122 WEST TAYLOR        |
| HOBBS, NM 88240        |
| Phone: (505) 393-9174  |
| Fax: (505) 397-1471    |

| TO: NMOLD Hobbs Office DATE: 1-6-99                                |
|--|
| ATTN: Chais Williams   |
| FROM: Wes Root   |
| SUBJECT: Interim Abatement, Jot I-9 Site, 09-7195-R38E, Len Co. NM |
| COVER PAGE PLUSPAGE(S) TO FOLLOW                                   |
| COMMENTS: Ro we discussed on Jonuary 4, 1999, instellation of      |
| the three wells to be used for interim abatement at the            |
| Junction I-9 site will begin thursday Jonnan 7, 1999.              |
| The drilling contractor will begin at 7:00 AM. f                   |
| understand from our conversition this afternoon that               |
| Paul Kautz, NMOCO representative, may inspect drilling             |
| operations at the site.  |

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# **RICE** Operating Company

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

December 18, 1998

Mr. Wayne Price New Mexico Energy and Minerals Department Oil Conservation Division 2040 South Pacheco Street Santa Fe, New Mexico 87505

Re: Junction I-9 Release Site Unit Letter I, Section 9 of T19S R38E Hobbs Salt Water Disposal System Lea County, New Mexico

Mr. Price:

Thank you for your prompt review and approval of our request to initiate interim abatement measures at the above referenced site. However, based on the contents of your approval letter, there apparently has been a slight misunderstanding as to our conversations on December 15 and 17, 1998. Specifically, the reason we want to initiate interim abatement, why we would like to include monitoring wells, and the number of wells we want to install need to be clarified.

Rice requested interim abatement because it just makes good sense to begin abatement of the crude oil floating on the ground water; we are concerned that the Stage I Abatement approval process will take several months; and pursuant to New Mexico Oil Conservation Division (NMOCD) Rule 19.D.(g), we are allowed, with NMOCD approval, to begin abating water pollution while abatement plan approval is pending.

Rice Operating Company wishes to install a total of three wells, one recovery well and two down gradient monitoring wells as part of the interim abatement measures. As I stated on December 15<sup>th</sup>, the direction of ground water flow at the site could be accurately determined if there are three wells present. This information would allow us to develop a more accurate Stage I Abatement Plan.

While a potential for the release to have impacted water wells does exist, visual inspection of the two water wells we have identified within a one mile radius of the site to date showed no evidence of adverse impact. Both water wells are used to supply a stock tank. The well I discussed with you on December 15th is located approximately ¼ of a mile northwest of and in an apparent up gradient position relative to the site. The well I found on December 16<sup>th</sup> is located <sup>3</sup>/<sub>4</sub> of a mile down gradient from the release site.

At this time there is no reason to assume that either water well has been adversely affected by our release and their existence had absolutely no bearing on Rice's decision to request installation of monitoring wells. The location of the two wells is shown on the enclosed topographic map.

Therefore, while we appreciate the decision to allow three monitoring wells to be installed, the combination of one recovery well and two monitor wells should be more than adequate for Rice to develop the Stage I Abatement plan. The three wells will be installed pursuant to the conditions specified in the approval letter. A site map showing the proposed locations for the recovery well (RW-1) and two monitoring wells (MW-1 and MW-2) is enclosed.

The two monitoring wells will be initially sampled for the parameters included in condition 4 of your approval letter. If these results are below regulatory limits, Rice requests that the NMOCD allow parameters, such as metals, be removed from future testing.

If you have any questions please feel free to call.

Sincerely,

7. Welesley Root

F. Wesley Root Projects Manager

Enclosures

CC.

Mr. Chris Williams, NMOCD District I Office KH. File







OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

#### CERTIFIED MAIL RETURN RECEIPT NO: P 288 259 090

December 17, 1998

Mr. F. Wesley Root Projects Manager Rice Operating Company (ROC) 122 West Taylor Hobbs, New Mexico 88240

RE: Abatement Plan (AP-8) Requirement Rice Operating Company Hobbs Salt Water Disposal System UL I-Sec 9-Ts19s-R38e Lea County, New Mexico

#### Dear Mr. Root:

New Mexico Oil Conservation Division (NMOCD) is in receipt of your letter sent by fax dated December 15, 1998 requesting permission to initiate emergency interim abatement measures at the above referenced facility. NMOCD also acknowledges your verbal request pursuant to our telephone conversation on December 17, 1998 to allow three monitor wells to be installed in addition to the one recovery well. It is NMOCD's understanding this decision was made after you confirmed that there is a domestic water well located down gradient from the spill site.

Therefore due to the potential for impacts on down gradient water wells and pursuant to NMOCD Rule 19.D.(g) your request is hereby approved subject to the following conditions:

- 1. All recovery and monitor wells shall be constructed per your drawing, except monitor wells can have different casing size. The annulus above the bentonite plug shall be grouted to the surface with an approved type cement grout containing 3-5% bentonite. Boring logs shall be recorded with all appropriate information.
- 2. Product recovery records shall be maintained and shall include volumes recovered, the product thickness measured before each recovery event, and the disposition of all waste generated. These Field records shall be maintained and submitted in subsequent reports. ROC shall properly retain a sample of the recovered oil for future possible fingerprinting.





OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

- 3. NMOCD will allow one recovery well as proposed, and three monitor wells strategically located to determine the groundwater gradient and located a sufficient distance from the recovery well to make a preliminary determination of the down gradient extent of contamination.
- 4. Initial groundwater sampling analysis for all monitor wells shall include volatile organics (Method 8060), Semi-volatile organics (Method 8270), PAH's (Method 8310), WQCC Metals, and General Chemistry (PH, TDS, Conductivity, Major Cations and Anions).
- 5. ROC shall notify the District office 48 hours in advance before commencing any significate activities.
- 6. The above emergency action shall not interfere with the normal abatement plan process pursuant to NMOCD Rule 19.

Please be advised that NMOCD approval of this emergency plan does not relieve ROC of liability should their operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve ROC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155).

Sincerely Yours,

Wayne Piece

Wayne Price-Environmental Bureau

cc: Chris Williams-NMOCD District I Supervisor Bill McNeill-Hobbs

file: O/wp/riceaba1



OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

Certified Mail Return Receipt No. Z 357 870 111

December 16, 1998

Mr. Bill McNeill P.O. Box 1058 Hobbs, NM 88241 505-392-8790

Re: Abatement Plan (AP-8) Requirement Rice Operating Company Hobbs Salt Water Disposal System Lea County, New Mexico



#### Dear Mr. McNeill:

New Mexico Oil Conservation Division (NMOCD) hereby gives notice that NMOCD has required Rice Operating Company to submit an Abatement Plan for the above referenced facility located in Unit Letter I, Section 9-Ts 19s-R38e, pursuant to NMOCD Rule 19 (Prevention and Abatement of Water Pollution). A copy of Rule 19 has been enclosed for your information.

Pursuant to our telephone conversation on December 15, 1998 NMOCD understands that you are the current land owner and that one of your down gradient water wells approximately 1/4 mile away which is used for watering domestic stock has been impacted from this spill. We understand your technical adviser has sampled this well to verify this fact and has indicted to you that ground water movement could be as high as three feet per day. In order to expedite this matter NMOCD respectfully requests that you send us a map showing the location of your well in reference to the spill, the analytical results of any water quality sampling, and information from your technical adviser as to the ground water flow rate.

NMOCD understands you wish to intervene in this case and will copy you on all correspondence concerning this issue. NMOCD is very concerned about any oilfield groundwater contamination in the state of New Mexico and requires that a responsible person abate pollution in accordance with all applicable rules and regulations.

If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155).

Sincerely Yours,

Wayne Price

Wayne Price-Environmental Bureau

cc:

Roger Anderson-Environmental Bureau Chief, Santa Fe, NM Lori Wrotenbery-NMOCD Director Mr. Wes Root-Rice Operating Co.-Hobbs OCD District I Office-Hobbs

attachments-1

file: O/wp/mcneille

# **RICE** Operating Company

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

December 15, 1998

Mr. Wayne Price New Mexico Energy and Minerals Department Oil Conservation Division 2040 South Pacheco Street Santa Fe, New Mexico 87505

Re: Junction I-9 Release Site Unit Letter I, Section 9 of T19S R38E Hobbs Salt Water Disposal System Lea County, New Mexico

Mr. Price:

Rice Operating Company requests that the New Mexico Oil Conservation Division approve the installation of a recovery well at the above listed site as an interim abatement measure.

As we discussed during our telephone conversation this morning, the well would be used to recover crude oil floating on top of the water table at the site until an abatement plan pursuant to 19 NMAC 15.A.19 can be approved and implemented. A site map showing the proposed location for the recovery well (RW-1) and well construction diagram are enclosed.

Crude oil would be recovered by manually bailing the well a minimum of three days per week. The initial bailing schedule will be Monday, Wednesday, and Friday. After measuring the volume of crude oil recovered during each bailing event, the recovered fluids will be placed back into the Hobbs Salt Water Disposal System for disposal. A monthly summary of the crude oil volume recovered, including a cumulative total, will be prepared and kept on file at our Hobbs Office.

Your prompt response to this request will greatly assist our abatement efforts. If you have any questions please feel free to call.

Sincerely,

F. Wesley Root

F. Wesley Root Projects Manager

Enclosure

CC.

Mr. Chris Williams, NMOCD District I Office KH. File







OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

#### CERTIFIED MAIL RETURN RECEIPT NO: P 288 259 088

Mr. F. Wesley Root Projects Manager Rice Operating Company (ROC) 122 West Taylor Hobbs, New Mexico 88240

RE: Abatement Plan (AP-8) Requirement Rice Operating Company Hobbs Salt Water Disposal System Lea County, New Mexico

Dear Mr. Root:

The New Mexico Oil Conservation Division (OCD) has reviewed Rice Operating Company's (ROC) Release Notification letter dated October 22, 1998 concerning the discovery of hydrocarbon-impacted ground water on October 20, 1998 located at ROC's Hobbs Salt Water Disposal System Unit letter I, Section 9, Township 19 south, Range 38 east in Lea County, New Mexico.

Pursuant to 19 NMAC 15.A.19.C.1, the OCD requires an abatement plan for the ROC site to abate ground water pollution. To initiate the abatement plan process, the OCD requires that ROC submit to the OCD by January 20, 1999 a Stage 1 abatement plan investigation proposal pursuant to OCD Rule 19.E.1. and OCD Rule 19.E.3.

If you have any questions, please contact Wayne Price of my staff at (505) 827-7155.

Sincerely,

Roger C. Anderson Environmental Bureau Chief

xc: Chris Williams-NMOCD District I Supervisor



| DRILLI            | ING LOG   | Site Name /Location     | Well No.<br>B-9       | Date Drille<br>1-7-99 | ed: Driller:<br>C. Harrison | Logged by:<br>FWR         |
|-------------------|---|-------------------------|-----------------------|-----------------------|-----------------------------|---------------------------|
| RICE Ope          | erating Company   | Junction I-9            | Well Depth:           | Boring De             | pth: Well Material:         | Construction:             |
| 122 V<br>Hobbs Ne | West Taylor<br>w Mexico 88240   | 09-T19S-R38E            | Casing Length:        | Boring Dia            | meter: Casing Size:         | Plugged boring            |
| Phone: (          | (505) 393-9174  | Lea Co. New Mexico      | N/A<br>Screen Longth: | 8"                    | N/A                         | total depth to            |
| Fax: (5           | 505) 397-1471   |                         | N/A                   | Air Rota              | iry N/A                     | surface with<br>bentonite |
| DEPTH<br>(Feet)   | SUBSUR  | RFACE LITHOLOGY         | Sample<br>Type        | OVM<br>(ppm)          | REMARKS                     | Boring                    |
| 0                 | Light brown, fine-  | grained calcareous sand |                       |                       |                             |                           |
|                   |   | <i>a</i>                |                       |                       |                             |                           |
|                   |   |                         |                       |                       |                             |                           |
| 4                 |   |                         | Į                     |                       | 1                           |                           |
| 5                 |   | · .                     | Drill Cuttings        | >1                    |                             |                           |
| 6                 |   |                         | I                     |                       | ł                           |                           |
| - 7               | 1176 to a 11. 1.4 -   | Caliata                 |                       |                       |                             |                           |
| 8                 | white to light gray   | Callene                 |                       |                       |                             |                           |
| 9                 |   |                         | Drill Cuttings        | >1                    |                             |                           |
|                   |   |                         |                       |                       |                             |                           |
| 12                |   |                         |                       |                       |                             |                           |
| - 13              |   |                         |                       |                       |                             |                           |
| 14                |   |                         |                       |                       |                             |                           |
| 15                |   |                         | Drill Cuttings        | >1                    |                             |                           |
| - 16              |   |                         |                       |                       |                             |                           |
|                   |   |                         |                       |                       |                             |                           |
| 10                |   |                         |                       |                       | 3                           |                           |
| 20                |   |                         | Drill Cuttings        | 127                   | Hydrocarbon stain           |                           |
| 21                |   |                         | L                     |                       |                             |                           |
| <u> </u>          | , <del>1997 - 1997 - 1997 - 1997 - 19</del> 97 - 1997 |                         | -                     |                       |                             |                           |
| - 23              | Indurated red-brow  | n silicious sandstone   |                       |                       |                             |                           |
| <sup>-</sup> - 24 |   |                         | Drill Cuttings        | 173                   | Hydrocarbon stain           |                           |
| 25                | Light gray caliche  |                         |                       |                       | -                           |                           |
| 27                |   |                         |                       |                       |                             |                           |
| 28                |   |                         |                       |                       |                             |                           |
| 29                |   |                         |                       |                       |                             |                           |
| 30                |   |                         | Drill Cuttings        | 46                    |                             |                           |
| - 31              |   |                         |                       |                       | Depth to Water              |                           |
| ■ <u> </u>        | Indurated and har   | m silicious candetono   | -                     |                       | 0.00 feet LNAPL             |                           |
| 33                |   | an sincious sandstone   |                       |                       | gaugea 1-8-99               |                           |
| 34                |   |                         | Drill Cuttings        | 4                     |                             |                           |
|                   | Light brown to pinl   | k fine-grained sand     | l                     |                       |                             |                           |
| 37                |   |                         |                       |                       | Bentonite Seal              |                           |
| - 38              |   |                         |                       |                       | <u>ا</u>                    |                           |
| 39                |   |                         | Drill Cuttings        | >1                    |                             |                           |
| 40                |   |                         |                       |                       |                             |                           |

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# ARCADIS GERAGHTY& MILLER

## APPENDIX B

## **BORING LITHOLOGY LOGS**

| ENEI<br>2775<br>DA  | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420   | RE                                 | CORD C                  | )F SU         | BSURFACE EXPLORA  | TION    |
|---------------------|---|------------------------------------|-------------------------|---------------|---|---------|
| Project #:          | EV-958  | Well/Borin                         | g #:                    |               | B-1 Date Drilled: 1   | 0/20/98 |
| Project:            | Junction I-9<br>roject: Hobbs SWD System  |                                    | West Texa<br>Well Servi | s Water<br>ce | Drilling Air Rot<br>Method:   | агу     |
|                     | Lea County, New Mexico  | Driller:                           | Bernie                  | ·             | Logged By: SAL  |         |
| DEPTH<br>(FEET)     | SOIL DESCRIPTION  | SAMPLE<br>NUMBER/<br>TIME          | SAMPLE<br>TYPE          | OVA<br>(PPM)  | REMARKS/SAMP<br>DESCRIPTION   | LE      |
| 0<br>               | Brown sandy top soil to 6"<br>Brown silty fine SAND 6" to 2'<br>White to tan caliche-soft crumbly             |                                    |                         |               |   | ° —     |
| 5<br>               | from 2' to 5'<br>Light tan caliche with tine sand 3'<br>to 10'.   | 1 / 8:45                           | SS                      |               | Sample 1 collected from 4' to 5' using a sp<br>spoon sampling device. Sample was light<br>tan to white caliche.   | 5       |
| 10<br>              | Light tan caliche with tine tan sand<br>from 10' to 15'.  | 278:55                             | SS                      | 85            | Sample 2 collected from 10' to 12' using a split spoon. Sample was light tan with some gray staining. Some odor.  |         |
| 15                  | Light tan fine caliche and sand<br>stained gray, 15' to 20'.  | 379:00                             | SS                      | 297           | Sample 3 collected from 15' to 16' using<br>a split spoon. Sample was light tan caliche<br>and fine sand stained gray. Strong odor.   |         |
| 20                  | Light blue caliche with blue stained<br>chert, very hard from 20' to<br>approximately 20.6 feet. Then sandy   | 479:10                             | SS                      | 54            | Sample 4 collected from 20' to 20'.6" using<br>a split spoon. Sample was hard light blue<br>stained caliche and chert. Some odor.   | 20      |
| 25                  | to 25'.<br>Caliche stained blue-gray, some fine<br>sand tan to gray from 25' to                               | 579:40                             | Core                    | 254           | Sample 5 collected from 25' to 26' using<br>a split spoon. Sample was soft caliche and<br>fine sand stained gray. Strong odor.  | 25      |
|                     | approximately 28'. Hard<br>Hard red chert stained blue-gray.<br>Caliche stained gray from 28' to 30'.         | 679:50<br>7710:00                  | Core                    | 261<br>195    | Sample 6 collected at 28' using a core<br>sampling tool. Sample was hard red chert<br>and caliche stained blue-gray. Strong odor.<br>Sample 7 collected at 30' using a core | 30      |
|                     | Caliche and sand stained gray<br>from 30' to approximately 32'.   | 8710:10                            | Core                    | 110           | sampling tool. Sample was power caliche<br>stained gray. Some odor.<br>Sample 8 collected at 32' using a core   |         |
| 35 [ <sup>1</sup>   | Light tan caliche with chips of pink-<br>ed chert and no odor from 32' to 34'.                                |                                    |                         |               | sampling tool. Sample was light tan sand<br>and caliche. No staining and no odor.   | 35      |
| -<br>-<br>- 40<br>F | Fotal depth of boring, 34 feet.<br>Depth to groundwater, 31.6 feet meas<br>Phase-separated hydrocarbon (PSH), | ured on 10/21/9<br>0.8 feet, measu | 98.<br>Ired on 10/21/9  | 98            |   | 40      |

ABBREVIATIONS AND SYMBOLS

SS - Driven Split Spoon ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core

RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler

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HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing MD - Mud Drilling

| 2775<br>D                             | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420   | RE                                 | CORD C                  | OF SU         | BSURFACE EXPLORA  | ΓION        |  |  |  |
|---------------------------------------|---|------------------------------------|-------------------------|---------------|---|-------------|--|--|--|
| Project #                             | : EV-958  | Well/Borin                         | g #:                    |               | B-2 Date Drilled: 10  | 0/20/98     |  |  |  |
| Project:                              | Junction I-9<br>Hobbs SWD System  | Drilling<br>Company:               | West Texa<br>Well Servi | s Water<br>ce | Drilling Air Rotary<br>Method:  |             |  |  |  |
|                                       | Lea County, New Mexico  | Driller:                           | Bernie                  |               | Logged By: SAL  |             |  |  |  |
| DEPTH                                 | 1   | SAMPLE                             | SAMPLE                  | OVA           | REMARKS/SAMP  | LE.         |  |  |  |
| (FEET)                                | SOIL DESCRIPTION  | NUMBER/                            | TYPE                    | (PPM)         | DESCRIPTION   |             |  |  |  |
| 0<br>                                 | Brown sandy top soil to 6"  |                                    |                         |               |   | 0           |  |  |  |
| -                                     | Brown silty fine sand 6" to 2"<br>White to tan caliche-soft crumbly   |                                    |                         | •             |   |             |  |  |  |
| - 5                                   | from 2' to 5'   | 1/10:45                            | SS                      | 0             | Sample 1 collected from 5' to 6' using a spl  |             |  |  |  |
|                                       | Light tan to white caliche with fine sand, crumbly, soft, 5' to 10'.  |                                    |                         |               | spoon sampling device. Sample was light<br>tan to white, soft, crumbly caliche.   |             |  |  |  |
| -                                     |   | 2710:50                            | SS                      | 0             | Sample 2 collected from 10' to 12' using a  |             |  |  |  |
| 10<br>                                | Light tan callche with fine tan sand,<br>crumbly and soft, from 10' to 15'.   |                                    |                         |               | split spoon. Sample was light tan<br>caliche. No odor.  |             |  |  |  |
| •<br>1.5                              |   | 37 10:55                           | Core                    | 2             | Sample 3 collected from 15' to 16' using  | - · ·       |  |  |  |
| 15<br>                                | Hard white caliche and tan fine sand.<br>Some blue-gray color, 15' to 20'.  |                                    |                         |               | a coring tool. Sample was light tan/white<br>caliche and fine sand stained gray. No odor                                | 13          |  |  |  |
|                                       |   | 4/11:00                            | Core                    | 266           | Sample 4 collected from 20' to 21' using a  |             |  |  |  |
| 20                                    | Hard caliche stained blue-gray, 20' to<br>23'. Strong odor. Then hard blue-gray<br>stained caliche and chert, 23' to 25'. |                                    |                         |               | coring tool. Sample was hard blue-gray stained caliche. Strong odor.  | 20          |  |  |  |
|                                       |   | 5711:10                            | Core                    | 274           | Sample 5 collected from 25' to 26' using a  | 25          |  |  |  |
| - 25                                  | Hard caliche stained blue-gray with<br>blue-gray stained chert mixed in, 25'<br>to 28'.                                   |                                    |                         |               | coring tool. Sample was hard caliche and chert stained blue-gray. Strong odor.  |             |  |  |  |
| 20                                    | with chips of chert, 28' to 30'.  | 6711:20                            | Core                    | 174           | Sample 6 collected at 30' to 31' using a core   | 30          |  |  |  |
| — 30                                  | Light tan caliche stained gray with<br>thin black lines in the center of the<br>core, from 30' to 33'.                    |                                    |                         |               | sampling tool. Sample was white caliche<br>stained gray with black lines running<br>through the sample core. Some odor. |             |  |  |  |
| — 35                                  |   |                                    |                         |               |   | 35 —        |  |  |  |
| · · · · · · · · · · · · · · · · · · · | ······································  |                                    |                         |               | · · · · · · · · · · · · · · · · · · ·   | · · · · · · |  |  |  |
|                                       |   |                                    |                         |               |   |             |  |  |  |
| 40                                    | Total depth of boring, 33 feet.<br>Depth to groundwater, 31.6 feet meas<br>Phase-separated hydrocarbon (PSH),             | ured on 10/21/9<br>0.7 feet, measu | 98.<br>red on 10/21/9   | 98.           |   | 40          |  |  |  |

SS - Driven Split Spoon ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing MD - Mud Drilling I.

| ENE<br>2775<br>D/ | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420 | RE                | CORDC          | )F SU   | BSURFACE EXPLORAT  | ΓION           |  |  |  |
|-------------------|---|-------------------|----------------|---------|--|----------------|--|--|--|
| Project #:        | EV-958  | Well/Borin        | g #:           |         | B-3 Date Drilled: 10   | )/20/98        |  |  |  |
|                   | Junction I-9  | Drilling          | West Texa      | s Water | Drilling Air Rota  | ury            |  |  |  |
| Project:          | Hobbs SWD System  | Company:          | Well Servi     | ce      | Method:  | -              |  |  |  |
|                   | Lea County, New Mexico  | Driller:          | Bernie         |         | Logged By: SAL   |                |  |  |  |
| עדספת             |   | SAMPLE            | SAMPLE         | OVA     | REMARKS/SAMPI  | ਤਾ             |  |  |  |
|                   | SOIL DESCRIPTION  | NUMBER/ TYPE (DI  |                |         | DESCRIPTION  |                |  |  |  |
| (FEEI)            |   | TIME              | TIFE           | (PPIVI) | DESCRIPTION  |                |  |  |  |
| <u> </u>          | Brown sandy top soil to 6"  |                   |                |         |  | 0              |  |  |  |
|                   |   |                   |                |         |  | -              |  |  |  |
| _                 | Brown silty fine sand 6" to 2'.                                       |                   |                | •       |  |                |  |  |  |
|                   | Light tap caliche 2' to 15'   |                   |                |         |  | -              |  |  |  |
| 5                 | No evidence of staining and no odor.                                  |                   |                |         |  | 5              |  |  |  |
|                   |   |                   |                |         |  |                |  |  |  |
| _                 |   |                   |                |         |  |                |  |  |  |
|                   |   |                   |                |         |  | -              |  |  |  |
| 10                |   |                   |                |         |  | 10             |  |  |  |
|                   |   |                   |                |         |  | -              |  |  |  |
| -                 |   |                   |                |         |  | -              |  |  |  |
| 15                | Light top soft collabe and tipe sand                                  | 17 14:05          | Core           | 2.2     | Sample 1 collected at 15' using                                    | 15             |  |  |  |
| -                 | with intermittent hard layers and no                                  |                   |                |         | caliche and fine sand no staining. No odor.                        | -              |  |  |  |
|                   | evidence of staining from 15' to                                      |                   |                |         |  | _              |  |  |  |
|                   | approximately 25'.  | 2/14.10           | Core           | 13      | Sample 2 collected at 20' using a coring                           | <b>∤</b> −     |  |  |  |
| 20                | r   | 27 14.10          |                |         | tool. Sample was light tan and soft. No                            | 20             |  |  |  |
| -                 |   |                   | · ·            |         | stain. No odor.  |                |  |  |  |
| -                 |   | ľ                 |                |         | · · ·  | -              |  |  |  |
| - 25              |   | 37 14:20          | Core           | 214     | Sample 3 collected at 25' using a coring                           | 25             |  |  |  |
|                   | Light tan caliche stained blue-gray.                                  |                   |                |         | tool. Sample was crumbly caliche<br>stained blue-gray. Strong odor |                |  |  |  |
| - 1               | gray from 25' to approximately 30'.                                   |                   |                |         | similed blac gray. Buoing buoin                                    | -              |  |  |  |
| -                 |   | 4 / 14:30         |                | 127     | Sample 4 collected from 30' to 31' using a                         |                |  |  |  |
| — 30 k            | Crumbly caliche stained dark gray                                     | 47 14:30          | Core           | 137     | coring tool. Sample was dark gray stained                          | 30             |  |  |  |
| <u> </u>          | with thin black lines in the center of                                |                   |                |         | caliche with black lines running                                   |                |  |  |  |
| -  t              | he core, from 30' to 31'.   | 5/1425            |                |         | through the sample core. Some odor.                                |                |  |  |  |
| · _ h             | Fan sand from 31' 33'.  | 57 1455           |                | •       | split spoon. Sample was tan sand, no                               | -              |  |  |  |
| - 35              |   |                   |                |         | stain or odor.   |                |  |  |  |
|                   |   |                   |                |         |  | . <sup>.</sup> |  |  |  |
| -                 |   |                   |                |         |  |                |  |  |  |
| -<br>40 [7        | lotal depth of boring, 33 feet.                                       |                   |                |         |  | 40             |  |  |  |
| . ~ [             | Depth to groundwater, 31 feet measure (PSH)                           | ed on 10/21/98    | red on 10/21/9 | 8.      |  |                |  |  |  |
| P                 | nase-separateu nyurocarbon (FSH),                                     | i tor tio, incasu |                |         |  |                |  |  |  |
| BDEVIA            |   | S - Driven Solit  | Spoon          |         | HSA - Hollow Stem Auger  |                |  |  |  |

SS - Driven Split Spoon ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler

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HSA - Hollow Stem Auger CFA - Continuos Flight Augers DC - Driving Casing MD - Mud Drilling

| Project #:       EV-958       Well/Boring #:       B-4       Date Drilled:       10/20/98         Junction I-9       Junction I-9       Drilling       West Texas Water       Drilling       Air Rotary         Project:       Hobbs SWD System       Company:       Well Service       Method:         Lea County, New Mexico       Droller:       Bernie       Logged By:       SAL         DEPTH<br>(FEET)       SOIL DESCRIPTION       SAMPLE<br>NUMBER/<br>TIME       SAMPLE<br>NUMBER/<br>TYPE       OVA<br>(PPM)       REMARKS/SAMPLE<br>DESCRIPTION       0         0       Brown sixty ine sand 6' to 2'<br>White to an cance-son crumbly<br>rom 2' to 5'       T1715/05       SS       3       Sample 1 collected from 5' to 6' using a split<br>spoon sampling device. Sample was light<br>run to white, soft, crumbly caliche.       0       -         10       Light ain cownic calche with time<br>sand, crumbly and soft, from 10' to 12' using a<br>split spoon. Sample 2 collected from 0' to 12' using a<br>split spoon. Sample was light tan, dry<br>ealthche. No odor.       10         115       Hard red chert with white and ught<br>an hard caliche and some sand, 14'<br>to approximately 14'.       3/15:12       Core       10       Sample 2 collected at 15' using a<br>coring tool. Sample was light tan, dry<br>ealthche. No dodr.       12       -         20       Dry powdered caliche stand<br>doithe and some sand, 14'<br>to approximately 20'.       3/15:12       Core       10  | ENE<br>2775<br>D. | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420  | RE                   | CORD                    | OF SU         | BSURFA  | CE EXPLORA                        | ATION               |  |  |
|---|-------------------|--|----------------------|-------------------------|---------------|---|-----------------------------------|---------------------|--|--|
| Junction I-9       Drilling       West Texas Water       Drilling       Air Rotary         Project:       Hobbs SWD System       Company:       Well Service       Method:         DEPTH       SOIL DESCRIPTION       SAMPLE       OVA       REMARKS/SAMPLE         0       Brown sandy top soil to 6"       SAMPLE       OVA       REMARKS/SAMPLE         0       Brown sandy top soil to 6"       SaMPLE       OVA       REMARKS/SAMPLE         10       Brown sity hine sand 6" to 2"       Nime to an calcine-soft rumbly       0       -         5       Hord realizes soft rumbly, soft, 5" to 10"       17/15:05       3S       3       Sample 1 collected from 5" to 6" using a split soft soft rumbly caliche.       5         10       Light tan caliche with the tan sand, erumbly, soft, 5" to 10"       2/15:10       SS       1.7       Sample 2 collected from 10" to 12" using a coring tool. Sample was light tan, dry caliche with end light tan data alche and some sand, 14" to approximately 20".       4/15:15       Core       10       10       -         20       Dry powdered calche stamed       3/15:12       Core       10       Sample 3 collected at 15" using a coring tool. Sample was light tan/white caliche with some caliche with  | Project #         | EV-958   | Well/Borin           | g #:                    |               | B-4   | Date Drilled:                     | 10/20/98            |  |  |
| Lea County, New Mexico       Droller:       Bernie       Logged By:       SAL         DEPTH<br>(FEET)       SOIL DESCRIPTION       SAMPLE<br>NUMBER<br>TYPE       SAMPLE<br>(PPM)       OVA<br>REMARKS/SAMPLE<br>DESCRIPTION       0         0       Brown sandy top soil to o<br>Brown sandy top soil to o<br>Sumplify that stand of to 2'<br>White to an callche-soft crumbly<br>tom 2 to 5'       1715:05       SS       3       Sample 1 collected from 5' to 6' using a split<br>spoon sampling device. Sample was light<br>tan to white, soft, crumbly callche.<br>Dry and no odor.       0       -         10       Light tan to white callche with from 10' to<br>approximately 14'.       2/15:10       SS       1.7       Sample 2 collected from 10' to 12' using a<br>split spoon. Sample was light tan, dry<br>callche. No odor.       10         15       Hard red chert with white and light<br>tan to white, soft, from 10' to<br>approximately 14'.       3 / 15:12       Core       10       Sample 3 collected at 15' using<br>a coning tool. Sample was light tan/white<br>callche with red hard pieces of chert.<br>No odor.       15       -         20       Dry powdered callche staned<br>blue-gray with dor, from 20' to 30'.<br>At approximately 22'' and 22' is thin<br>layer of red chert.       5/7 15:25       Core       91       Sample 4 collected at 20' using a<br>coring tool. Sample was callche with some<br>chert, stained blue-gray. Sight odor.       20         30       Light fan Ganche with hight gray<br>stain and very little odor, from 30'<br>to approximately 33'.       6/7 15:40       SS       6.2  | Project:          | Junction I-9<br>Hobbs SWD System   | Drilling<br>Company: | West Texa<br>Well Servi | s Water<br>ce | Drilling Air Rotary<br>Method:  |                                   |                     |  |  |
| DEPTH<br>(FEET)       SOIL DESCRIPTION       SAMPLE<br>NUMBER/<br>TIME       SAMPLE<br>NUMBER/<br>TYPE       OVA<br>(PPM)       REMARKS/SAMPLE<br>DESCRIPTION         0       Brown samey top soil to 0°       0       0       0       0         10       Brown samey top soil to 0°       0       0       0       0         10       Brown sinty hite sand or to 2'       1/15:05       3S       3       Sample 1 collected from 5' to 6' using a split<br>spon sampling device. Sample was light<br>tan to white soft, crumbly caliche.       5       -         10       Light tan colliche with fine tan sand.<br>crumbly and soft, from 10' to<br>approximately 14'.       2/15:10       SS       1.7       Sample 2 collected from 10' to 12' using a<br>split spon.       10         11       Hard red chert with white and tight<br>tan hard caliche and some sand, 14'<br>to approximately 20'.       3/15:12       Core       10       Sample 3 collected at 15' using<br>a coring tool. Sample was light tan/white<br>caliche with red hard pieces of chert.<br>No odor.       15       -         20       Dry powered caliche staneed<br>bue-gray with doct, rbm 2U' to 30'.<br>At approximately 25' and 28' is thin<br>layer of red chert.       3/15:12       Core       177       Sample 4 collected at 20' using a<br>coring tool. Sample was powdered, blue-<br>gray. Some odor.       25         30       Light tan cauche with hight gray<br>stain and very little odor, from 30'<br>to approximately 33'.       5/15:40       SS       6.  | -                 | Lea County, New Mexico   | Droller:             | Bernie                  |               |   | Logged By: SAL                    |                     |  |  |
| DEF1H<br>(FEET)       SOIL DESCRIPTION       NUMBER<br>TIME       SAUTLE<br>TYPE       OVA<br>(PPM)       Intervention of the construction of | DEDTH             | T  | SAMPLE               | CANDLE                  | 0174          |   | EMARKS/SAM                        |                     |  |  |
| 0       Brown sandy top soil to 6"       0       0         8       Brown saily the sand 6" to 2"       17 15:05       SS       3       Sample 1 collected from 5" to 6" using a split spoon sampling device. Sample was light tan to white, soft, crumbly caliche. Dry and no odor.       5       5   | (FEET)            | SOIL DESCRIPTION   | NUMBER/<br>TIME      | TYPE                    | (PPM)         | ) DESCRIPTION   |                                   |                     |  |  |
| 7       5       17/15:05       SS       3       Sample 1 collected from 5' to 6' using a split spoon sampling device. Sample was light tan to white callche with the sand, crumbly soft, 5' to 10'.       5       10       10       10       10       10       27/15:10       SS       1.7       Sample 2 collected from 10' to 12' using a split spoon. Sample was light tan, dry callche. No dot.       10       10         10       Light an callche with the tan sand, crumbly and soft, from 10' to approximately 14'.       37/15:12       Core       10       Sample 3 collected at 15' using a coring tool. Sample was light tan, white and light tan hard callche and some sand, 14' to approximately 20'.       15       15       15       15        16       20<   | 0<br>             | Brown sandy top soil to 6"<br>Brown silty fine sand 6" to 2'   |                      |                         |               |   |                                   | 0 —                 |  |  |
| 5       Light tan to white callche with line<br>sand, crumbly, soft, 5' to 10'.       5       Spoon sampling device. Sample was light<br>tan to white, soft, crumbly caliche.<br>Dry and no odor.       5   |                   | from 2' to 5'  | 1715:05              | SS                      | 3             | Sample I colle  | cted from 5' to 6' using a        | split               |  |  |
| 10       27 15:10       SS       1.7       Sample 2 collected from 10' to 12' using a split spoon. Sample was light tan, dry caliche. No odor.       10         15       Hard red chert with white and light tan hard caliche and some sand, 14' to approximately 20'.       37 15:12       Core       10       Sample 3 collected at 15' using a coring tool. Sample was light tan/white caliche with red hard pieces of chert. No odor.       15         20       Dry powdered caliche stained blue-gray with odor, from 20' to 30'. At approximately 25' and 28' is thin layer of red chert.       47 15:15       Core       177       Sample 4 collected at 20' using a coring tool. Sample was powdered, blue-gray with odor, from 20' to 30'. At approximately25' and 28' is thin layer of red chert.       20       57 15:25       Core       91       Sample 5 collected at 30' using a split spoor.       25         30       Light tan caliche with light gray stain ed odor, from 30' to approximately 33'.       67 15:40       SS       6.2       Sample 6 collected at 30' using a split spoor.       30       30         31       Light tan caliche with light gray stain and very little odor, from 30' to approximately 33'.       35       35       35       35       35  | 5<br>             | Light tan to white caliche with fine sand, crumbly, soft, 5' to 10'.   |                      |                         |               | spoon sampling<br>tan to white, so<br>Dry and no odd                                  | ht 5                              |                     |  |  |
| 10       Light tan caliche with ine tan sand, crumbly and soft, from 10' to approximately 14'.       37 15:12       Core       10       Sample 3 collected at 15' using a coring tool. Sample was light tan, dry caliche. No odor.       15         11       Hard red chert with white and light tan hard caliche and some sand, 14' to approximately 20'.       37 15:12       Core       10       Sample 4 collected at 15' using a coring tool. Sample was light tan/white caliche with red hard pieces of chert. No odor.       15  | - 10              |  | 2715:10              | SS                      | 1.7           | Sample 2 collected from 10' to 12'  |                                   | a 10                |  |  |
| 15       Hard red chert with white and light tan hard caliche and some sand, 14' to approximately 20'.       37 15:12       Core       10       Sample 3 collected at 15' using a coring tool. Sample was light tan/white caliche with red hard pieces of chert. No odor.       15  | 10<br>            | Light tan caliche with fine tan sand,<br>crumbly and soft, from 10' to<br>approximately 14'.                               |                      |                         |               | split spoon. Sa<br>caliche. No od   | mple was light tan, dry<br>or.    |                     |  |  |
| 15       Hard red chert with white and light<br>tan hard caliche and some sand, 14'<br>to approximately 20'.       a coring tool. Sample was light tan/white<br>caliche with red hard pieces of chert.<br>No odor.       13       20         20       Dry powdered caliche stained<br>blue-gray with odor, from 20' to 30'.<br>At approximately25' and 28' is thin<br>layer of red chert.       4 / 15:15       Core       177       Sample 4 collected at 20' using a<br>coring tool. Sample was powdered, blue-<br>gray stained caliche. Odor.       20       20         25       5 / 15:25       Core       91       Sample 5 collected at 25' using a<br>coring tool. Sample was caliche with some<br>chert, stained blue-gray. Some odor.       25         30       6 / 15:40       SS       6.2       Sample 6 collected at 30' using a split spoor<br>sampling tool. Sample was white caliche<br>stained light blue-gray. Slight odor.       30         30       Light tan caliche with light gray<br>stain and very little odor, from 30'<br>to approximately 33'.       35       35  |                   |  | 3/15:12              | Core                    | 10            | Sample 3 colled   | cted at 15' using                 |                     |  |  |
| 20       Dry powdered caliche stained<br>blue-gray with odor, from 20' to 30'.<br>At approximately25' and 28' is thin<br>layer of red chert.       20   | 13<br>            | Hard red chert with white and light<br>tan hard caliche and some sand, 14'<br>to approximately 20'.                        |                      |                         |               | a coring tool. Sample was light ta<br>caliche with red hard pieces of che<br>No odor. |                                   | e   15              |  |  |
| 25       Core       91       Sample 5 collected at 25' using a coring tool. Sample was powdered, blue-gray stained caliche. Odor.       25         25       57 15:25       Core       91       Sample 5 collected at 25' using a coring tool. Sample was caliche with some chert, stained blue-gray. Some odor.       25         30       Light tan caliche with light gray stain and very little odor, from 30' to approximately 33'.       57 15:20       Sample 5 collected at 30' using a split spoor sampling tool. Sample was white caliche stained light blue-gray. Slight odor.       30         35       35       35       35       35       35  | 20                |  | 4715:15              | Core                    | 177           | Sample 4 collec   | Sample 4 collected at 20' using a |                     |  |  |
| 25       5715:25       Core       91       Sample 5 collected at 25' using a coring tool. Sample was caliche with some chert, stained blue-gray. Some odor.       25         30       Light tan caliche with light gray stain and very little odor, from 30' to approximately 33'.       6715:40       SS       6.2       Sample 6 collected at 30' using a split spoor sampling tool. Sample was white caliche stained light blue-gray. Slight odor.       30  | -                 | blue-gray with odor, from 20' to 30'.<br>At approximately25' and 28' is thin<br>layer of red chert.                        |                      |                         |               | gray stained cal  | iche. Odor.                       | -                   |  |  |
| 30       Light tan caliche with light gray<br>stain and very little odor, from 30'<br>to approximately 33'.       67 15:40       SS       6.2       Sample 6 collected at 30' using a split spoor<br>sampling tool. Sample was white caliche<br>stained light blue-gray. Slight odor.       30         35       35       35       35       35   | 25                |  | 5715:25              | Core                    | 91            | Sample 5 collec   | ted at 25' using a                | 25                  |  |  |
| 30       130       6715:40       SS       6.2       Sample 6 collected at 30' using a split spoor sampling tool. Sample was white caliche stain and very little odor, from 30' to approximately 33'.       30       30         35       35       35       35       35       35       35   | -                 |  |                      |                         |               | chert, stained bl   |                                   |                     |  |  |
| Light tan callche with light gray<br>stain and very little odor, from 30'<br>to approximately 33'.<br>35 35 35 35 35 35 35  | - 30 L            |  | 6715:40              | SS                      | 6.2           | Sample 6 collec   | ted at 30' using a split spo      | <sup>ооп</sup> 30 — |  |  |
| 35  |                   | Light fan caliche with light gray<br>stain and very little odor, from 30'<br>to approximately 33'.                         |                      |                         |               | sampling tool. S<br>stained light blu   |                                   |                     |  |  |
|   | ·                 |  |                      |                         |               |   | :                                 | 25                  |  |  |
|   | - 33              | · · · · · · · · · ·  | · · _ ·              | · · · · ·               |               |   |                                   |                     |  |  |
|   | . F               |  | · · ·                |                         | I             |   |                                   | ٦· ]                |  |  |
| Total depth of boring, 33 feet.   | · -               | lotal depth of boring, 33 feet.  |                      |                         |               |   |                                   | -                   |  |  |
| 40 — 40 Depth to groundwater, 32.8 feet measured on 10/21/98. 40 — 40 —   | 40 I              | 40 Depth to groundwater, 32.8 feet measured on 10/21/98.<br>Phase-separated hydrocarbon (PSH), NONE, measured on 10/21/98. |                      |                         |               |   |                                   |                     |  |  |

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SS - Driven Spirt Spoon ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler

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HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing MD - Mud Drilling į.

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| 2775<br>D       | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420  | RE                               | RECORD OF SUBSURFACE EXPLORATION   |              |   |              |  |  |  |
|-----------------|--|----------------------------------|--|--------------|---|--------------|--|--|--|
| Project #       | : EV-958   | Well/Borin                       | g #:   |              | B-5 Date Drilled:   | 10/20/98     |  |  |  |
| Project:        | Junction I-9<br>Hobbs SWD System<br>Lea County New Mexico  | Drilling<br>Company:<br>Driller: | Drilling West Texas Water Drilling Air<br>Company: Well Service Method:<br>Driller: Bernie Logged By: SA |              |   | Rotary       |  |  |  |
| DEPTH<br>(FEET) | SOIL DESCRIPTION   | SAMPLE<br>NUMBER/<br>TIME        | SAMPLE<br>TYPE   | OVA<br>(PPM) | REMARKS/SA<br>DESCRIPTI   | MPLE<br>ON   |  |  |  |
| 0<br>5<br>10    | Brown sandy top soil to 6"<br>Brown silty tine sand 6" to 2'<br>White to tan caliche-soft crumbly<br>from 2' to 5'<br>Light tan to white caliche with fine<br>sand, crumbly, dry, soft, 5' to 15'. |                                  |  |              |   | 0<br>5<br>10 |  |  |  |
| 15              | Dry tan crumbly caliche stained<br>blue-gray from 15' to 30'. Some odor.<br>Red chert encountered at<br>approximately 26'.   | 1716:15                          | Core   | 21           | Sample 1 collected at 15' using<br>a coring tool. Sample was light tan/w<br>caliche, dry, crumbly, stained blue-gra<br>Some odor.                               | hite<br>15 — |  |  |  |
| 20              |  | 2 / 16:23                        | Core   | 174          | Sample 2 collected at 20' using a<br>a coring tool. Sample was light tan/wi<br>caliche, dry, crumbly, stained blue-gra<br>Some odor.                            | hite 20      |  |  |  |
| 25              |  | 3 / 16:35                        | Core   | 81           | Sample 3 collected at 25' using a<br>coring tool. Sample was light tan cali<br>and chert stained blue-gray. Some odd  | che 25       |  |  |  |
| 30              | Light tan caliche stained gray with<br>thin black lines in the center of the<br>core, from 30' to 33'.   | 4 / 16:45                        | Core   | 28           | Sample 4 collected at 30' using a core<br>sampling tool. Sample was white calic<br>stained gray with black lines running<br>through the sample core. Some odor. | the 30       |  |  |  |
|                 |  | · · · · ·                        |  |              |   | 35           |  |  |  |
| 40              | Total depth of boring, 33 feet.<br>Depth to groundwater, 32.7 feet meas<br>Phase-separated hydrocarbon (PSH),  | sured on 10/21/2<br>NONE, measu  | 98.<br>red on 10/21/9  | 8.           |   | 40           |  |  |  |

ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler

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HSA - Hollow Stem Auger CFA - Continuous Flight Auger DC - Driving Casing MD - Mud Drilling T

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| DA                      | ALLAS, TX 75234-7420                  |                  |                 |         |   |                              |         |  |
|-------------------------|---------------------------------------|------------------|-----------------|---------|---|------------------------------|---------|--|
| Project #:              | EV-958                                | Well/Boring #: ] |                 |         | B-6   | Date Drilled:                | 10/21/9 |  |
|                         | Junction I-9                          | Drilling         | West Texa       | s Water |   | Drilling Air R               | lotary  |  |
| Project:                | Hobbs SWD System                      | Company:         | Well Servio     | ce      |   | Method:                      |         |  |
|                         | Lea County, New Mexico                | Driller:         | Driller: Bernie |         |   | Logged By: SAL               |         |  |
| DEPTH                   |                                       | SAMPLE           | SAMPLE          | OVA     |   | REMARKS/SAM                  | IPLE    |  |
| (FEET) SOIL DESCRIPTION |                                       | TIME             | TYPE            | (PPM)   |   | DESCRIPTIO                   | Ň       |  |
| o                       | Brown sandy top soil to 6"            |                  |                 |         |   |                              | 0       |  |
|                         | Light tan to gray caliche and sand    | 1                |                 |         |   |                              |         |  |
| <u> </u>                | nom o to s.                           |                  |                 | ·       |   |                              |         |  |
| 5                       |                                       | 1 / 8:35         | Core            | 0       | Sample I coll   | ected from 5' to 7' using a  | cori 5  |  |
|                         | 5' to 15'.                            |                  |                 |         | No odor.  | was light gray silty sand.   |         |  |
|                         |                                       |                  |                 |         |   |                              | 1       |  |
|                         | ·                                     | 2/8:40           | Core            | 1.4     | Sample 2 coll   | ected from 10' to 12' using  | 3 1 10  |  |
| 10                      |                                       |                  |                 | · · ·   | coring tool. S  | ample was light gray cali    | che 10  |  |
| -                       |                                       |                  |                 |         | land silly sand   | . NO 000F.                   |         |  |
| _                       |                                       | 2/9:45           | Core            |         | Sample 7 coll   | ated from 15' to 16' using   |         |  |
| I5                      | Light gray to brown silty sand from   | 378.45           | COIE            | 5.2     | Sample 3 collected from 15' to 16' usi<br>a coring tool. Sample was gray to bro |                              | n 15    |  |
|                         | 15' to approximately 25'.             |                  |                 |         | silty sand. No  | odor.                        |         |  |
| _                       |                                       |                  |                 |         |   |                              |         |  |
| 20                      | · · · · · · · · · · · · · · · · · · · | 4/8:47           | Core            | 290     | Sample 4 colle  | cted from 20' to 21' using   | a 20    |  |
|                         |                                       |                  |                 |         | gray silty sand   | . Strong odor.               |         |  |
| -                       |                                       |                  |                 |         |   |                              |         |  |
| 25                      | Lop and gray silly sand from          | 5/8:50           | Core            | 237     | Sample 5 colle  | ected from 25' to 26' using  | a 25    |  |
| - :                     | 25' to approximately 30'.             |                  |                 |         | silty sand. Str   | ong odor.                    |         |  |
|                         |                                       | 1                |                 |         |   |                              |         |  |
| - 30                    |                                       | 679:05           | Core            | 255     | Sample 6 colle  | cted at 30' to 31' using a c | ore 30  |  |
| - <sup>30</sup> [       | an sand from 30 to 33".               |                  |                 |         | Some odor.  | Sample was tan sand          |         |  |
| _                       |                                       |                  |                 |         |   |                              |         |  |
| -                       |                                       |                  |                 |         |   | :                            |         |  |
| 35                      |                                       |                  |                 |         |   |                              | 35 •    |  |
|                         |                                       |                  |                 |         |   |                              |         |  |
| <u> </u>                |                                       |                  |                 |         |   |                              |         |  |
| 40                      | Total depth of boring, 33 feet.       | ured on 10/21/9  | 98.             |         |   |                              | 40 -    |  |
| -   F                   | Phase-separated hydrocarbon (PSH),    | NONE, measu      | red on 10/21/9  | 8.      |   |                              |         |  |

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ST - Pressed Shelby Tube CA - Continuous Flight Auger RC - Rock Core THD - Texas Highway Department Cone CT-5' - Continuous Sampler

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HSA - Hollow Stem Auger CFA - Continuous Flight Auge DC - Driving Casing MD - Mud Drilling i

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| ENE<br>2775<br>D | RCON SERVICES, INC.<br>VILLA CREEK, SUITE 120<br>ALLAS, TX 75234-7420 | RE                                  | RECORD OF SUBSURFACE EXPLORA |         |  |                   |  |  |  |
|------------------|---|-------------------------------------|------------------------------|---------|--|-------------------|--|--|--|
| Project #        | : EV-958  | Well/Borin                          | g_#:                         |         | B-7 Date Drilled: 10   | 0/21/98           |  |  |  |
|                  | Junction I-9  | Drilling                            | West Texa                    | s Water | Drilling Air Rota  | ary               |  |  |  |
| Project:         | Hobbs SWD System  | Company: Well Service               |                              |         | Method:  | -                 |  |  |  |
|                  | Lea County, New Mexico  | Driller:                            | Bernie                       | •       | Logged By: SAL   |                   |  |  |  |
| DIDOTT           | 1   | SAMPLE                              |                              |         |  | . 17              |  |  |  |
| DEPIH            | SOIL DESCRIPTION  | NUMBER/                             | SAMPLE                       | OVA     | KEIVIAKAS/SAIVIEI  | _E                |  |  |  |
| (FEET)           |   | TIME                                | TYPE                         | (PPM)   | DESCRIPTION  |                   |  |  |  |
| 0                |   |                                     |                              |         |  |                   |  |  |  |
|                  | Brown sandy top soil to 6"  |                                     |                              |         |  |                   |  |  |  |
|                  | from 6" to 5'.  |                                     |                              |         |  |                   |  |  |  |
|                  |   |                                     |                              |         |  | -                 |  |  |  |
| 5                |   |                                     |                              |         |  | 5                 |  |  |  |
|                  | S' to 15'   |                                     |                              |         |  | <b>_</b>          |  |  |  |
|                  |   |                                     |                              |         |  |                   |  |  |  |
|                  |   | [                                   |                              |         |  |                   |  |  |  |
| 10               |   |                                     |                              |         |  | 10                |  |  |  |
|                  |   |                                     | 1                            |         |  |                   |  |  |  |
|                  |   |                                     | 1                            |         |  |                   |  |  |  |
|                  | 1 1   |                                     |                              |         |  | 1 _               |  |  |  |
| 15               | Light top dry grimbly callebe from                                    | 1/9:30                              | Core                         | 3.6     | Sample I collected from 15' to 16' using                                     | 15                |  |  |  |
|                  | 15' to approximately 25'.   |                                     |                              |         | a coring tool. Sample was tan crumbly  |                   |  |  |  |
|                  |   |                                     |                              |         |  |                   |  |  |  |
| _                | •   | 2/040                               |                              |         |  |                   |  |  |  |
| 20               | · ·   | 279:40                              | Core                         | 0.0     | Sample 2 collected from 20 to 21 using a coring tool. Sample was tan crumbly | 20                |  |  |  |
| <u> </u>         |   |                                     |                              |         | caliche. No odor.  |                   |  |  |  |
| —<br>—           |   |                                     |                              |         |  |                   |  |  |  |
|                  |   | 379:45                              | Core                         | 125     | Sample 3 collected from 25' to 26' using a                                   |                   |  |  |  |
| 25               | Soft light tan callche with   |                                     |                              |         | coring tool. Sample was soft tan caliche                                     | 25                |  |  |  |
| _                | hard blue-gray stained caliche from                                   |                                     |                              |         | and hard blue-gray caliche. Some odor.                                       |                   |  |  |  |
|                  | zi to approximately 50.   | ·                                   |                              |         |  |                   |  |  |  |
| - 20             |   | 479:55                              | Core                         | 145     | Sample 4 collected at 30' to 31' using a core                                | 30                |  |  |  |
| - 30             | Light tan silty sand from 30 to 31'.                                  |                                     |                              |         | sampling tool. Sample was light tan silty                                    | ,,, <u>,</u> ,    |  |  |  |
| -                | 1   |                                     | 1                            | ľ       | sand. No staining. Some odor.  |                   |  |  |  |
| -                |   | Í                                   |                              |         | ,  |                   |  |  |  |
| - 25             | 1   |                                     |                              |         | •  | 35                |  |  |  |
|                  | I   |                                     |                              |         | 1  |                   |  |  |  |
| -                |   |                                     |                              | I       |  | · · · · · <b></b> |  |  |  |
| -                | · · · · · · · · · · · · · · · · · · ·                                 |                                     |                              |         |  | •                 |  |  |  |
|                  | Total depth of boring, 31 feet.                                       |                                     |                              |         |  | 40                |  |  |  |
| -                | Depth to groundwater, NONE.   |                                     | red on 10/31/0               | 8       |  | · —               |  |  |  |
| l                | ruase-separated nydrocarbon (PSH),                                    | INOINE, measu                       | rea on 10/21/9               | 0.      |  | l                 |  |  |  |
| BBREVIA          | TIONS AND SYMBOLS s   | S - Driven Split<br>T - Pressed She | : Spoon<br>Iby Tube          |         | HSA - Hollow Stem Auger<br>CFA - Continuous Flight Auge                      | rs                |  |  |  |

- CA Continuous Flight Auger RC Rock Core THD Texas Highway Department Cone CT-5' Continuous Sampler

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DC - Driving Casing MD - Mud Drilling

| DRILLI<br>RICE Ope<br>122 V<br>Hobbs, Ne<br>Phone: (<br>Fax: (5 | ING LOGSite Name /Locationperating Company<br>West Taylor<br>New Mexico 88240<br>(505) 393-9174<br>(505) 397-1471Site Name /LocationJunction I-9<br>09-T19S-R38E<br>Hobbs SWD System<br>Lea Co. New Mexico |  | Well No.<br>B-8<br>Well Depth:<br>N/A<br>Casing Length:<br>N/A<br>Screen Length:<br>N/A  | Date Drille<br>1-7-99<br>Boring Dep<br>40'<br>Boring Dia<br>8"<br>Drilling Me<br>Air Rota | ed:<br>pth:<br>meter:<br>thod:<br>ry | Driller:<br>C. Harrison<br>Welf Material:<br>N/A<br>Casing Size:<br>N/A<br>Slot Size:<br>N/A | Logged by:<br>FWR<br>Construction:<br>Plugged boring<br>by filling from<br>total depth to<br>surface with<br>bentonite |
|---|--|--|--|---|--------------------------------------|--|--|
| DEPTH<br>(Feet)   | SUBSUR   | RFACE LITHOLOGY  | Sample<br>Type   | OVM<br>(ppm)  | R                                    | EMARKS   | Boring   |
|   | Light brown, fine-<br>White to light gray  | grained, calcareous sand<br>Caliche<br>k fine-grained sand | Drill Cuttings | >1<br>>1<br>>1<br>>1<br>>1<br>22<br>19<br>>1  | Hydroca<br>De<br>0.0<br>ga           | rbon stain<br>rpth to Water<br>D0 feet LNAPL<br>uged 1-8-99<br>Bentonite Seal                |  |
| 39<br>40  |  |  | Drill Cuttings   | >1  |                                      |  |  |

# ARCADIS GERAGHTY& MILLER

## APPENDIX C

## MONITOR WELL CONSTRUCTION DIAGRAMS

| DRILL               | ING LOG                         | Site Name /Location      | Well No.<br>MW-1      | Date Drille<br>1-7-99 | d: Driller:<br>C. Harrison        | Logged by:<br>FWR              |
|---------------------|---------------------------------|--------------------------|-----------------------|-----------------------|-----------------------------------|--------------------------------|
| RICE Ope            | erating Company                 | Junction I-9             | Well Depth:<br>40'    | Boring Dep<br>40'     | oth: Well Material:<br>Sch 40 PVC | Construction:                  |
| Hobbs, Ne           | ew Mexico 88240                 | Hobbs SWD System         | Casing Length:<br>25' | Boring Dia<br>6"      | meter: Casing Size:               | Flush-mount<br>set in 3' by 3' |
| Phone: (<br>Fax: (5 | (505) 393-9174<br>505) 397-1471 | Lea Co. New Mexico       | Screen Length:        | Drilling Me           | thod: Slot Size:                  | pad w/ locking<br>cap          |
| DEPTH               | SUBSUF                          | RFACE LITHOLOGY          | Sample                |                       | REMARKS                           | Well                           |
| (Feet)              |                                 |                          | Туре                  | (ppm)                 |                                   | Design                         |
| 0                   | Light brown, fine-              | grained, calcareous sand | -                     |                       |                                   |                                |
| 2                   | White to light gray             | Caliche                  |                       |                       | •                                 |                                |
| — · 3               |                                 |                          |                       |                       |                                   |                                |
| 4                   |                                 |                          | Drill Cuttings        | >1                    |                                   |                                |
| <u> </u>            |                                 |                          |                       | -                     |                                   |                                |
| - 7                 |                                 |                          |                       |                       |                                   |                                |
| - 8                 |                                 |                          |                       |                       |                                   |                                |
| 9                   |                                 |                          | Drill Cuttings        | >1                    |                                   |                                |
| 10                  |                                 |                          |                       |                       |                                   |                                |
| 12                  |                                 |                          |                       |                       |                                   |                                |
| — 13                |                                 |                          |                       |                       |                                   |                                |
| - 14                |                                 |                          | Drill Cuttings        | >1                    |                                   | 8666 86862                     |
| 15                  |                                 | 1                        |                       |                       |                                   |                                |
| — 17                |                                 |                          |                       |                       |                                   |                                |
| 18                  |                                 |                          |                       |                       |                                   |                                |
| 19<br>20            |                                 |                          | Drill Cuttings        | >1                    |                                   |                                |
| 20                  |                                 |                          |                       |                       |                                   |                                |
| <u> </u>            |                                 |                          |                       |                       |                                   |                                |
| — 23                |                                 |                          |                       |                       |                                   |                                |
| 24                  |                                 |                          | Drill Cuttings        | >1                    |                                   |                                |
| - 26                |                                 |                          | ļ                     |                       |                                   |                                |
| 27                  |                                 |                          |                       |                       | · · ·                             |                                |
| - 28                |                                 |                          |                       |                       |                                   |                                |
| - 29                | Gray limestone                  |                          | Drill Cuttings        | >1                    |                                   |                                |
| — 31                |                                 |                          | L                     |                       |                                   |                                |
| — 32                |                                 |                          |                       |                       | Depth to Water                    |                                |
| 33                  |                                 |                          |                       |                       |                                   |                                |
| - 34                | Indurated red-brow              | n silicious sandstone    | Drill Cuttings        | >1                    | Cement Grout                      |                                |
| - 36                |                                 |                          | Į                     |                       | Rentonite Seal                    |                                |
| - 37                |                                 | <u> </u>                 |                       |                       | Dentonite Geal                    |                                |
| - 38                | Light brown to pin              | k fine-grained sand      | Drill Cuttings        | >1                    | Sand Pack                         |                                |
| <u> </u>            | - •                             | -<br>                    |                       |                       | Factory Slot Screen               |                                |

| DRILLI            | NG LOG                      | Site Name /Location                   | Well No.<br>MW-2 | Date Drille<br>1-7-99 | d:     | <sup>Driller:</sup><br>C. Harrison | Logged by:<br>FWR |
|-------------------|-----------------------------|---------------------------------------|------------------|-----------------------|--------|------------------------------------|-------------------|
| RICE Ope          | erating Company             | Junction I-9                          | Well Depth:      | Boring Dep            | oth:   | Well Material:<br>Sch 40 PVC       | Construction:     |
| 122 V<br>Hobbs Ne | Vest Taylor<br>Wexico 88240 | 09-T19S-R38E                          | Casing Length:   | Boring Dia            | meter: | Casing Size:                       | Flush-mount       |
| Phone: (          | (505) 393-9174              | Lea Co. New Mexico                    | 25'              | 6"<br>Drilling Me     | thod:  | 2"<br>Slot Size:                   | pad w/ locking    |
| Fax: (5           | 05) 397-1471                |                                       | 15'              | Air Rota              | гу     | 0.02"                              | cap               |
| DEPTH             | SUBSUF                      | RFACE LITHOLOGY                       | Sample           | OVM                   | R      | EMARKS                             | Well              |
| (Feet)            |                             |                                       | Туре             | (ppm)                 |        |                                    | Design            |
| 0                 | Light brown fine            | grained calcareous sand               |                  |                       |        |                                    |                   |
|                   | Light brown, the-           | granicu, carcarcous sand              | -                |                       |        |                                    |                   |
| 2                 | White to light gray         | y Caliche                             |                  |                       |        |                                    |                   |
|                   |                             |                                       |                  |                       |        |                                    |                   |
| 5                 |                             |                                       | Drill Cuttings   | >1                    |        |                                    |                   |
| - 6               |                             | • .                                   | ļ                |                       |        |                                    |                   |
| - 7               |                             |                                       |                  |                       |        |                                    |                   |
| - 8               |                             |                                       |                  |                       |        |                                    |                   |
| - 9               |                             |                                       | Drill Cuttings   | >1                    |        |                                    |                   |
| 10                |                             |                                       | 2 min Cunango    | -                     |        |                                    |                   |
|                   |                             |                                       |                  |                       |        |                                    |                   |
|                   |                             |                                       |                  |                       |        |                                    |                   |
| 14                |                             |                                       | <u> </u>         | L.,                   |        |                                    |                   |
| 15                |                             |                                       | Drill Cuttings   | >1                    |        |                                    |                   |
| - 16              |                             |                                       | <b>h</b>         |                       |        |                                    |                   |
| - 17              |                             |                                       |                  |                       |        |                                    |                   |
| 18                |                             | , <u> </u>                            |                  |                       |        |                                    |                   |
| - 19              | Light gray limesto          | ne                                    | Drill Cuttings   | >1                    |        |                                    |                   |
| 21                |                             |                                       | ļ                |                       |        |                                    |                   |
| 22                |                             |                                       |                  |                       |        |                                    |                   |
| - 23              |                             |                                       |                  |                       |        |                                    |                   |
| - 24              | Light gray, silty, c        | aliche                                | Drill Cuttings   | <u></u>               |        |                                    |                   |
| 25                |                             |                                       | Drift Cuttings   | ~1                    |        |                                    |                   |
| 26                | · · · · · . · · .           | <u></u>                               |                  |                       | ·      |                                    |                   |
|                   |                             |                                       |                  |                       |        |                                    |                   |
| 29                | Case limenter               |                                       |                  |                       |        |                                    |                   |
| 30                | Gray ilmestone              |                                       | Drill Cuttings   | >1                    |        |                                    |                   |
| - 31              |                             |                                       | <b>h</b>         |                       | • D    | epth to Water                      |                   |
| - 32              |                             |                                       | -                |                       |        |                                    |                   |
| - 33              | Light brown to pin          | k fine-grained sand                   |                  |                       |        |                                    |                   |
| 34                |                             |                                       | Drill Cuttings   | >1                    |        | Compart Crout                      |                   |
| - 35              |                             |                                       | ļ                |                       |        | Cement Grout                       |                   |
| 37                |                             |                                       |                  |                       |        | Bentonite Seal                     |                   |
| - 38              |                             |                                       |                  | _                     |        | Sand Pack                          |                   |
| - 39              |                             |                                       | Drill Cuttings   | >1                    |        | actory Slot Screen                 |                   |
| 40                |                             | · · · · · · · · · · · · · · · · · · · |                  |                       |        | -                                  |                   |
|                   |                             |                                       |                  |                       |        |                                    |                   |

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|   | DRII          | LING LOG                                | Site Name /Location                           | Well No.<br>RW-1      | Date Drille<br>1-7-99   | ed:         | Driller:<br>C. Harrison       | Logged by:<br>FWR              |
|---|---------------|---|---|-----------------------|-------------------------|-------------|-------------------------------|--------------------------------|
|   | RICE          | Operating Company                       | Junction I-9                                  | Well Depth:<br>35'    | Boring De<br>35'        | pth:        | Well Material:<br>Sch 40 PVC  | Construction:                  |
|   | I.<br>Hobbs   | , New Mexico 88240                      | Hobbs SWD System                              | Casing Length:<br>20' | Boring Dia              | meter:      | Casing Size:<br>4"            | Flush-mount<br>set in 3' by 3' |
|   | Pho<br>Fa     | ne: (505) 393-9174<br>:: (505) 397-1471 | Lea Co. New Mexico                            | Screen Length:<br>15' | Drilling Me<br>Air Rota | thod:<br>ry | Slot Size:<br>0.02"           | pad w/ locking<br>cap          |
|   | DEPT<br>(Feet | H SUBSUF                                | RFACE LITHOLOGY                               | Sample<br>Type        | OVM<br>(ppm)            | R           | REMARKS                       | Well<br>Design                 |
|   |               | 0 Light brown, fine-                    | grained, calcareous sand                      |                       |                         | <u> </u>    | <u></u>                       |                                |
|   |               | 2 White to light gray                   | / Caliche                                     |                       |                         | l           |                               |                                |
|   | ·             | 3                                       |   |                       |                         |             |                               |                                |
|   |               | 4                                       |   | Drill Cuttings        | >1                      | 1           |                               |                                |
| _ |               | 5                                       | · .   | Dim Cuttings          | - 1                     |             |                               |                                |
|   |               | 7                                       |   |                       |                         |             |                               |                                |
|   |               | 8                                       |   |                       |                         |             |                               |                                |
|   |               | 9                                       |   | Drill Cuttings        | 48                      | Hydroc      | arbon stain                   |                                |
|   | 1             | 0                                       |   |                       |                         | J           |                               |                                |
|   | 1             | 2                                       |   |                       |                         |             |                               |                                |
|   | 1             | 3                                       |   |                       |                         |             |                               |                                |
|   | 1             | 4                                       |   | Drill Cuttings        | 180                     |             |                               |                                |
|   |               | 5                                       | ·   |                       |                         | Hydroca     | arbon stain                   |                                |
|   | 1             | 7 Gray limestone                        |   |                       |                         |             |                               |                                |
|   | 1             | 8                                       |   |                       |                         |             |                               |                                |
| _ | 1             | 9                                       |   | Drill Cuttings        | 114                     | Hydrocs     | arbon stain                   |                                |
|   | - 2           | 1                                       |   |                       |                         | ilyaioca    |                               |                                |
|   | 2             | 2                                       | 1.0.000                                       | -                     |                         |             |                               |                                |
|   | <u> </u>      | 3                                       |   |                       |                         |             |                               |                                |
|   | 2             | 4 Light gray, silty, ca                 | aliche  | Drill Cuttings        | 212                     | Hydroca     | arbon stain                   |                                |
|   | 2             | 6                                       |   | ļ                     |                         |             |                               |                                |
|   | 2             | 7                                       | · ····································        |                       |                         |             | · <u>-</u> .                  |                                |
|   | 2             | 8 Grav limestone int                    | erhedded with red-brown silicous              | -                     |                         |             |                               |                                |
|   | 2             | 9 sandstone                             |   | Drill Cuttings        | 89                      |             |                               |                                |
|   | 3             | 1                                       |   | ļ                     |                         | Hydroca     | arbon stain                   |                                |
|   | 3             | 2                                       |   |                       |                         | • D         | epth to Water                 |                                |
|   | 3             | 3 Indurated red-brow                    | n silicious sandstone                         | Drill Cuttings        | >1                      | 0.<br>g:    | 25 IEEI LNAPL<br>auged 1-8-99 |                                |
|   | 3<br>7        | 4                                       | No  |                       | ~ 1                     |             | Cemont Crout                  |                                |
| _ | 3<br>3        | 6                                       |   |                       |                         |             |                               |                                |
|   | 3             | 7                                       |   |                       |                         |             | Bentonite Seal                |                                |
|   | 3             | 8                                       |   |                       |                         |             | Sand Pack                     |                                |
|   | — 3           | 9                                       |   |                       |                         |             | actory Slot Screen            |                                |
|   | 4             | ч <u> </u>                              | ( <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> | <u> </u>              |                         |             |                               |                                |

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|  |                                   | Site Name /Location | Well No.                                | Date Drilled               | 1:        | Driller:  | Logged by:                        |
|--|-----------------------------------|---------------------|---|----------------------------|-----------|---|-----------------------------------|
|  |                                   | Junction I-9        | Well Depth:                             | Boring Dept                | th:       | Well Material:  | Construction:                     |
| 122 V  | West Taylor                       | 09-T19S-R38E        | 40'                                     | 40'<br>Boring Dian         | neter:    | Sch 40 PVC  | Flush-mount                       |
| Hobbs, N<br>Phone:   | ew Mexico 88240<br>(505) 393-9174 | Hobbs SWD System    | 25'                                     | 6"                         | neter.    | 2"  | set in 3' by 3'<br>pad w/ locking |
| Fax: (:  | 505) 397-1471                     | Lea Co. New Mexico  | Screen Length:<br>15'                   | Drilling Meth<br>Air Rotar | hod:<br>Y | Slot Size:<br>0.02"   | cap                               |
| DEPTH<br>(Feet)  | SUBSUR                            | RFACE LITHOLOGY     | Sample<br>Type                          | OVM<br>(ppm)               | R         | EMARKS  | Well                              |
| 0  |                                   |                     | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |                            |           |   |                                   |
|  |                                   |                     |   |                            |           |   |                                   |
| 22         23         24         25         26         27         28         29         30         31         32         33         34         35         36         37         38         39         40 |                                   |                     |   |                            |           | Cement Grout<br>Bentonite Seal<br>Sand Pack<br>actory Slot Screen |                                   |

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## ARCADIS GERAGHTY& MILLER

## APPENDIX D

#### LABORATORY ANALYTICAL RESULTS

Contes

Environmental Laboraturies

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# CERTES ENVIRONMENTAL LABORATORIES ANALYTICAL REPORT

Certes File Number: 98-3543

Client Project I.D.:

EV 958

Prepared for: ENERCON SERVICES, INC. - DALLAS 2775 Villa Creek Suite 120 Dallas, TX 75234

> Attention: Scott Lowry

#### Report Date:

#### 10/30/98

Included are the results of chemical analyses for the samples submitted to Certes Environmental Laboratories, L.L.C., on 10/22/98. All analytical results met Quality Control requirements as set by the industry accepted criteria. Please refer to the Laboratory Quality Control Results section of this report.

Sincerely,

Certes Environmental Laboratories, L.L.C.

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Bharat Vandra Laboratory Manager

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## ATTACHMENT E LABORATORY REPORTS

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CEL File No.: 98-3543

Report Date: 10/30/98

|                  | ·  | Result        | Units             | Reporting<br>Limit | Date<br>Prepare | Date<br>d Analyzed | Analyzed<br>By | Dilut  |
|------------------|--|---------------|-------------------|--------------------|-----------------|--------------------|----------------|--------|
| Client Sample II | D: B-1/20'-20.6'                           |               | <u></u>           |                    |                 | Sample Nur         | nber: 98-35    | 543-00 |
| Date Sampled:    | 10/20/98                                   |               |                   |                    |                 | Sample Mat         | rix: Solid     |        |
| Time Sampled:    | 9:10                                       |               |                   |                    |                 | -<br>Sampled By    | : SL           |        |
| EPA 8021B        | Benzene                                    | 684           | μg/Kg             | 200                | 10/23/98        | 10/23/98           | DWT            | 4      |
|                  | Toluene                                    | 759           | μg/Kg             | 200                | 10/23/98        | 10/23/98           | DWT            | 4      |
|                  | Ethyl benzene                              | 11000         | μg/Kg             | 200                | 10/23/98        | 10/23/98           | · DWT          | 4      |
|                  | Xylenes (Total)                            | 21700         | μg/Kg             | 600                | 10/23/98        | 10/23/98           | DWT            | 4      |
|                  | Total BTEX (Calculated)                    | 34143         | μg/Kg             |                    | 10/23/98        | 10/23/98           | DWT            | 1      |
|                  | **Quality Control Surroga                  | te            |                   |                    | 10/23/98        | 10/23/98           | DWT            | 1      |
|                  | Difluorobenzene (SS)                       | 97%           | 74-119%           |                    | 10/23/98        | 10/23/98           | DWT            | 1      |
|                  | 4-Bromofluorobenzene (SS)                  | 158%          | 49-158%           |                    | 10/23/98        | 10/23/98           | DWT            | 1      |
| EPA 8015B        | TPH (DRO)                                  | 1070          | mg/Kg             | 500                | 10/26/98        | 10/27/98           | JCA            | 50     |
|                  | **Quality Control Surrogat                 | e             |                   |                    | 10/26/98        | 10/27/98           | JCA            | 50     |
|                  | p-Terphenyl (SS)                           | *0%           | 60-140%           |                    | 10/26/98        | 10/27/98           | JCA            | 50     |
| * Surrogate rec  | overy is out of range                      |               | <u></u>           |                    |                 |                    |                |        |
| lient Sample ID: | B-1/28'                                    |               |                   |                    | Sa              | ample Numb         | per: 98-3543   | 3-002  |
| Date Sampled:    | 10/20/98                                   |               |                   |                    | S               | mple Matri         | x: Solid       |        |
| ime Sampled:     | 9:50                                       |               |                   |                    | Sa              | impled By:         | SL             |        |
| PA 8021B         | Benzene                                    | 285           | µg/Kg             | 200                | 10/23/98        | 10/23/98           | DWT            | 40     |
|                  | Toluene                                    | 1000          | µg/Kg             | 200                | 10/23/98        | 10/23/98           | DWT            | 40     |
|                  | Einyi benzene<br>Yulanan (Tatal)           | 9170          | µg/Kg             | 200                | 10/23/98        | 10/23/98           | DWT            | 40     |
|                  | Aylenes (10tal)<br>Total DTEY (Calculated) | 24000         | µg/Kg             | 000                | 10/23/98        | 10/23/98           | DWT            | 40     |
|                  | **Ouglity Control Surrogets                | 22022         | μg∕⊼g             |                    | 10/23/98        | 10/23/90           | DWI            | 1      |
|                  | Diffuerchenzone (SS)                       |               | 74 11004          |                    | 10/22/08        | 10/22/08           |                | 1      |
|                  | A-Bromofluorobenzene (SS)                  | 9J70<br>1530/ | 10-1580/          |                    | 10/22/08        | 10/22/08           | DWT            | 1      |
| PA 8015B         |  | 1200          | 47-1J0/0<br>ma/Ka | 500                | 10/26/08        | 10/23/30           |                | 50     |
|                  | **Ouglity Control Surrogate                | 1200          | iiig/ Kg          |                    | 10/26/08        | 10/2/198           |                | 50     |
|                  | n-Tembenyl (SS)                            | * 0.0%        | 60.140%           |                    | 10/26/08        | 10/27/09           | JCA            | 50     |
| * Surrogate reco | very is out of range                       | 070           | 00-14070          |                    | 10/20/98        | 10/27/98           | JCA            | 0      |
| ent Sample ID: H | 8-1/30'                                    |               |                   |                    | Sa              | mple Numbe         | er: 98-3543    | -003   |
| ate Sampled: 1   | 0/20/98                                    |               |                   |                    | Sa              | mple Matrix        | : Solid        |        |
| me Sampled: 1    | 0:00                                       |               |                   |                    | Sa              | mpled By:          | SL             |        |
| <br>PA 8021B     | Benzene                                    | 1130          | μg/Kg             | 200                | 0/23/98         | 10/23/98           | DWT            | 40     |
|                  | Toluene                                    | 1030          | μg/Kg             | 200                | 0/23/98         | 10/23/98           | DWT            | 40     |
|                  |  | Page          | 2 of 9            |                    |                 |                    | •              |        |

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| Results of Analyses   |   | EL THE NO  |   |                              | _  | •  |  | 0/30/98   |
|---|---|--|---|------------------------------|--|--|--|---|
| Sample: 98-   | 3543-003 continued  | Result   | Units   | Reporting<br>Limit           | Date<br>Prepared   | Date A<br>Analyzed   | Analyzed<br>By   | Dilutio   |
| EPA 8021B   | Ethyl benzene   | 13800  | μg/Kg   | 200                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Xylenes (Total)   | 19500  | μg/Kg   | 600                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Total BTEX (Calculated)   | 35460  | μg/Kg   |                              | 10/23/98   | 10/23/98   | DWT  | I   |
|   | **Quality Control Surrogat  | te   |   |                              | 10/23/98   | 10/23/98   | DWT  | . 1   |
|   | Difluorobenzene (SS)  | 84%  | 74-119%   |                              | 10/23/98   | 10/23/98   | DWT  | 1   |
|   | 4-Bromofluorobenzene (SS)   | 141%   | 49-158%   |                              | 10/23/98   | 10/23/98   | DWT  | . 1   |
| EPA 8015B   | TPH (DRO)   | 1130   | mg/Kg   | 500                          | 10/26/98   | 10/27/98   | JCA  | 50  |
|   | **Quality Control Surrogat  | e  |   |                              | 10/26/98   | 10/27/98   | JCA  | 50  |
|   | p-Terphenyl (SS)  | *0%  | 60-140%   |                              | 10/26/98   | 10/27/98   | JCA  | 50  |
| * Surrogate re  | covery is out of range  |  |   |                              |  |  |  |   |
| Client Sample ID  | : <b>B-2/25'-26'</b>  |  |   |                              | Sa   | mple Number  |  | 3-004   |
| Date Sampled:   | 10/20/98  |  | •   |                              | Sa   | mple Matrix:   | Solid  |   |
| Time Sampled:   | 11:10   |  |   |                              | Sa   | mpled By:  | SL   |   |
| EPA 8021B   | Benzene   | 477  | µg/Kg   | 200                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Toluene   | 716  | µg/Kg   | 200                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Ethyl benzene   | 11300  | µg/Kg   | 200                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Xylenes (Total)   | 25200  | µg/Kg   | 600                          | 10/23/98   | 10/23/98   | DWT  | 40  |
|   | Total BTEX (Calculated)   | 37693  | µg/Kg   |                              | 10/23/98   | 10/23/98   | DWT  | 1   |
|   | <b>**Quality Control Surrogate</b>  |  |   |                              | 10/23/98   | 10/23/98   | DWT  | 1   |
| •   | Difluorobenzene (SS)  | 89%  | 74-119%   |                              | 10/23/98   | 10/23/98   | DWT  | 1   |
|   |   | 142%   | 49-158%   |                              | 10/23/98   | 10/23/98   | DWT  | 1   |
|   | 4-Bromofluorobenzene (SS)   |  |   |                              |  |  |  | 76  |
| EPA 8015B   | 4-Bromonuorobenzene (SS)<br>TPH (DRO)   | 520  | mg/Kg   | 250                          | 10/26/98   | 0/27/98  | JCA  | 25  |
| EPA 8015B   | 4-Bromonuorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate  | 520  | mg/Kg   | 250                          | 10/26/98 1<br>10/26/98 1   | 10/27/98<br>10/27/98   | JCA<br>JCA   | 25<br>25<br>25  |
| EPA 8015B<br>* Surrogate rec  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)  | 520<br>*0%   | mg/Kg<br>60-140%  | 250                          | 10/26/98 1<br>10/26/98 1<br>10/26/98 1   | 10/27/98<br>10/27/98<br>10/27/98   | JCA<br>JCA<br>JCA  | 25<br>25<br>25  |
| EPA 8015B<br>* Surrogate rec  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)  | 520<br>*0%   | mg/Kg<br>60-140%  | 250                          | 10/26/98 1<br>10/26/98 1<br>10/26/98 1   | 10/27/98<br>10/27/98<br>10/27/98   | JCA<br>JCA<br>JCA  | 25<br>25<br>25  |
| EPA 8015B * Surrogate rect  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>povery is out of range<br>B-2/30'-31'   | 520<br>*0%   | mg/Kg<br>60-140%  | 250                          | 10/26/98 1<br>10/26/98 1<br>10/26/98 1   | 10/27/98<br>10/27/98<br>10/27/98<br>nple Number:   | JCA<br>JCA<br>JCA<br>98-3543   | 25<br>25<br>25  |
| EPA 8015B * Surrogate reco  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>overy is out of range<br>B-2/30'-31'<br>10/20/98  | 520<br>*0%   | mg/Kg<br>60-140%  | 250                          | 10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>Sar<br>Sar   | 10/27/98<br>10/27/98<br>10/27/98<br>nple Number:<br>nple Matrix:   | JCA<br>JCA<br>JCA<br>98-3543<br>Solid  | 25<br>25<br>25  |
| EPA 8015B<br>* Surrogate recu<br>lient Sample ID:<br>Date Sampled:<br>Time Sampled:               | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>tovery is out of range<br>B-2/30'-31'<br>10/20/98<br>11:20  | 520<br>*0%   | mg/Kg<br>60-140%  | 250                          | 10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>Sar<br>Sar<br>Sar  | 10/27/98<br>10/27/98<br>10/27/98<br>nple Number:<br>nple Matrix:<br>npled By:  | JCA<br>JCA<br>JCA<br>98-3543<br>Solid<br>SL  | 25<br>25<br>25<br>-005  |
| EPA 8015B<br>* Surrogate rec<br>lient Sample ID:<br>Date Sampled:<br>lime Sampled:<br>EPA 8021B   | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>tovery is out of range<br>B-2/30'-31'<br>10/20/98<br>11:20<br>Benzene   | 520<br>*0%<br><50                                      | mg/Kg<br>60-140%<br><br>µg/Kg   | 250<br>50                    | 10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>Sar<br>Sar<br>10/23/98<br>10/23/98   | 10/27/98<br>10/27/98<br>10/27/98<br>nple Number:<br>nple Matrix:<br>npled By:<br>0/23/98   | JCA<br>JCA<br>JCA<br>98-3543<br>Solid<br>SL<br>DWT   | 25<br>25<br>25<br>-005  |
| EPA 8015B<br>* Surrogate rec<br>lient Sample ID:<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B   | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>overy is out of range<br>B-2/30'-31'<br>10/20/98<br>11:20<br>Benzene<br>Toluene   | 520<br>* 0%<br><50<br>70                               | mg/Kg<br>60-140%<br><br>µg/Kg<br>µg/Kg  | 250<br>50<br>50              | 10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>Sar<br>Sar<br>10/23/98 1<br>10/23/98 1   | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>nple Number:<br>nple Matrix:<br>npled By:<br>0/23/98<br>0/23/98  | JCA<br>JCA<br>JCA<br>98-3543<br>Solid<br>SL<br>DWT<br>DWT  | 25<br>25<br>25<br>-005<br>10<br>10  |
| EPA 8015B<br>* Surrogate rect<br>lient Sample ID:<br>Date Sampled:<br>lime Sampled:<br>EPA 8021B  | <ul> <li>4-Bromofiliorobenzene (SS)<br/>TPH (DRO)</li> <li>**Quality Control Surrogate<br/>p-Terphenyl (SS)</li> <li><i>tovery is out of range</i></li> <li>B-2/30'-31'</li> <li>10/20/98</li> <li>11:20</li> <li>Benzene<br/>Toluene</li> <li>Ethyl benzene</li> </ul>   | 520<br>*0%<br><50<br>70<br>870                         | mg/Kg<br>60-140%<br>µg/Kg<br>µg/Kg<br>µg/Kg                                     | 250<br>50<br>50<br>50        | 10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>nple Number:<br>nple Matrix:<br>npled By:<br>0/23/98<br>0/23/98<br>0/23/98   | JCA<br>JCA<br>JCA<br>Solid<br>SL<br>DWT<br>DWT<br>DWT  | 25<br>25<br>25<br>-005  |
| EPA 8015B<br>* Surrogate recu<br>lient Sample ID:<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | <ul> <li>4-Bromofiliorobenzene (SS)<br/>TPH (DRO)</li> <li>**Quality Control Surrogate<br/>p-Terphenyl (SS)</li> <li>overy is out of range</li> <li>B-2/30'-31'</li> <li>10/20/98</li> <li>11:20</li> <li>Benzene<br/>Toluene</li> <li>Ethyl benzene</li> <li>Xylenes (Total)</li> </ul>  | 520<br>* 0%<br><50<br>70<br>870<br>2510                | mg/Kg<br>60-140%<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg                   | 250<br>50<br>50<br>50<br>150 | 10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | JCA<br>JCA<br>JCA<br><b>98-3543</b><br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT                             | 25<br>25<br>25<br>-005<br>10<br>10<br>10<br>10                            |
| EPA 8015B<br>* Surrogate rect<br>Client Sample ID:<br>Date Sampled:<br>Cime Sampled:<br>EPA 8021B | <ul> <li>4-Bromofiliorobenzene (SS)<br/>TPH (DRO)</li> <li>**Quality Control Surrogate<br/>p-Terphenyl (SS)</li> <li><i>tovery is out of range</i></li> <li>B-2/30'-31'</li> <li>10/20/98</li> <li>11:20</li> <li>Benzene<br/>Toluene</li> <li>Ethyl benzene</li> <li>Xylenes (Total)</li> <li>Total BTEX (Calculated)</li> </ul> | 520<br>*0%<br><50<br>70<br>870<br>2510<br>3450         | mg/Kg<br>60-140%<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg | 250<br>50<br>50<br>150       | 10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>10/26/98 1<br>Sar<br>Sar<br>Sar<br>10/23/98 1<br>10/23/98 1<br>10/23/98 1<br>10/23/98 1<br>10/23/98 1                                  | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98                                     | JCA<br>JCA<br>JCA<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT  | 25<br>25<br>25<br><b>-005</b><br>10<br>10<br>10<br>10                     |
| EPA 8015B<br>* Surrogate rec.<br>Lient Sample ID:<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>overy is out of range<br>B-2/30'-31'<br>10/20/98<br>11:20<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate   | 520<br>*0%<br><50<br>70<br>870<br>2510<br>3450         | mg/Kg<br>60-140%<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg          | 250<br>50<br>50<br>50<br>150 | 10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98             | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98             | JCA<br>JCA<br>JCA<br><b>98-3543</b><br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT        | 25<br>25<br>25<br>-005<br>10<br>10<br>10<br>10<br>1<br>1                  |
| EPA 8015B<br>* Surrogate recu<br>lient Sample ID:<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | 4-Bromofiliorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate<br>p-Terphenyl (SS)<br>overy is out of range<br>B-2/30'-31'<br>10/20/98<br>11:20<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate<br>Difluorobenzene (SS)                               | 520<br>*0%<br><50<br>70<br>870<br>2510<br>3450<br>111% | mg/Kg<br>60-140%<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg | 250<br>50<br>50<br>150       | 10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/26/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98 | 10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/27/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98 | JCA<br>JCA<br>JCA<br><b>98-3543</b><br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT | 25<br>25<br>25<br>-005<br>-10<br>10<br>10<br>10<br>10<br>1<br>1<br>1<br>1 |

Certes Environmental Laboratories 2209 Wisconsin Street, Suite 200 Dallas, Texas, 75229 • 972-620-7966 • 800-394-2872 • FAX 972-620-7963 • Email: certes@aol.com

Analytical Chemistry

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| Results of An     | alyses                            | CEL File No.: | 98-3543 |                    |                  | Report Date:     |                |        |
|-------------------|-----------------------------------|---------------|---------|--------------------|------------------|------------------|----------------|--------|
| Sample: 98-       | -3543-005 continued               | Result        | Units   | Reporting<br>Limit | Date<br>Prepared | Date<br>Analyzed | Analyzed<br>By | Diluti |
| EPA 8015B         | TPH (DRO)                         | 278           | mg/Kg   | 250                | 10/26/98         | 10/27/98         | JCA            | 24     |
|                   | **Quality Control Surrog          | ate           |         |                    | 10/26/98         | 10/27/98         | JCA            | . 24   |
|                   | p-Terphenyl (SS)                  | *0%           | 60-140% |                    | 10/26/98         | 10/27/98         | JCA            | 2      |
| * Surrogate i     | recovery is out of range          |               | -       | ·                  |                  |                  |                |        |
| Client Sample II  | D: B-3/25'                        |               |         |                    | S                | ample Nuril      | ber: 98-354    | 13-006 |
| Date Sampled:     | 10/20/98                          |               |         |                    | Sa               | -<br>ample Matri | x: Solid       |        |
| Time Sampled:     | 14:20                             |               |         |                    | Sa               | impled By:       | SL             |        |
| EPA 8021B         | Benzene                           | <200          | µg/Kg   | 200                | 10/23/98         | 10/23/98         | DWT            | 40     |
|                   | Toluene                           | 1520          | µg/Kg   | 200                | 10/23/98         | 10/23/98         | DWT            | 40     |
|                   | Ethyl benzene                     | 6950          | µg/Kg   | 200                | 10/23/98         | 10/23/98         | DWT            | 40     |
|                   | Xylenes (Total)                   | 15900         | µg/Kg   | 600                | 10/23/98         | 10/23/98         | DWT            | 40     |
|                   | Total BTEX (Calculated)           | 24370         | µg/Kg   |                    | 10/23/98         | 10/23/98         | DWT            | 1      |
|                   | **Quality Control Surrogat        | te            |         |                    | 10/23/98         | 10/23/98         | DWT            | 1      |
|                   | Difluorobenzene (SS)              | 102%          | 74-119% |                    | 10/23/98         | 10/23/98         | DWT            | 1      |
|                   | 4-Bromofluorobenzene (SS)         | 145%          | 49-158% |                    | 10/23/98         | 10/23/98         | DWT            | 1      |
| EPA 8015B         | TPH (DRO)                         | 369           | mg/Kg   | 250                | 10/26/98         | 10/27/98         | JCA            | 25     |
|                   | <b>**Quality Control Surrogat</b> | e             |         |                    | 10/26/98         | 10/27/98         | JCA            | 25     |
|                   | p-Terphenyl (SS)                  | *0%           | 60-140% |                    | 10/26/98         | 10/27/98         | JCA            | 25     |
| * Surrogate rea   | covery is out of range            |               |         |                    | .:               | .*               |                |        |
| Client Sample ID: | B-3/31'-33'                       |               |         |                    | Sar              | nple Numbe       | er: 98-3543    | 5-007  |
| Date Sampled:     | 10/20/98                          |               |         |                    | Sar              | nple Matrix      | : Solid        |        |
| Time Sampled:     | 14:35                             | <u></u>       | ·       | <u> </u>           | Sar              | npled By:        | SL             |        |
| EPA 8021B         | Benzene                           | <50           | µg/Kg   | 50                 | 10/23/98 1       | 0/23/98          | DWT            | 10     |
|                   | Toluene                           | <50           | µg/Kg   | 50                 | 10/23/98 1       | 0/23/98          | DWT            | 10     |
|                   | Ethyl benzene                     | <50           | µg/Kg   | <b>50</b>          | 10/23/98 1       | 0/23/98          | DWT            | 10     |
|                   | Xylenes (Total)                   | <150          | µg/Kg   | 150                | 10/23/98 1       | 0/23/98          | DWT            | 10     |
|                   | Total BTEX (Calculated)           | 0             | µg/Kg   | ]                  | 10/23/98 1       | 0/23/98          | DWT            | 1      |
|                   | **Quality Control Surrogate       | ;             |         | . 1                | 10/23/98 1       | 0/23/98          | DWT            | 1      |
|                   | Difluorobenzene (SS)              | 108%          | 74-119% | 1                  | 10/23/98         | 0/23/98          | DWT            | 1      |
|                   | 4-Bromofluorobenzene (SS)         | 96%           | 49-158% | 1                  | 10/23/98         | 0/23/98          | DWT            | 1      |
| CPA 8015B         | TPH (DRO)                         | <10           | mg/Kg   | 10 1               | 10/26/98 1       | 0/27/98          | JCA            | 1      |
|                   | **Quality Control Surrogate       | :             |         | 1                  | 10/26/98         | 0/27/98          | JCA            | 1      |
|                   | <b>—</b> 1 1/00                   |               |         |                    |                  | 0.000            |                |        |

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Analytical Chemistry

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**Results of Analyses** 

CEL File No.: 98-3543

Report Date: 10/30/98

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|                    |                             | Result  | Units       | Limit   | Prepare  | ed Analyzed             | By         | Dilu  |
|--------------------|-----------------------------|---------|-------------|---------|----------|-------------------------|------------|-------|
| Client Sample II   | ): B-4/20'                  |         |             |         |          | Sample Num              | ber: 98-35 | 43-00 |
| Date Sampled:      | 10/20/98                    |         |             |         |          | Sample Matr             | ix: Solid  |       |
| Time Sampled:      | 15:15                       |         |             |         |          | Sampled By:             | SL         |       |
| EPA 8021B          | Benzene                     | <50     | µg/Kg       | 50      | 10/23/9  | 8 10/23/98              | DWT        | j     |
|                    | Toluene                     | 207     | µg/Kg       | 50      | 10/23/9  | 8 10/23/98              | DWT        | ]     |
|                    | Ethyl benzene               | 178     | µg/Kg       | 50      | 10/23/9  | <b>3</b> 10/23/98 .     | DWT        | 1     |
|                    | Xylenes (Total)             | 764     | μg/Kg       | 150     | 10/23/98 | 3 10/23/98 <sup>°</sup> | DWT        | 1     |
|                    | Total BTEX (Calculated)     | 1149    | µg/Kg       |         | 10/23/98 | 10/23/98                | DWT        | j     |
|                    | **Quality Control Surrogat  | te      |             |         | 10/23/98 | 10/23/98                | DWT        | ]     |
|                    | Difluorobenzene (SS)        | 111%    | 74-119%     |         | 10/23/98 | 10/23/98                | DWT        | ]     |
|                    | 4-Bromofluorobenzene (SS)   | 134%    | 49-158%     |         | 10/23/98 | 10/23/98                | DWT        | 1     |
| EPA 8015B          | TPH (DRO)                   | 50      | mg/Kg       | 10      | 10/26/98 | 10/27/98                | JCA        | 1     |
|                    | **Quality Control Surrogat  | e       |             |         | 10/26/98 | 10/27/98                | JCA        | 1     |
|                    | p-Terphenyl (SS)            | 64%     | 60-140%     |         | 10/26/98 | 10/27/98                | JCA        | 1     |
| Tient Sample ID:   | <b>B_4/30'</b>              | <u></u> |             | <u></u> |          | amala Numb              |            |       |
| Date Sampled:      | 10/20/98                    |         |             |         | 5        | ample Numb              | •• Solid   | 5-009 |
| Fime Sampled:      | 15:40                       |         |             |         | S        | ampled By:              | SL         |       |
| EPA 8021B          | Benzene                     | <50     | µg/Kg       | 50      | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    | Toluene                     | <50     | μg/Kg       | 50      | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    | Ethyl benzene               | <50     | μg/Kg       | 50      | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    | Xylenes (Total)             | <150    | µg/Kg       | 150     | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    | Total BTEX (Calculated)     | 0       | µg/Kg       |         | 10/23/98 | 10/23/98                | DWT        | 1     |
|                    | **Quality Control Surrogate |         |             |         | 10/23/98 | 10/23/98                | DWT        | 1     |
|                    | Difluorobenzene (SS)        | 109%    | 74-119%     |         | 10/23/98 | 10/23/98                | DWT        | 1     |
|                    | 4-Bromofluorobenzene (SS)   | 108%    | 49-158%     |         | 10/23/98 | 10/23/98                | DWT        | 1     |
| CPA 8015B          | TPH (DRO)                   | 47      | mg/Kg       | 10      | 10/26/98 | 10/27/98                | JCA        | 1     |
|                    | **Quality Control Surrogate | ·····   |             |         | 10/26/98 | 10/27/98                | JCA        | 1     |
|                    | p-Terphenyl (SS)            | 70%     | 60-140%     |         | 10/26/98 | 10/27/98                | JCA        | 1     |
| lient Sample ID: 1 | 3-5/20'                     |         | <del></del> |         | Si       | ample Numbe             | r: 98-3543 | -010  |
| ate Sampled: 1     | 0/20/98                     |         |             |         | Sa       | mple Matrix:            | Solid      |       |
| ime Sampled: 1     | 6:23                        | • .     |             |         | Sa       | mpled By:               | SL         |       |
| PA 8021B           | Benzene                     | <50     | μg/Kg       | 50      | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    | Toluene                     | 288     | µg/Kg       | 50      | 10/23/98 | 10/23/98                | DWT        | 10    |
|                    |                             | Page    | 5 of 9      |         |          |                         |            |       |

Analytical Chemistry

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Environmental Sciences

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| Results of Analyses C  |   | EL File No.: 98-3543                                    |  |                       |  | Repo  | )/30/98   |   |
|--|---|---|--|-----------------------|--|---|---|---|
| Sample: 98-  | 3543-010 continued  | Result  | Units  | Reporting<br>Limit    | Date<br>Prepared   | Date<br>Analyzed  | Analyzed<br>By  | Dilution  |
| EPA 8021B  | Ethyl benzene   | 188   | µg/Kg  | 50                    | 10/23/98   | 10/23/98  | DWT   | 10  |
|  | Xylenes (Total)   | 759   | µg/Kg  | 150                   | 10/23/98   | 10/23/98  | DWT   | · 10  |
|  | Total BTEX (Calculated)   | 1235  | µg/Kg  |                       | 10/23/98   | 10/23/98  | DWT   | 1   |
|  | **Quality Control Surrogan  | te  |  |                       | 10/23/98   | 10/23/98  | DWT   | . 1   |
|  | Difluorobenzene (SS)  | 112%  | 74-119%  |                       | 10/23/98   | 10/23/98  | DWT   | 1   |
|  | 4-Bromofluorobenzene (SS)   | 125%  | 49-158%  | •                     | 10/23/98   | 10/23/98  | DWT   | 1   |
| EPA 8015B  | TPH (DRO)   | 22  | mg/Kg  | 10                    | 10/26/98   | 10/27/98  | JCA   | 1   |
|  | **Quality Control Surrogat  | e   |  |                       | 10/26/98   | 10/27/98  | JCA   | 1   |
|  | p-Terphenyl (SS)  | 72%   | 60-140%  |                       | 10/26/98   | 10/27/98  | JCA   | -   |
| Client Sample ID   | : B-5/25'   |   |  |                       | Sa   | mple Numb   | er: 98-354  | 3-011   |
| The state of the s | . D. <i>E (201</i>  |   |  |                       |  |   |   |   |
| Client Sample ID<br>Date Sampled:  | : B-5/25'<br>10/20/98   |   | ······································                                   |                       | Sa<br>Sa   | mple Numb<br>mple Matrix  | er: 98-354.<br>:: Solid   | 3-011   |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:   | : B-5/25'<br>10/20/98<br>16:35  |   | · · · · · · · · · · · · · · · · · · ·                                    |                       | Sa<br>Sa<br>Sa   | mple Numb<br>mple Matrix<br>mpled By:   | er: 98-354<br>:: Solid<br>SL  | 3-011   |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene   | <50   | µg/Kg  | 50                    | Sa<br>Sa<br>Sa<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98   | er: 98-354<br>:: Solid<br>SL<br>DWT   | <b>3-011</b>  |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene  | <50<br>268  | µg/Кg<br>µg/Кg   | 50<br>50              | Sa<br>Sa<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98   | er: 98-354<br>:: Solid<br>SL<br>DWT<br>DWT  | <b>3-011</b><br>10<br>10                            |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene   | <50<br>268<br>264                                       | µg/Kg<br>µg/Kg<br>µg/Kg  | 50<br>50<br>50        | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT  | <b>3-011</b><br>10<br>10<br>10                      |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)  | <50<br>268<br>264<br>566                                | µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg                                | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT   | <b>3-011</b><br>10<br>10<br>10<br>10                |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)   | < 50<br>268<br>264<br>566<br>1098                       | μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg                       | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT                                    | <b>3-011</b> 10 10 10 10 10 10 10 10 10 10 10 10 10 |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate  | < 50<br>268<br>264<br>566<br>1098                       | µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg<br>µg/Kg                       | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT                             | <b>3-011</b> 10 10 10 10 10 1 1 1 1                 |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate<br>Difluorobenzene (SS)  | < 50<br>268<br>264<br>566<br>1098<br>104%               | μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>74-119%                     | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT                      | <b>3-011</b> 10 10 10 10 1 1 1 1 1 1 1              |
| Client Sample ID<br>Date Sampled:<br>Fime Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)   | < 50<br>268<br>264<br>566<br>1098<br>104%<br>135%       | μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>74-119%<br>49-158%          | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98   | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT        | <b>3-011</b> 10 10 10 10 1 1 1 1 1 1 1              |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)<br>TPH (DRO)                                | < 50<br>268<br>264<br>566<br>1098<br>104%<br>135%<br>69 | μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>74-119%<br>49-158%<br>mg/Kg | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98                         | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98                                     | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>JCA        | <b>3-011</b> 10 10 10 1 1 1 1 1 1 1 1 1             |
| Client Sample ID<br>Date Sampled:<br>Time Sampled:<br>EPA 8021B  | : B-5/25'<br>10/20/98<br>16:35<br>Benzene<br>Toluene<br>Ethyl benzene<br>Xylenes (Total)<br>Total BTEX (Calculated)<br>**Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate | < 50<br>268<br>264<br>566<br>1098<br>104%<br>135%<br>69 | μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>μg/Kg<br>74-119%<br>49-158%<br>mg/Kg | 50<br>50<br>50<br>150 | Sa<br>Sa<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98 | mple Numb<br>mple Matrix<br>mpled By:<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98<br>10/23/98 | er: 98-354<br>Solid<br>SL<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>DWT<br>JCA<br>JCA | <b>3-011</b> 10 10 10 10 1 1 1 1 1 1 1 1 1 1 1 1    |

| Client Sample ID | ): B-5/30'                  |      |            |     | S        | ample Number: | 98-3543 | 3-012 |
|------------------|-----------------------------|------|------------|-----|----------|---------------|---------|-------|
| Date Sampled:    | 10/20/98                    |      |            |     | S        | ample Matrix: | Solid   |       |
| Time Sampled:    | 16:45                       | S    | ampled By: | SL  |          |               |         |       |
| EPA 8021B        | Benzene                     | <50  | µg/Kg      | 50  | 10/23/98 | 10/23/98      | DWT     | 10    |
|                  | Toluene                     | <50  | µg/Kg      | 50  | 10/23/98 | 10/23/98      | DWT     | 10    |
|                  | Ethyl benzene               | <50  | µg/Kg      | 50  | 10/23/98 | 10/23/98      | DWT     | 10    |
|                  | Xylenes (Total)             | <150 | µg/Kg      | 150 | 10/23/98 | 10/23/98      | DWT     | 10    |
|                  | Total BTEX (Calculated)     | 0.   | µg/Kg      |     | 10/23/98 | 10/23/98      | DWT     | 1     |
|                  | **Quality Control Surrogate | e    |            |     | 10/23/98 | 10/23/98      | DWT     | 1     |
|                  | Difluorobenzene (SS)        | 111% | 74-119%    |     | 10/23/98 | 10/23/98      | DWT     | 1     |
|                  | 4-Bromofluorobenzene (SS)   | 99%  | 49-158%    |     | 10/23/98 | 10/23/98      | DWT     | 1     |
|                  |                             | Pa   | ge 6 of 9  |     |          |               |         |       |

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I.
| Results of Ana                 | alyses   | CEL File No.: 98-3543 |                             |                    |  | Report Date: 10/30/98                        |                          |                  |
|--------------------------------|--|-----------------------|-----------------------------|--------------------|--|--|--------------------------|------------------|
| Sample: 98-                    | -3543-012 continued  | Result                | Units                       | Reporting<br>Limit | Date<br>Prepared                             | Date<br>I Analyzed                           | Analyzed<br>By           | Dilutio          |
| EPA 8015B                      | TPH (DRO)  | 18                    | mg/Kg                       | 10                 | 10/26/98                                     | 10/27/98                                     | JCA                      | 1                |
|                                | **Quality Control Surroga  | ıte                   |                             |                    | 10/26/98                                     | 10/27/98                                     | JCA                      | . 1              |
|                                | p-Terphenyl (SS)   | 63%                   | 60-140%                     |                    | 10/26/98                                     | 10/27/98                                     | JCA                      | 1                |
|                                |  |                       | -                           |                    |  |  |                          |                  |
| Client Sample II               | D: B-6/20'-21'   |                       |                             |                    | 5  | ample Numb                                   | er: 98-354               | 43-013           |
| Date Sampled:                  | 10/21/98   |                       |                             |                    | S  | ample Matrix                                 | :: Solid                 |                  |
| Time Sampled:                  | 8:47   |                       |                             |                    | S  | ampled By:                                   | SL                       |                  |
| EPA 8021B                      | Benzene  | <50                   | µg/Kg                       | 50                 | 10/23/98                                     | 10/23/98                                     | DWT                      | 10               |
|                                | Toluene  | 1390                  | µg/Kg                       | 50                 | 10/23/98                                     | 10/23/98                                     | DWT                      | 10               |
|                                | Ethyl benzene  | 1440                  | µg/Kg                       | 50                 | 10/23/98                                     | 10/23/98                                     | DWT                      | 10               |
|                                | Xylenes (Total)  | 4660                  | µg/Kg                       | 150                | 10/23/98                                     | 10/23/98                                     | DWT                      | 10               |
|                                | Total BTEX (Calculated)  | 7490                  | µg/Kg                       |                    | 10/23/98                                     | 10/23/98                                     | DWT                      | 1                |
|                                | **Quality Control Surrogate  | e                     |                             |                    | 10/23/98                                     | 10/23/98                                     | DWT                      | 1                |
|                                | Difluorobenzene (SS)   | 114%                  | 74-119%                     |                    | 10/23/98                                     | 10/23/98                                     | DWT                      | 1                |
|                                | 4-Bromofluorobenzene (SS)  | 127%                  | 49-158%                     |                    | 10/23/98                                     | 10/23/98                                     | DWT                      | 1                |
| EPA 8015B                      | TPH (DRO)  | 71                    | mg/Kg                       | 10                 | 10/26/98                                     | 10/27/98                                     | JCA                      | 1                |
|                                | **Quality Control Surrogate  | e                     |                             |                    | 10/26/98                                     | 10/27/98                                     | JCA                      | 1                |
|                                | p-Terphenyl (SS)   | 61%                   | 60-140%                     |                    | 10/26/98                                     | 10/27/98                                     | JCA                      | 1                |
|                                |  |                       |                             |                    | •  |  |                          |                  |
| lient Sample ID:               | B-6/25'-26'  |                       | •                           |                    | Sa   | mple Number                                  | :: 98-3543               | 8-014            |
| Date Sampled:<br>Time Sampled: | 10/21/98<br>8:50   |                       |                             |                    | Sa<br>Sa                                     | mple Matrix:<br>mpled By:                    | Solid<br>SL              |                  |
| PA 8021B                       | Benzene  | 460                   | μg/Kg                       | 200                | 10/23/98                                     | 10/23/98                                     | DWT                      | 40               |
|                                | Toluene  | 4260                  | µg/Kg                       | 200                | 10/23/98                                     | 10/23/98                                     | DWT                      | 40               |
|                                | Ethyl benzene  | 12200                 | µg/Kg                       | 200                | 10/23/98                                     | 10/23/98                                     | DWT                      | 40               |
|                                | Xylenes (Total)  | 26400                 | µg/Kg                       | 600                | 10/23/98                                     | 10/23/98                                     | DWT                      | 40               |
|                                | Total PTEX (Calculated)  | 43320                 | µg/Kg                       |                    | 10/23/98                                     | 10/23/98                                     | DWT                      | 1                |
|                                | Total BTEA (Calculated)  |                       |                             |                    |  | 10/22/00                                     | DWT                      | 1                |
|                                | **Quality Control Surrogate  |                       |                             | 1                  | 10/23/98                                     | 10/23/98                                     | DWI                      |                  |
|                                | **Quality Control Surrogate<br>Difluorobenzene (SS)  | 85%                   | 74-119%                     | 1                  | 10/23/98<br>10/23/98                         | 10/23/98                                     | DWT                      | 1                |
|                                | **Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)   | 85%<br>143%           | 74-119%<br>49-158%          | 1<br>1<br>1        | 10/23/98<br>10/23/98<br>10/23/98             | 10/23/98<br>10/23/98<br>10/23/98             | DWT<br>DWT               | 1<br>1           |
| PA 8015B                       | **Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)<br>TPH (DRO)                                | 85%<br>143%<br>234    | 74-119%<br>49-158%<br>mg/Kg | 1<br>1<br>50 1     | 10/23/98<br>10/23/98<br>10/23/98<br>10/26/98 | 10/23/98<br>10/23/98<br>10/23/98<br>10/27/98 | DWT<br>DWT<br>JCA        | 1<br>1<br>5      |
| PA 8015B                       | **Quality Control Surrogate<br>Difluorobenzene (SS)<br>4-Bromofluorobenzene (SS)<br>TPH (DRO)<br>**Quality Control Surrogate | 85%<br>143%<br>234    | 74-119%<br>49-158%<br>mg/Kg | 50 1               | 10/23/98<br>10/23/98<br>10/23/98<br>10/26/98 | 10/23/98<br>10/23/98<br>10/23/98<br>10/27/98 | DWT<br>DWT<br>JCA<br>JCA | 1<br>1<br>5<br>5 |

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**Results of Analyses** 

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CEL File No.: 98-3543

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Report Date: 10/30/98

|                   |                                  | Result | Units    | Limit       | Prepar   | ed Analyzed   | By          | Dilu   |
|-------------------|----------------------------------|--------|----------|-------------|----------|---------------|-------------|--------|
| Client Sample II  | D: B-6/30'-31'                   |        |          |             |          | Sample Num    | ber: 98-35  | 43-01  |
| Date Sampled:     | 10/21/98                         |        |          |             |          | Sample Matr   | ix: Solid   |        |
| Time Sampled:     | 9:05                             |        |          |             |          | Sampled By:   | SL          |        |
| EPA 8021B         | Benzene                          | 581    | µg/Kg    | 50          | 10/23/9  | 8 10/23/98    | DWT         |        |
|                   | Toluene                          | 130    | μg/Kg    | 50          | 10/23/9  | 8 10/23/98    | DWT         | . ]    |
|                   | Ethyl benzene                    | 2900   | μg/Kg    | 50          | 10/23/9  | 8 10/23/98 .  | DWT         | 1      |
|                   | Xylenes (Total)                  | 4170   | μg/Kg    | 150         | 10/23/9  | 8 10/23/98    | DWT         | 1      |
|                   | Total BTEX (Calculated)          | 7781   | μg/Kg    |             | 10/23/9  | 8 10/23/98    | DWT         | -      |
|                   | **Quality Control Surrogate      | 9      |          |             | 10/23/98 | 3 10/23/98    | DWT         |        |
|                   | Difluorobenzene (SS)             | 116%   | 74-119%  |             | 10/23/98 | 3 10/23/98    | DWT         | 1      |
|                   | 4-Bromofluorobenzene (SS)        | 152%   | 49-158%  |             | 10/23/98 | 3 10/23/98    | DWT         | 1      |
| EPA 8015B         | TPH (DRO)                        | 25     | mg/Kg    | 10          | 10/26/98 | 10/27/98      | JCA         | 1      |
|                   | **Quality Control Surrogate      |        |          |             | 10/26/98 | 10/27/98      | JCA         | 1      |
|                   | p-Terphenyl (SS)                 | 67%    | 60-140%  |             | 10/26/98 | 10/27/98      | JCA         | 1      |
| Client Sample ID: | B-7/25'-26'                      |        | <u></u>  | <del></del> |          | Sample Numbe  | er: 98-3543 | 6-010  |
| Date Sampled:     | 10/21/98                         |        |          |             | 5        | Sample Matrix | : Solid     |        |
| Time Sampled:     | 9:45                             |        | <u> </u> |             |          | Sampled By:   | SL          |        |
| EPA 8021B         | Benzene                          | <50    | µg/Kg    | 50          | 10/23/98 | 10/23/98      | DWT         | 10     |
|                   | Toluene                          | 100    | µg/Kg    | 50          | 10/23/98 | 10/23/98      | DWT         | 1(     |
|                   | Ethyl benzene<br>Kadasas (Tatal) | < 150  | µg/Kg    | 50<br>150   | 10/23/98 | 10/23/98      | DWT         | 10     |
|                   | Aylenes (10tal)                  | <150   | µg/Kg    | 150         | 10/23/98 | 10/23/98      | DWI         | 1      |
|                   | total BIEA (Calculated)          | 100    | µg/ĸg    |             | 10/22/09 | 10/23/98      |             | 1      |
|                   | Diffueroherene (SS)              | 1030/  | 74 1100/ |             | 10/22/09 | 10/22/09      | DWI         | 1      |
|                   | A Dramofluershammer (SS)         | 103%   | /4-11970 |             | 10/23/30 | 10/22/09      |             | 1      |
| DA 9015D          |                                  | 11/70  | 49-1J070 | 10          | 10/22/20 | 10/23/30      | DWI         | 1      |
| FA 80156          |                                  | 100    | mg/Kg    |             | 10/20/20 | 10/27/09      |             | ۰<br>۱ |
|                   | - Quality Control Surrogate      | + 500/ | 60 1408/ |             | 10/20/90 | 10/27/09      |             | 1      |
| * Supporte par    | p-lerpnenyl (SS)                 | * 59%  | 60-140%  |             | 10/20/98 | 10/2//98      | JCA         | 1      |
| Smill guie let    | ····· w was of lunge             |        | <u></u>  |             |          |               |             |        |
| ient Sample ID: 1 | B-7/30'                          |        | •        |             | S        | ample Numbe   | r: 98-3543- | -017   |
| ate Sampled:      | 10/21/98                         |        |          |             | S        | ample Matrix: | Solid       |        |
| ime Sampled:      | 9:55                             | ·      |          |             | S        | ampled By:    | SL          |        |
| PA 8021B          | Benzene                          | <50    | µg/Kg    | 50          | 10/23/98 | 10/23/98      | DWT         | 10     |
|                   | Toluene                          | 214    | μg/Kg    | 50          | 10/23/98 | 10/23/98      | DWT         | 10     |
|                   |                                  | Page   | 8 of 9   |             |          |               |             |        |
|                   |                                  |        |          |             |          |               |             |        |

Analytical Chemistry

Environmental Sciences

Research

## **Results of Analyses**

CEL File No.: 98-3543

Report Date: 10/30/98

| <u>Sample: 98-35</u> | 543-017 continued           | Result | Units   | Reporting<br>Limit | Date<br>Prepared | Date<br>Analyzed | Analyzed<br>By | Dilution |
|----------------------|-----------------------------|--------|---------|--------------------|------------------|------------------|----------------|----------|
| EPA 8021B            | Ethyl benzene               | 865    | μg/Kg   | 50                 | 10/23/98         | 10/23/98         | DWT            | 10       |
|                      | Xylenes (Total)             | 2190   | µg/Kg   | 150                | 10/23/98         | 10/23/98         | DWT            | 10       |
|                      | Total BTEX (Calculated)     | 3269   | μg/Kg   |                    | 10/23/98         | 10/23/98         | DWT            | 1        |
|                      | **Quality Control Surrogate |        |         |                    | 10/23/98         | 10/23/98         | DWT            | 1        |
|                      | Difluorobenzene (SS)        | 115%   | 74-119% |                    | 10/23/98         | 10/23/98         | DWT            | 1        |
|                      | 4-Bromofluorobenzene (SS)   | 117%   | 49-158% | •                  | 10/23/98         | 10/23/98         | DWT            | 1        |
| EPA 8015B            | TPH (DRO)                   | 10     | mg/Kg   | 10                 | 10/26/98         | 10/27/98         | JCA            | 1        |
|                      | **Quality Control Surrogate |        |         |                    | 10/26/98         | 10/27/98         | JCA            | 1        |
|                      | p-Terphenyl (SS)            | 89%    | 60-140% |                    | 10/26/98         | 10/27/98         | JCA            | 1        |

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**Results of Analyses - Laboratory Quality Control** 

|                                   | Benzene   | Toluene   | EUM      | A Xy/leness | Diesel                                  |
|-----------------------------------|-----------|-----------|----------|-------------|---|
|                                   |           |           | benzene. |             | Range                                   |
|                                   |           |           |          |             | <u>. Organies</u>                       |
|                                   |           |           |          |             | - · · · · · · · · · · · · · · · · · · · |
| Matrix Spike                      |           |           |          |             |   |
| Date Marsha                       | 102200771 | 100200777 |          | 100200777   | DROG                                    |
|                                   | 10239811  | 102398H1  | 102398H1 | 102398H1    | . 0099                                  |
| Date Prepared                     | 10/23/98  | 10/23/98  | 10/23/98 | 10/23/98    | 10/26/98                                |
| Date Analyzed                     | 10/23/98  | 10/23/98  | 10/23/98 | 10/23/98    | 10/27/98                                |
| Spiked Sample ID                  | 3543-17   | 3543-17   | 3543-17  | 3543-17     | N/A                                     |
| Spike Level                       |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | 100       | 100       | 100      | 200         | 83.3                                    |
| Spike Result                      |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | 108       | 104       | 93       | 183         | 30.0*                                   |
| % Recovery                        | 108       | 104       | 93       | 92          | N/A                                     |
| Spike Duplicate Result            |           |           |          | 1           |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | 111       | 107       | 96       | 191         | 196*                                    |
| % Recovery Duplicate              | 111       | 107       | 96       | 96          | N/A                                     |
| Relative Percent Difference (RPD) | 3         | 3         | 3        | 4           | N/A                                     |
| Control Limits (%low-%high)       | 70-130    | 70-130    | 70-130   | 70-130      | 53.3-112                                |
| Method Blank                      |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | <1        | <1        | <1       | <3          | <10.0                                   |
|                                   |           |           |          |             |   |
| Laboratory Control Sample         |           | ·         |          |             |   |
| Spike Level                       |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | 100       | 100       | 100      | 200         | 83.3                                    |
| Spike Result                      |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | 110       | 110       | 111      | 227         | 63.1                                    |
| % Recovery                        | 110       | 110       | 111      | 114         | 75                                      |
| Spike Duplicate Result            |           |           |          |             |   |
| (mg/L) (µg/L) (mg/Kg) (µg/Kg)     | N/A       | N/A       | N/A      | N/A         | 70.5                                    |
| % Recovery Duplicate              | N/A       | N/A       | N/A      | .N/A        | 85                                      |
| Relative Percent Difference (RPD) | N/A       | N/A       | N/A      | N/A         | 11                                      |
| Control Limits (%low-%high)       | 70-130    | 70-130    | 70-130   | 70-130      | 53.3-112                                |

\*See Case Narrative

μg/l = micrograms per liter (ppb) μg/kg = micrograms per kilogram (ppb) < = less than MS = Matrix Spike MSD = Matrix Spike LCS = Laboratory Control Sample BS = Blank Spike μmhos/cm = micromhos/centimeter mg/l = milligrams per liter (ppm) mg/kg = milligrams per kilogram (ppm) % = percent RPD = Relative Percentage Difference RW - Reagent Water LCSD = Laboratory Control Sample Duplicate

BSD = Blank Spike Duplicate

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| Client Name<br>-12102 GeusaTING Compa<br>Client Address<br>122 WEST TAYLOG | 2209 Wisconsin<br>Dallas, Texas 75<br>972-620-7966 | Lavoratories, L.L.C.<br>Street, Suite 200<br>229<br>972-620-7963 Fax |                                    | Analysi   | s(es) Requested             |              |
|--|--|--|------------------------------------|---|-----------------------------|--------------|
| Billing Address  | W EVERCON-Phome, No.                               | 37   |                                    | <u>(</u> ସ)                                     |                             |              |
| Purchase Order No.   | Hcbbs Rate   | M <sup>ZID</sup> SE240   |                                    | 4) ج  |                             |              |
| Projest Manager A. LowLey  | TUNKTICAN For I P                                  | Hebbs SWD Sys  | X31                                | 103 H   |                             | <del></del>  |
| Certes Sample ID I   | Date Time Matrix                                   | No. & Type of Container  | 5                                  |   |                             |              |
| 10 15-2/20 10h<br>11 B-5/25' 10h   | 20198 1623 Sou                                     | ->->   | > >                                |   |                             |              |
| 12 73-5/ 30'   | 1048 1646 Sal                                      | >->  | > >                                |   |                             |              |
| 13 R-6/20-21' 101  | 21/28 847 Som                                      | ->   | >                                  |   |                             |              |
| 14 B-la/25-21a 10h   | 1/28 850 Sort                                      | ->   | >                                  |   |                             |              |
| 15 B-6/30-31 10h   | 1/95 905 Son                                       | ->   | 7<br>7                             |   |                             |              |
| 10 R-7/25-210 10/  | 21/95 945 Soil                                     | ->   | >                                  |   |                             |              |
| 17 3-7/30' 1012  | 1/98 905 Sor                                       | ->   | >                                  |   |                             |              |
|  |  |  |                                    |   |                             |              |
| Sampled By   | 1 Matrix: A.                                       | Air Bag; C - Charcoal Tube<br>40ml VOA Vial; G - Amber o             | L - Liquid, OL<br>r Glass 1 Liter; | - Oil: S - Soil: SD Solid: 6                    | al Sludge, WP - Wipe; W     | WaterWastewa |
| TAT  | nt Project ID                                      | Special Instructions (includir                                       | - Nitric Acid; H                   | SQ, - Sulturic Acid; O - Other<br>ion Jimits) / |                             |              |
| Standard: Date Required 15/30  | EN 958<br>alloration G.                            | Clert will bar<br>RL Spir 422  | 5108 75                            | DRO +ler GRO                                    | 98-3542                     |              |
| Relignished by Semiliar S  |  | Date   | eu                                 | Received By                                     |                             | P.           |
| Relinquished by .  |  | Date   | ne                                 | Received By                                     |                             |              |
| Relinquished by  |  | Date 10/27.94 Tir  | ne 1/5 5                           | Received By Laboratory                          | $\cup$ $\cup$ $\cup$ $\cup$ | -            |

| Analysis(es) Requested   |   |   |                           |                  |                     |                   |                                       |                   | S - Soil; SD - Solid: SL - Sludge; WP - Wipe, W - Water/Westew<br>Oml Wide-mouth Glass Jar, O - Other                                   | The they GRA Certes Job Number<br>BOIS DAR they GRA POR JOY 3543 | aived By                | sived By        | sived By Laboratory K.C.L. Cose   |
|--|---|---|---------------------------|------------------|---------------------|-------------------|---------------------------------------|-------------------|---|--|-------------------------|-----------------|---|
| oratories, L.L.C.<br>eet, Suite 200<br>2-620-7963 Fax                          | 011) GIG<br>- 00<br>- 07200<br>- 07200<br>- 00<br>- 00<br>- 00<br>- 00<br>- 00<br>- 00<br>- 00<br>- | Hudtatton number.<br>Holde SWISS<br>No & Type of Container?<br>G J 10 P3  | <u> </u>                  | > >              | ->-                 |                   | · · · · · · · · · · · · · · · · · · · | >->               | ag; C - Charcoal Tube; L - Liquid; OL - Oi;<br>I VOA Vial; G - Amber or Glass 1 Liter; J - 2<br>drochlonc Acid; HNO - Ninc Acid; H SO - | rectal lastructions (including specific detection it             | 10122192 Time Rec       | e Time Rec      | $e \left[ o \right] 2 c \left[ q_{\chi} \right]$ Time $\left[ 655 \right]$ Reco |
| Environmental La<br>2209 Wisconsin St<br>Dallas, Texas 7522<br>972-620-7966 9; | - ENERCON - LA PHOPE No.<br>City Heldes State   | To ensure proper billing, please reference<br>Sile Location<br>Juncture Prov T.9 ]<br>Date Time Matrix <sup>1</sup> | 10/20/98 916 Soil         | 10/20/78 10 Sont | 10/20/46 11 10 Solu | 10/20/92 1420 Son | 10/20/98 1435 Solu                    | 10/2096 1546 Solu | 1 Matrix: A - Air<br>2 Container Type: V - 40n<br>3 Preservative: HCI - H   | Client Project ID<br>EV 958<br>Construction Construction         | Part Part Part          | Da              | Da<br>agree to the terms and conditions contain                                 |
| Certes   | Client Address<br>Billing Address   | Purchase Order No.<br>Profect Manager A. Cowley<br>Certes Sample ID<br>No.  | [ B-1/26-20.6<br>2 R-1/25 | 3 13-1/ 30'      | 4 R-7/25-26         | b 3-3/25'         | 7 8-3/31-53'<br>8 R-4/25'             | 9 B-4/30'         | Sampled By<br>SAL   | TAT<br>Standard+Date Required 10 13 O                            | Relinquished By Samoler | Relinquished by | Relinquished by<br>NOTE: By submitting these samples, you                       |



February 10, 1999

F. Wesley Root RICE OPERATING COMPANY 122 West Taylor Hobbs, NM 88240



The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on January 19, 1999. The sample(s) was assigned to Certificate of Analysis No. (s) 9901761 and analyzed for all parameters as listed on the chain of custody.

Sample MW-2 (SPL#9901761-01D) was randomly chosen as a quality Control sample for Total metals analysis by SW-846 method 6010. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Aluminum and Iron. A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

あつ

Electa Brown Project Manager



Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 99-01-761

Approved for Release by:

Dat/e

Electa Brown, Project Manager

Greg Grandits Laboratory Director

Cynthia Schreiner Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory. The results relate only to the samples tested. Results reported on a Wet Weight Basis unless otherwise noted.



Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-1 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 12:30:00 DATE RECEIVED: 01/19/99

|  | ANALYTICA  | L DATA      |           |          |
|--|--|-------------|-----------|----------|
| PARAMETER  |  | RESULTS     | DETECTION | UNITS    |
| Liquid-liquid<br>Method 3520C<br>Analyzed by:<br>Date:   | extraction SEMIVOLATIL<br>***<br>KL<br>01/20/99 13:00:00 | ES 01/20/99 | BIMI I    |          |
| Chloride<br>Method 325.3<br>Analyzed by:<br>Date:        | *<br>CV<br>01/29/99 11:00:00                             | 128         | 2         | mg/L     |
| Carbonate, as<br>Method SM 45<br>Analyzed by:<br>Date:   | CaCO3<br>00-CO2D **<br>TK<br>01/19/99 16:20:00           | ND          | 2         | mg/L     |
| Bicarbonate, a<br>Method SM 450<br>Analyzed by:<br>Date: | as CaCO3<br>D0-CO2D **<br>TK<br>01/19/99 16:20:00        | 332         | 2         | mg/L     |
| pH<br>Method 150.1                                       | *  | 7.29        |           | pH Units |
| Analyzed by:<br>Date:                                    | TK<br>01/19/99 17:00:00                                  |             |           |          |
| Resistivity<br>Method 120.1<br>Analyzed by:<br>Date:     | *<br>TK<br>01/19/99 16:50:00                             | 0.74        | 0.001     | Mohms-cm |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-1 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 12:30:00 DATE RECEIVED: 01/19/99

|   |                                  | ANALY    | TICAL DATA |         |          |          |
|---|----------------------------------|----------|------------|---------|----------|----------|
| PARAMETER   |                                  |          |            | RESULTS | DETECTIO | ON UNITS |
| Sulfate<br>Method 375.4<br>Analyzed by:<br>Date:        | *<br>TW .<br>01/28/99            | 13:30:00 |            | 318     | 25       | mg/L     |
| Specific Grav<br>ASTM D1429                             | ity                              |          |            | 0.982   |          | g/cm3    |
| Analyzed by:<br>Date:                                   | DS<br>02/02/99                   | 14:00:00 |            |         |          |          |
| Total Dissolve<br>Method 160.1<br>Analyzed by:<br>Date: | ed Solids<br>*<br>DS<br>02/05/99 | 10:00:00 |            | 890     | 20       | mg/L     |
| Silver, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99            | 10:00:00 |            | ND      | 0.01     | mg/L     |
| Aluminum, Tota<br>Method 6010B<br>Analyzed by:          | al<br>***<br>JM                  | ···      |            | 12.3    | 0.1      | mg/L     |
| Date:   | 01/20/99                         | 10:00:00 |            |         |          |          |
| Arsenic, Total<br>Method 6010B<br>Analyzed by:<br>Date: | L<br>***<br>EG<br>01/21/99       | 15:28:00 |            | 0.019   | 0.005    | mg/L     |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-1

| PROJECT NO:    |          |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 12:30:00 |
| DATE RECEIVED: | 01/19/99 |          |

|   | ANALYTICAL DAT                         | A       |                    |       |
|---|--|---------|--------------------|-------|
| PARAMETER   |  | RESULTS | DETECTION<br>LIMIT | UNITS |
| Barium, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99  | 10:00:00                               | 0.870   | 0.005              | mg/L  |
| Calcium, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99 | 10:00:00                               | 727     | 1                  | mg/L  |
| Cadmium, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99 | 10:00:00                               | ND      | 0.005              | mg/L  |
| Cobalt, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99  | 10:00:00                               | ND      | 0.01               | mg/L  |
| Chromium, Total<br>Method 6010B ***                                     | ······································ | ND      | 0.01               | mg/L  |
| Analyzed by: JM<br>Date: 01/20/99                                       | 10:00:00                               |         |                    |       |
| Copper, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99  | 10:00:00                               | 0.02    | 0.01               | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



## Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-1 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 12:30:00 DATE RECEIVED: 01/19/99

|  | ANALYTICAL                            | DATA    |           |       |
|--|---------------------------------------|---------|-----------|-------|
| PARAMETER  |                                       | RESULTS | DETECTION | UNITS |
| Iron, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99       | 9 10:00:00                            | 9.34    | 0.02      | mg/L  |
| Mercury, Total<br>Method 7470 A***<br>Analyzed by: AG<br>Date: 01/20/99    | 9 14:50:00                            | ND      | 0.0002    | mg/L  |
| Potassium, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99  | 9 10:00:00                            | 3       | 2         | mg/L  |
| Magnesium, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99  | 0 10:00:00                            | 43.9    | 0.1       | mg/L  |
| Manganese, Total<br>Method 6010B ***                                       | · · · · · · · · · · · · · · · · · · · | 0.214   | 0.005     | mg/L  |
| Analyzed by: JM<br>Date: 01/20/99  | 10:00:00                              |         |           |       |
| Molybdenum, Total<br>Method 6010B ***<br>Analyzed by: JM<br>Date: 01/20/99 | 10:00:00                              | ND      | 0.02      | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root DATE: 02/09/99 PROJECT NO: **PROJECT:** Jct. I-9 Hobbs SWD System MATRIX: WATER SITE: 09-T195-R38E, Lea County **DATE SAMPLED:** 01/16/99 12:30:00 SAMPLED BY: Rice Operating Company **DATE RECEIVED:** 01/19/99 SAMPLE ID: MW-1 ANALYTICAL DATA PARAMETER RESULTS DETECTION UNITS LIMIT Sodium, Total 144 0.5 mg/L Method 6010B \*\*\* Analyzed by: JM Date: 01/20/99 10:00:00 0.02 Nickel, Total 0.02 mg/L Method 6010B \*\*\* Analyzed by: JM Date: 01/20/99 10:00:00 Acid Digestion-Aqueous, ICP 01/19/99 Method 3010A \*\*\* Analyzed by: EE Date: 01/19/99 13:00:00 Lead, Total 0.005 0.005 mg/L Method 6010B \*\*\* Analyzed by: EG Date: 01/21/99 15:28:00 Selenium, Total ND 0.005 mq/L Method 6010B \*\*\* Analyzed by: EG Date: 01/21/99 15:28:00 Zinc, Total 0.05 0.02 mg/L Method 6010B \*\*\* Analyzed by: JM Date: 01/20/99 10:00:00

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



02/09/99

Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-1

| PROJECT NO:    | •        |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 12:30:00 |
| DATE RECEIVED: | 01/19/99 |          |

| ANALYTICAL DATA             |         |      |        |  |  |
|-----------------------------|---------|------|--------|--|--|
| PARAMETER                   | RESULTS | PQL* | UNITS  |  |  |
| Benzene                     | . 8     | 5    | ug/L   |  |  |
| Bromobenzene                | ND      | 5    | ug/L   |  |  |
| Bromochloromethane          | ND      | 5    | ug/L   |  |  |
| Bromodichloromethane        | ND      | 5    | ug/L   |  |  |
| Bromoform                   | ND      | 5    | ug/L   |  |  |
| Bromomethane                | ND      | 10   | ug/L   |  |  |
| n-Butylbenzene              | ND      | 5    | ug/L   |  |  |
| sec-Butylbenzene            | ND      | 5    | uq/L   |  |  |
| tert-Butylbenzene           | ND      | 5    | uq/L   |  |  |
| Carbon tetrachloride        | ND      | 5    | ug/L   |  |  |
| Chlorobenzene               | ND      | 5    | uq/L   |  |  |
| Chlorodibromomethane        | ND      | 5    | ′ uq/L |  |  |
| Chloroethane                | ND      | 10   | ug/L   |  |  |
| Chloroform                  | ND      | 5    | uq/L   |  |  |
| Chloromethane               | ND      | 10   | ug/L   |  |  |
| 2-Chlorotoluene             | ND      | 5    | ug/L   |  |  |
| 4-Chlorotoluene             | ND      | 5    | ug/L   |  |  |
| 1,2-Dibromo-3-chloropropane | ND      | 5    | ug/L   |  |  |
| 1,2-Dibromoethane           | ND      | 5    | ug/L   |  |  |
| Dibromomethane              | ND      | 5    | ug/L   |  |  |
| 1,2-Dichlorobenzene         | ND      | 5    | ug/L   |  |  |
| 1,3-Dichlorobenzene         | ND      | 5    | ug/L   |  |  |
| 1,4-Dichlorobenzene         | ND      | 5    | ug/L   |  |  |
| Dichlorodifluoromethane     | ND      | 10   | ug/L   |  |  |
| 1,1-Dichloroethane          | ND      | 5    | ug/L   |  |  |
| 1,2-Dichloroethane          | ND      | 5    | ug/L   |  |  |
| 1,1-Dichloroethene          | ND      | 5    | ug/L   |  |  |
| cis-1,2-Dichloroethene      | ND      | 5    | ug/L   |  |  |
| trans-1,2-Dichloroethene    | ND      | 5    | ug/L   |  |  |
| 1,2-Dichloropropane         | ND      | 5    | ug/L   |  |  |
| 1,3-Dichloropropane         | ND      | 5    | ug/L   |  |  |
| 2,2-Dichloropropane         | ND      | 5    | ug/L   |  |  |
| 1,1-Dichloropropene         | ND      | 5    | ug/L   |  |  |
| Ethylbenzene                | 32      | 5    | ug/L   |  |  |
| Hexachlorobutadiene         | ND      | 5    | ug/L   |  |  |
| Isopropylbenzene            | ND      | 5    | ug/L   |  |  |
| p-Isopropyltoluene          | ND      | 5    | uq/L   |  |  |
| Methylene chloride          | ND      | 5    | uq/L   |  |  |

METHOD: 8260 Water, Volatile Organics (continued on next page)



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUISTON TEXAS 77054

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Certificate of Analysis No. H9-9901761-02

HOUSTON, TEXAS 77054 PHONE (713) 660-0901

| Rice | Operating | Company |
|------|-----------|---------|
|------|-----------|---------|

SAMPLE ID: MW-1

| ANA                        | LYTICAL DATA | (cont | inued) |       |       |
|----------------------------|--------------|-------|--------|-------|-------|
| PARAMETER                  | RESULT       | rs    | PQL*   | τ     | JNITS |
| Naphthalene                |              | ND    | 5      |       | ug/L  |
| n-Propylbenzene            |              | ND    | 5      |       | ug/I  |
| Styrene                    |              | ND    | 5      |       | ug/I  |
| 1,1,1,2-Tetrachloroethane  |              | ND    | 5      |       | ug/I  |
| 1,1,2,2-Tetrachloroethane  |              | ND    | 5      |       | ug/I  |
| Tetrachloroethene          |              | ND    | 5      |       | ug/I  |
| Toluene                    |              | ND    | 5      |       | ug/I  |
| 1,2,3-Trichlorobenzene     |              | ND    | 5      |       | ug/I  |
| 1,2,4-Trichlorobenzene     |              | ND    | 5      |       | ug/L  |
| 1,1,1-Trichloroethane      |              | ND    | 5      |       | ug/I  |
| 1,1,2-Trichloroethane      |              | ND    | 5      |       | ug/L  |
| Trichloroethene            |              | ND    | 5      |       | ug/L  |
| Trichlorofluoromethane     |              | ND    | 5      |       | uq/I  |
| 1,2,3-Trichloropropane     |              | ND    | 5      |       | ug/I  |
| 1,2,4-Trimethylbenzene     |              | 7     | 5      |       | uq/L  |
| 1,3,5-Trimethylbenzene     |              | ND    | 5      |       | uq/L  |
| Vinyl chloride             |              | ND    | 10     |       | ug/L  |
| Xvlenes (total)            |              | 12    | 5      |       | uq/L  |
| Acetone                    |              | ND    | 100    |       | ug/L  |
| Carbon Disulfide           |              | ND    | 5      |       | ug/L  |
| Vinvl Acetate              |              | ND    | 10     |       | ug/L  |
| 2-Butanone                 |              | ND    | 20     |       | ug/L  |
| 1,2-Dichloroethene (total) |              | ND    | 5      |       | uq/L  |
| 2-Chloroethylvinylether    |              | ND    | .10    |       | uq/L  |
| 4-Methyl-2-Pentanone       |              | ND    | 10     |       | uq/L  |
| cis-1,3-Dichloropropene    |              | ND    | 5      |       | ug/L  |
| trans-1,3-Dichloropropene  |              | ND    | 5      |       | uq/L  |
| 2-Hexanone                 |              | ND    | 10     |       | uq/L  |
| Methyl t-Butyl Ether       |              | ND    | 10     |       | ug/L  |
| SURROGATES                 | AMOUNT       | %     |        | LOWER | UPPER |
|                            | SPIKED       | REC   | OVERY  | LIMIT | LIMIT |
| .,2-Dichloroethane-d4      | 50 ug/L      |       | 86     | 76    | 114   |
| Foluene-d8                 | 50 ug/L      |       | 102    | 88    | 110   |

ANALYZED BY: GLT DATE/TIME: 01/23/99 20:10:00 METHOD: 8260 Water, Volatile Organics NOTES: \* - Practical Quantitation Limit ND - Not Detected NA - Not Analyzed

50 ug/L

86

86

115

COMMENTS:

4-Bromofluorobenzene



Certificate of Analysis No. H9-9901761-02

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

02/09/99

| PROJECT: Jct. I-9 Hobbs SWD System | PROJECT NO:                    |   |
|------------------------------------|--------------------------------|---|
| SITE: 09-T195-R38E, Lea County     | MATRIX: WATER                  |   |
| SAMPLED BY: Rice Operating Company | DATE SAMPLED: 01/16/99 12:30:0 | 0 |
| SAMPLE ID: MW-1                    | DATE RECEIVED: 01/19/99        |   |

| PARAMETER                   | RESULTS | PQL* | UNITS |
|-----------------------------|---------|------|-------|
| Acenaphthene                | ND      | 5    | uq/L  |
| Acenaphthylene              | ND      | 5    | uq/L  |
| Aniline                     | ND      | 5    | ug/L  |
| Anthracene                  | ND      | 5    | ug/L  |
| Benzo(a)Anthracene          | ND      | 5    | ug/L  |
| Benzo(b)Fluoranthene        | ND      | 5    | ug/L  |
| Benzo(k)Fluoranthene        | ND      | 5    | ug/L  |
| Benzo(a) Pyrene             | ND      | 5    | ug/L  |
| Benzoic Acid                | ND      | 25   | ug/L  |
| Benzo(g,h,i)Perylene        | ND      | 5    | ug/L  |
| Benzyl alcohol              | ND      | ·5   | ug/L  |
| 4-Bromophenylphenyl ether   | ND      | 5    | ug/L  |
| Butylbenzylphthalate        | ND      | 5    | ug/L  |
| di-n-Butyl phthalate        | ND      | 5    | ug/L  |
| Carbazole                   | ND      | 5    | ug/L  |
| 4-Chloroaniline             | ND      | 5    | ug/L  |
| bis(2-Chloroethoxy)Methane  | ND      | 5    | ug/L  |
| bis(2-Chloroethyl)Ether     | ND      | 5    | ug/L  |
| bis(2-Chloroisopropyl)Ether | ND      | 5    | ug/L  |
| 4-Chloro-3-Methylphenol     | ND      | 5    | ug/L  |
| 2-Chloronaphthalene         | ND      | · 5  | ug/L  |
| 2-Chlorophenol              | ND      | 5    | ug/L  |
| 4-Chlorophenylphenyl ether  | ND      | 5    | ug/L  |
| Chrysene                    | ND      | 5    | ug/L  |
| Dibenz(a,h)Anthracene       | ND      | 5    | ug/L  |
| Dibenzofuran                | ND      | 5    | ug/L  |
| 1,2-Dichlorobenzene         | ND      | 5    | ug/L  |
| 1,3-Dichlorobenzene         | ND      | 5    | ug/L  |
| 1,4-Dichlorobenzene         | ND      | 5    | ug/L  |
| 3,3'-Dichlorobenzidine      | ND      | 10   | ug/L  |
| 2,4-Dichlorophenol          | ND      | 5    | ug/L  |
| Diethylphthalate            | ND      | 5    | ug/L  |
| 2,4-Dimethylphenol          | ND      | 5    | ug/L  |
| Dimethyl Phthalate          | ND      | 5    | ug/L  |
| 4,6-Dinitro-2-Methylphenol  | · ND    | 25   | ug/L  |
| 2,4-Dinitrophenol           | ND      | 25   | ug/L  |
| 2,4-Dinitrotoluene          | ND      | 5    | ug/L  |
| 2,6-Dinitrotoluene          | ND      | 5    | ug/L  |

METHOD: 8270C, Semivolatile Organics - Water (continued on next page)



Certificate of Analysis No. H9-9901761-02

Rice Operating Company

SAMPLE ID: MW-1

| ANALYT                     | ICAL DATA | (cont | inued) |       |
|----------------------------|-----------|-------|--------|-------|
| PARAMETER                  | RESULTS   |       | PQL*   | UNITS |
| 1,2-Diphenylhydrazine      |           | ND .  | 5      | ug/L  |
| bis(2-Ethylhexyl)Phthalate |           | ND    | 5      | ug/L  |
| Fluoranthene               |           | ND    | 5      | ug/L  |
| Fluorene                   |           | ND    | 5      | ug/L  |
| Hexachlorobenzene          |           | ND    | 5      | ug/L  |
| Hexachlorobutadiene        |           | ND    | 5      | ug/L  |
| Hexachloroethane           | ,         | ND    | 5      | ug/L  |
| Hexachlorocyclopentadiene  |           | ND    | 5      | ug/L  |
| Indeno (1,2,3-cd) Pyrene   |           | ND    | 5      | ug/L  |
| Isophorone                 |           | ND    | 5      | ug/L  |
| 2-Methylnaphthalene        |           | ND    | · 5 ·  | ug/L  |
| 2-Methylphenol             |           | ND    | 5      | ug/L  |
| 4-Methylphenol             |           | ND    | 5      | ug/L  |
| Naphthalene                |           | ND    | 5      | ug/L  |
| 2-Nitroaniline             |           | ND    | 25     | ug/L  |
| 3-Nitroaniline             |           | ND    | 25     | ug/L  |
| 4-Nitroaniline             |           | ND    | 25     | ug/L  |
| Nitrobenzene               |           | ND    | 5      | ug/L  |
| 2-Nitrophenol              |           | ND    | 5      | ug/L  |
| 4-Nitrophenol              |           | ND    | 25     | ug/L  |
| N-Nitrosodiphenylamine     |           | ND    | 5      | ug/L  |
| N-Nitroso-Di-n-Propylamine |           | ND    | 5      | ug/L  |
| Di-n-Octyl Phthalate       |           | ND    | 5      | ug/L  |
| Pentachlorophenol          |           | ND    | 25     | ug/L  |
| Phenanthrene               |           | ND    | 5      | ug/L  |
| Phenol                     |           | ND    | 5      | ug/L  |
| Pyrene                     |           | ND    | 5      | ug/L  |
| Pyridine                   |           | ND    | 5      | ug/L  |
| 1,2,4-Trichlorobenzene     |           | ND    | 5      | ug/L  |
| 2,4,5-Trichlorophenol      |           | ND    | 10     | ug/L  |
| 2,4,6-Trichlorophenol      |           | ND    | 5      | ug/L  |

METHOD: 8270C, Semivolatile Organics - Water (continued on next page)



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054

Certificate of Analysis No. H9-9901761-0

| No. H9-9901761-02 | PHONE (713) 660-0901 |
|-------------------|----------------------|
|-------------------|----------------------|

| Rice Operating Company | SAMPLE ID: | MW-1 |
|------------------------|------------|------|
|------------------------|------------|------|

| SURROGATES           | AMOUNT<br>SPIKED | %<br>RECOVERY | LOWER<br>LIMIT | UPPER<br>LIMIT |
|----------------------|------------------|---------------|----------------|----------------|
| Nitrobenzene-d5      | 50 ug/L          | 74            | 35             | 114            |
| 2-Fluorobiphenyl     | 50 ug/L          | 78            | 43             | 116            |
| Terphenyl-d14        | 50 ug/L          | 60            | 33             | 141            |
| Phenol-d5            | 75 ug/L          | 21            | 10             | 110            |
| 2-Fluorophenol       | 75 ug/L          | 37            | 21             | 110            |
| 2,4,6-Tribromophenol | 75 ug/L          | 65            | 10             | 123            |

ANALYZED BY: YL DATE/TIME: 01/22/99 19:55:00 EXTRACTED BY: KL DATE/TIME: 01/20/99 13:00:00 METHOD: 8270C, Semivolatile Organics - Water NOTES: \* - Practical Quantitation Limit ND - Not Detected NA - Not Analyzed

COMMENTS:



Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System SITE: 09-T195-R38E, Lea County SAMPLED BY: Rice Operating Company SAMPLE ID: MW-2 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 11:20:00 DATE RECEIVED: 01/19/99

| ANALYTICAL DATA  |  |          |           |          |
|--|--|----------|-----------|----------|
| PARAMETER  |  | RESULTS  | DETECTION | UNITS    |
| Liquid-liquid<br>Method 3520C<br>Analyzed by:<br>Date:   | extraction SEMIVOLATILES<br>***<br>KL<br>01/20/99 13:00:00 | 01/20/99 | LIMI I    |          |
| Chloride<br>Method 325.3<br>Analyzed by:<br>Date:        | *<br>CV<br>01/29/99 11:00:00                               | 230      | 5         | mg/L     |
| Carbonate, as<br>Method SM 450<br>Analyzed by:<br>Date:  | CaCO3<br>DO-CO2D **<br>TK<br>01/19/99 16:20:00             | ND       | 2         | mg/L     |
| Bicarbonate, a<br>Method SM 450<br>Analyzed by:<br>Date: | as CaCO3<br>00-CO2D **<br>TK<br>01/19/99 16:20:00          | 322      | 2         | mg/L     |
| pH<br>Method 150.1                                       | *  | 7.51     |           | pH Units |
| Analyzed by:<br>Date:                                    | TK<br>01/19/99 17:00:00                                    |          |           |          |
| Resistivity<br>Method 120.1<br>Analyzed by:<br>Date:     | *<br>TK<br>01/19/99 16:50:00                               | 0.58     | 0.001     | Mohms-cm |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2

| PROJECT NO:    |          |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 11:20:00 |
| DATE RECEIVED: | 01/19/99 |          |

|   |                                  | ANALYTICAL | DATA    |           |       |
|---|----------------------------------|------------|---------|-----------|-------|
| PARAMETER   |                                  |            | RESULTS | DETECTION | UNITS |
| Sulfate<br>Method 375.4<br>Analyzed by:<br>Date:        | *<br>TW<br>01/28/99              | 13:30:00   | 372     | 25        | mg/L  |
| Specific Grav<br>ASTM D1429<br>Analyzed by:<br>Date:    | ity<br>DS<br>02/02/99            | 14:00:00   | 0.985   |           | g/cm3 |
| Total Dissolve<br>Method 160.1<br>Analyzed by:<br>Date: | ed Solids<br>*<br>DS<br>02/05/99 | 10:00:00   | 1190    | 20        | mg/L  |
| Silver, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99            | 10:00:00   | ND      | 0.01      | mg/L  |
| Aluminum, Tota<br>Method_6010B                          | al                               |            | 16.5    | 0.1       | mg/L  |
| Analyzed by:<br>Date:                                   | JM<br>01/20/99                   | 10:00:00   |         |           |       |
| Arsenic, Total<br>Method 6010B<br>Analyzed by:<br>Date: | l<br>***<br>EG<br>01/21/99       | 15:28:00   | 0.025   | 0.005     | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 11:20:00 DATE RECEIVED: 01/19/99

|   |                            | ANALYTICA | L DATA |         |                    |         |
|---|----------------------------|-----------|--------|---------|--------------------|---------|
| PARAMETER   | ·                          |           |        | RESULTS | DETECTION<br>LIMIT | N UNITS |
| Barium, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00  |        | 0.970   | 0.005              | mg/L    |
| Calcium, Total<br>Method 6010B<br>Analyzed by:<br>Date: | L<br>***<br>JM<br>01/20/99 | 10:00:00  |        | 578     | . 1                | mg/L    |
| Cadmium, Total<br>Method 6010B<br>Analyzed by:<br>Date: | /<br>***<br>JM<br>01/20/99 | 10:00:00  |        | ND      | 0.005              | mg/L    |
| Cobalt, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00  |        | ND      | 0.01               | mg/L    |
| Chromium, Tota<br>Method 6010B                          | 1                          |           |        | 0.02    | 0.01               | mg/L    |
| Analyzed by:<br>Date:                                   | JM<br>01/20/99             | 10:00:00  |        |         |                    |         |
| Copper, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00  |        | 0.02    | 0.01               | mg/L    |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 11:20:00 DATE RECEIVED: 01/19/99

| ANALYTICAL DATA  |                          |          |         |                   |         |
|--|--------------------------|----------|---------|-------------------|---------|
| PARAMETER  |                          |          | RESULTS | DETECTIO<br>LIMIT | N UNITS |
| Iron, Total<br>Method 6010B **<br>Analyzed by: JN<br>Date: 01      | **<br>M<br>1/20/99       | 10:00:00 | 11.6    | 0.02              | mg/L    |
| Mercury, Total<br>Method 7470 A**<br>Analyzed by: A0<br>Date: 01   | **<br>G<br>1/20/99       | 14:50:00 | ND      | 0.0002            | mg/L    |
| Potassium, Total<br>Method 6010B **<br>Analyzed by: JN<br>Date: 01 | l<br>**<br>M<br>1/20/99  | 10:00:00 | 30      | 2                 | mg/L    |
| Magnesium, Total<br>Method 6010B **<br>Analyzed by: JN<br>Date: 01 | l<br>**<br>M<br>1/20/99  | 10:00:00 | 101     | 0.1               | mg/L    |
| Manganese, Total<br>Method 6010B_**                                | 1                        |          | 0.288   | 0.005             | mg/L    |
| Analyzed by: JM<br>Date: 01  | M<br>1/20/99             | 10:00:00 |         |                   | · ·     |
| Molybdenum, Tota<br>Method 6010B **<br>Analyzed by: JM<br>Date: 01 | al<br>**<br>M<br>1/20/99 | 10:00:00 | ND      | 0.02              | mg/L    |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



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Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 11:20:00 DATE RECEIVED: 01/19/99

|  |                                    | ANALY             | TICAL DATA |                   |            |
|--|------------------------------------|-------------------|------------|-------------------|------------|
| PARAMETER  |                                    |                   | RESULT     | S DETECI<br>LIMIT | TION UNITS |
| Sodium, Total<br>Method 6010B<br>Analyzed by:<br>Date: | ***<br>JM<br>01/20/99              | 10:00:00          | 17:        | 1 0.5             | mg/L       |
| Nickel, Total<br>Method 6010B<br>Analyzed by:<br>Date: | ***<br>JM<br>01/20/99              | 10:00:00          | N          | D 0.02            | mg/L       |
| Acid Digestio<br>Method 3010A<br>Analyzed by:<br>Date: | n-Aqueous<br>***<br>EE<br>01/19/99 | , ICP<br>13:00:00 | 01/19/99   | 9                 |            |
| Lead, Total<br>Method 6010B<br>Analyzed by:<br>Date:   | ***<br>EG<br>01/21/99              | 15:28:00          | 0.00'      | 7 0.005           | mg/L       |
| Selenium, Tot<br>Method_6010B                          | al                                 | ··· ·· ····       | NI         | 0.005             | mg/L       |
| Analyzed by:<br>Date:                                  | EG<br>01/21/99                     | 15:28:00          |            |                   |            |
| Zinc, Total<br>Method 6010B<br>Analyzed by:<br>Date:   | ***<br>JM<br>01/20/99              | 10:00:00          | 0.04       | ¥ 0.02            | mg/L       |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-01

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2

| PROJECT NO:    | •        |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 11:20:00 |
| DATE RECEIVED: | 01/19/99 |          |

| ANALYTI                     | CAL DATA |      |       |
|-----------------------------|----------|------|-------|
| PARAMETER                   | RESULTS  | PQL* | UNITS |
| Benzene                     | 17       | 5    | ug/I  |
| Bromobenzene                | ND       | 5    | ug/I  |
| Bromochloromethane          | ND       | 5    | ug/I  |
| Bromodichloromethane        | ND       | 5    | ug/I  |
| Bromoform                   | ND       | 5    | ug/I  |
| Bromomethane                | ND       | 10   | ug/I  |
| n-Butylbenzene              | ND       | 5    | ug/I  |
| sec-Butylbenzene            | ND       | 5    | ug/I  |
| tert-Butylbenzene           | ND       | 5    | ug/I  |
| Carbon tetrachloride        | ND       | 5    | ug/I  |
| Chlorobenzene               | ND       | 5    | ug/I  |
| Chlorodibromomethane        | ND       | 5    | ug/I  |
| Chloroethane                | ND       | 10   | ug/I  |
| Chloroform                  | ND       | 5    | ug/I  |
| Chloromethane               | ND       | 10   | ug/I  |
| 2-Chlorotoluene             | ND       | 5    | ug/I  |
| 4-Chlorotoluene             | ND       | 5    | ug/I  |
| 1,2-Dibromo-3-chloropropane | ND       | 5    | ug/I  |
| 1,2-Dibromoethane           | ND       | 5    | ug/I  |
| Dibromomethane              | ND       | 5    | ug/I  |
| 1,2-Dichlorobenzene         | ND       | 5    | ug/I  |
| 1,3-Dichlorobenzene         | ND       | 5    | uq/I  |
| 1,4-Dichlorobenzene         | ND       | 5    | uq/I  |
| Dichlorodifluoromethane     | ND       | 10   | ug/I  |
| 1,1-Dichloroethane          | ND       | 5    | ug/I  |
| 1,2-Dichloroethane          | ND       | 5    | ug/I  |
| 1,1-Dichloroethene          | ND       | 5    | uq/I  |
| cis-1,2-Dichloroethene      | ND       | 5    | ug/I  |
| trans-1,2-Dichloroethene    | ND       | 5    | ug/I  |
| 1,2-Dichloropropane         | ND       | 5    | ug/I  |
| 1,3-Dichloropropane         | ND       | 5    | uq/I  |
| 2,2-Dichloropropane         | ND       | 5    | uq/I  |
| 1,1-Dichloropropene         | ND       | 5    | uq/I  |
| Ethylbenzene                | 7        | 5    | ua/I  |
| Hexachlorobutadiene         | ND       | 5    | ua/I  |
| Isopropylbenzene            | ND       | 5    | ua/I  |
| p-Isopropyltoluene          | ND       | 5    | uq/I  |
| Methylene chloride          | ND       | 5    | ua/I  |

METHOD: 8260 Water, Volatile Organics (continued on next page)

## 02/09/99



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054 PHONE (713) 660-0901

Certificate of Analysis No. H9-9901761-01

| Rice Operating Company   | SA           | MPLE ID:      | MW-2   |        |
|--------------------------|--------------|---------------|--------|--------|
|                          | ANALYTICAL I | ATA (cont     | inued) |        |
| PARAMETER                | RES          | ULTS          | PQL*   | UNITS  |
| Naphthalene              |              | ND            | 5      | ug/L   |
| n-Propylbenzene          |              | ND            | 5      | . ug/L |
| Styrene                  |              | ND            | 5      | ug/L   |
| 1,1,1,2-Tetrachloroetha  | ne           | ND            | 5      | ug/L   |
| 1,1,2,2-Tetrachloroetha: | ne           | ND            | 5      | ug/L   |
| Tetrachloroethene        |              | ND            | 5      | ug/L   |
| Toluene                  |              | ND            | 5      | ug/L   |
| 1,2,3-Trichlorobenzene   |              | ND            | 5      | ug/L   |
| 1,2,4-Trichlorobenzene   |              | $\mathbf{ND}$ | 5      | ug/L   |
| 1,1,1-Trichloroethane    |              | ND            | 5 -    | ug/L   |
| 1,1,2-Trichloroethane    |              | ND            | 5      | ug/L   |
| Trichloroethene          |              | ND            | 5      | ug/L   |
| Trichlorofluoromethane   |              | ND            | 5      | ug/L   |
| 1,2,3-Trichloropropane   |              | ND            | 5      | ug/L   |
| 1,2,4-Trimethylbenzene   |              | ND            | 5      | ug/L   |
| 1,3,5-Trimethylbenzene   |              | ND            | 5      | ug/L   |
| Vinyl chloride           |              | ND            | 10     | ug/L   |
| Xylenes (total)          |              | 12            | 5      | ug/L   |
| Acetone                  |              | ND            | 100    | ug/L   |
| Carbon Disulfide         |              | ND            | 5      | ug/L   |
| Vinyl Acetate            |              | ND            | 10     | ug/L   |
| 2-Butanone               |              | ND            | 20     | ug/L   |
| 1,2-Dichloroethene (tota | al)          | ND            | 5      | ug/L   |
| 2-Chloroethylvinylether  |              | ND            | 10     | ug/L   |
| 4-Methyl-2-Pentanone     |              | ND            | 10     | ug/L   |
| cis-1,3-Dichloropropene  |              | ND            | 5      | ug/L   |
| trans-1,3-Dichloroproper | ne           | ND            | 5      | ug/L   |
| 2-Hexanone               |              | ND            | 10     | ug/L   |
| Methyl t-Butyl Ether     |              | ND            | 10     | ug/L   |

| SURROGATES            | AMOUNT  | 8        | LOWER | UPPER |
|-----------------------|---------|----------|-------|-------|
|                       | SPIKED  | RECOVERY | LIMIT | LIMIT |
| 1,2-Dichloroethane-d4 | 50 ug/L | 84       | 76    | 114   |
| Toluene-d8            | 50 ug/L | 104      | 88    | 110   |
| 4-Bromofluorobenzene  | 50 ug/L | 90       | 86    | 115   |

ANALYZED BY: GLT

DATE/TIME: 01/23/99 19:42:00

METHOD: 8260 Water, Volatile Organics

NOTES: \* - Practical Quantitation Limit ND - Not Detected NA - Not Analyzed

COMMENTS:



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054

Certificate of Analysis No. H9-9901761-01

PHONE (713) 660-0901

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-2

| PROJECT NO:    | •        |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 11:20:00 |
| DATE RECEIVED: | 01/19/99 |          |

| ANALYTICAL                  | DATA    |      |       |
|-----------------------------|---------|------|-------|
| PARAMETER                   | RESULTS | PQL* | UNITS |
| Acenaphthene                | ND      | 5    | ug/L  |
| Acenaphthylene              | ND      | · 5  | ug/L  |
| Aniline                     | ND      | 5    | ug/L  |
| Anthracene                  | ND      | 5    | ug/L  |
| Benzo(a)Anthracene          | ND      | 5    | ug/L  |
| Benzo(b)Fluoranthene        | ND      | 5    | ug/L  |
| Benzo(k)Fluoranthene        | ND      | 5    | ug/L  |
| Benzo (a) Pyrene            | ND      | 5    | ug/L  |
| Benzoic Acid                | ND      | 25   | ug/L  |
| Benzo(g,h,i)Perylene        | ND      | 5    | ug/L  |
| Benzyl alcohol              | ND      | 5    | ug/L  |
| 4-Bromophenylphenyl ether   | ND      | 5    | ug/L  |
| Butylbenzylphthalate        | ND      | 5    | ug/L  |
| di-n-Butyl phthalate        | ND      | 5    | ug/L  |
| Carbazole                   | ND      | 5    | ug/L  |
| 4-Chloroaniline             | ND      | 5    | ug/L  |
| bis(2-Chloroethoxy)Methane  | ND      | 5    | ug/L  |
| bis(2-Chloroethyl)Ether     | ND      | 5    | ug/L  |
| bis(2-Chloroisopropyl)Ether | ND      | 5    | ug/L  |
| 4-Chloro-3-Methylphenol     | ND      | 5    | ug/L  |
| 2-Chloronaphthalene         | ND      | 5    | ug/L  |
| 2-Chlorophenol              | ND      | 5    | ug/L  |
| 4-Chlorophenylphenyl_ether  | ND      | 5    | ug/L  |
| Chrysene                    | ND      | 5    | ug/L  |
| Dibenz(a,h)Anthracene       | ND      | 5    | ug/L  |
| Dibenzofuran                | ND      | 5    | ug/L  |
| 1,2-Dichlorobenzene         | ND      | 5    | ug/L  |
| 1,3-Dichlorobenzene         | ND      | 5    | ug/L  |
| 1,4-Dichlorobenzene         | , ND    | 5    | ug/L  |
| 3,3'-Dichlorobenzidine      | ND      | 10   | ug/L  |
| 2,4-Dichlorophenol          | ND      | 5    | ug/L  |
| Diethylphthalate            | ND      | 5    | ug/L  |
| 2,4-Dimethylphenol          | ND      | 5    | ug/L  |
| Dimethyl Phthalate          | ND      | 5    | ug/L  |
| 4,6-Dinitro-2-Methylphenol  | ND      | 25   | ug/L  |
| 2,4-Dinitrophenol           | ND      | 25   | ug/L  |
| 2,4-Dinitrotoluene          | ND      | 5    | ug/L  |
| 2,6-Dinitrotoluene          | ND      | 5    | ug/L  |

METHOD: 8270C, Semivolatile Organics - Water (continued on next page)



HOUSTON LÁBORATORY 8880 INTERCHANGE DRIVE HOUSTON TEXAS 77054

Certificate of Analysis No. H9-9901761-01

HOUSTON, TEXAS 77054 PHONE (713) 660-0901

| Rice Operating Company     | SAMPLE                   | ID: N  | M-2    | •     |
|----------------------------|--------------------------|--------|--------|-------|
| ANA                        | LYTICAL DATA             | (conti | inued) |       |
| PARAMETER                  | RESULTS                  |        | PQL*   | UNITS |
| 1,2-Diphenylhydrazine      |                          | ND     | 5      | ug/L  |
| bis(2-Ethylhexyl)Phthalate |                          | ND     | 5      | ug/L  |
| Fluoranthene               |                          | ND     | 5      | ug/L  |
| Fluorene                   |                          | ND     | 5      | ug/L  |
| Hexachlorobenzene          |                          | ND     | 5      | ug/L  |
| Hexachlorobutadiene        |                          | ND     | 5      | ug/L  |
| Hexachloroethane           |                          | ND     | 5      | ug/L  |
| Hexachlorocyclopentadiene  |                          | ND     | 5      | ug/L  |
| Indeno (1,2,3-cd) Pyrène   |                          | ND     | 5      | ug/L  |
| Isophorone                 |                          | ND     | 5      | ug/L  |
| 2-Methylnaphthalene        |                          | ND     | 5      | ug/L  |
| 2-Methylphenol             |                          | ND     | 5      | ug/L  |
| 4-Methylphenol             |                          | ND     | 5      | ug/L  |
| Naphthalene                |                          | ND     | 5      | ug/L  |
| 2-Nitroaniline             |                          | ND     | 25     | ug/L  |
| 3-Nitroaniline             |                          | ND     | 25     | ug/L  |
| 4-Nitroaniline             |                          | ND     | 25     | ug/L  |
| Nitrobenzene               |                          | ND     | 5      | ug/L  |
| 2-Nitrophenol              |                          | ND     | 5      | ug/L  |
| 4-Nitrophenol              |                          | ND     | 25     | ug/L  |
| N-Nitrosodiphenylamine     |                          | ND     | 5      | ug/L  |
| N-Nitroso-Di-n-Propylamine |                          | ND     | 5      | ug/L  |
| Di-n-Octyl Phthalate       |                          | ND     | 5      | ug/L  |
| Pentachlorophenol          |                          | ND     | 25     | ug/L  |
| Phenanthrene               |                          | ND     | 5      | ug/L  |
| Phenol                     |                          | ND     | 5      | ug/L  |
| Pyrene                     |                          | ND     | 5      | ug/L  |
| Pyridine                   |                          | ND     | 5      | ug/L  |
| 1,2,4-Trichlorobenzene     |                          | ND     | 5      | ug/L  |
| 2,4,5-Trichlorophenol      |                          | ND     | 10     | ug/L  |
| 2,4,6-Trichlorophenol      | · <u>-</u> · · · · · · · | ND     | 5      | ug/L  |

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(continued on next page)

METHOD: 8270C, Semivolatile Organics - Water



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054 PHONE (713) 660-0901

Certificate of Analysis No. H9-9901761-01

| Rice Operating Company | SAMPLI           | E ID: MW-2    |       |                |  |
|------------------------|------------------|---------------|-------|----------------|--|
| SURROGATES             | AMOUNT<br>SPIKED | %<br>RECOVERY | LOWER | UPPER<br>LIMIT |  |
| Nitrobenzene-d5        | 50 ug/L          | . 78          | 35    | 114            |  |
| 2-Fluorobiphenyl       | 50 ug/L          | 82            | 43.   | 116            |  |
| Terphenyl-d14          | 50  ug/L         | 56            | 33    | 141            |  |
| Phenol-d5              | 75 ug/L          | 21            | 10    | 110            |  |
| 2-Fluorophenol         | 75 ug/L          | 37            | 21    | 110            |  |
| 2,4,6-Tribromophenol   | 75 ug/L          | 73            | 10    | 123            |  |
|                        |                  |               |       |                |  |

ANALYZED BY: YL DATE/TIME: 01/22/99 19:24:00 EXTRACTED BY: KL DATE/TIME: 01/20/99 13:00:00 METHOD: 8270C, Semivolatile Organics - Water NOTES: \* - Practical Quantitation Limit ND - Not Detected NA -- Not Analyzed

COMMENTS:



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-3 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 14:30:00 DATE RECEIVED: 01/19/99

| ANALYTICAL DATA  |  |          |           |          |
|--|--|----------|-----------|----------|
| PARAMETER  |  | RESULTS  | DETECTION | UNITS    |
| Liquid-liquid<br>Method 3520C<br>Analyzed by:<br>Date:   | extraction SEMIVOLATILES<br>***<br>KL<br>01/20/99 13:00:00 | 01/20/99 |           |          |
| Chloride<br>Method 325.3<br>Analyzed by:<br>Date:        | *<br>CV<br>01/29/99 11:00:00                               | 195      | 5         | mg/L     |
| Carbonate, as<br>Method SM 450<br>Analyzed by:<br>Date:  | CaCO3<br>00-CO2D **<br>TK<br>01/19/99 16:20:00             | ND       | 2         | mg/L     |
| Bicarbonate, a<br>Method SM 450<br>Analyzed by:<br>Date: | as CaCO3<br>00-CO2D **<br>TK<br>01/19/99 16:20:00          | 370      | 2         | mg/L     |
| pH<br>Method 150.1<br>Analyzed by:<br>Date:              | *<br>TK<br>01/19/99 17:00:00                               | 7.51     | ·         | pH Units |
| Resistivity<br>Method 120.1<br>Analyzed by:<br>Date:     | *<br>TK<br>01/19/99 16:50:00                               | 0.53     | 0.001     | Mohms-cm |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

| PROJECT: Jct. I-9 Hobbs SWD System | PROJECT NO:              |         |
|------------------------------------|--------------------------|---------|
| SITE: 09-T195-R38E, Lea County     | MATRIX: WATER            | *       |
| SAMPLED BY: Rice Operating Company | DATE SAMPLED: 01/16/99 1 | 4:30:00 |
| SAMPLE ID: MW-3                    | DATE RECEIVED: 01/19/99  |         |

|   |                                  | ANALYTICAI | L DATA  |           |       |
|---|----------------------------------|------------|---------|-----------|-------|
| PARAMETER   |                                  |            | RESULTS | DETECTION | UNITS |
| Sulfate<br>Method 375.4<br>Analyzed by:<br>Date:        | *<br>TW<br>01/28/99              | 13:30:00   | 483     | 25        | mg/L  |
| Specific Gravi<br>ASTM D1429<br>Analyzed by:            | .ty<br>DS                        | 14.00.00   | 0.996   |           | g/cm3 |
| Date.   | 02/02/02                         | 14.00.00   |         |           |       |
| Total Dissolve<br>Method 160.1<br>Analyzed by:<br>Date: | ed Solids<br>*<br>DS<br>02/05/99 | 10:00:00   | 1340    | 40        | mg/L  |
| Silver, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99            | 10:00:00   | ND      | 0.01      | mg/L  |
| Aluminum, Tota<br>Method 6010B                          | 1<br>***                         |            | 32.7    | 0.1       | mg/L  |
| Date:   | 01/20/99                         | 10:00:00   |         |           |       |
| Arsenic, Total<br>Method 6010B<br>Analyzed by:<br>Date: | ***<br>EG<br>01/21/99            | 15:28:00   | 0.028   | 0.005     | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-3

| PROJECT NO:    |          |          |
|----------------|----------|----------|
| MATRIX:        | WATER    | i.       |
| DATE SAMPLED:  | 01/16/99 | 14:30:00 |
| DATE RECEIVED: | 01/19/99 |          |

|   |                            | ANALY    | TICAL   | DATA |         |                  |          |
|---|----------------------------|----------|---------|------|---------|------------------|----------|
| PARAMETER   |                            |          |         |      | RESULTS | DETECTI<br>LIMIT | ON UNITS |
| Barium, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00 | ·       |      | 3.91    | 0.005            | mg/L     |
| Calcium, Total<br>Method 6010B<br>Analyzed by:<br>Date: | l<br>***<br>JM<br>01/20/99 | 10:00:00 |         |      | 1255    | 1                | mg/L     |
| Cadmium, Tota<br>Method 6010B<br>Analyzed by:<br>Date:  | l<br>***<br>JM<br>01/20/99 | 10:00:00 |         |      | ND      | 0.005            | mg/L     |
| Cobalt, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00 |         |      | ND      | 0.01             | . mg/L   |
| Chromium, Tota<br>Method 6010B                          | al<br>***                  |          | <u></u> |      | 0.03    | 0.01             | mg/L     |
| Date:   | 01/20/99                   | 10:00:00 |         |      |         |                  |          |
| Copper, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99      | 10:00:00 |         |      | 0.02    | 0.01             | mg/L     |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-3 PROJECT NO: MATRIX: WATER DATE SAMPLED: 01/16/99 14:30:00 DATE RECEIVED: 01/19/99

|  |                              | ANALYTICAL DA | ATA     |                    |       |
|--|------------------------------|---------------|---------|--------------------|-------|
| PARAMETER  |                              |               | RESULTS | DETECTION<br>LIMIT | UNITS |
| Iron, Total<br>Method 6010B<br>Analyzed by:<br>Date:         | ***<br>JM<br>01/20/99        | 10:00:00      | 26.4    | 0.02               | mg/L  |
| Mercury, Total<br>Method 7470 A<br>Analyzed by: J<br>Date:   | ***<br>AG<br>01/20/99        | 14:50:00      | ND      | 0.0002             | mg/L  |
| Potassium, Tota<br>Method 6010B<br>Analyzed by:<br>Date: 0   | al<br>***<br>JM<br>01/20/99  | 10:00:00      | 8       | 2                  | mg/L  |
| Magnesium, Tota<br>Method 6010B<br>Analyzed by: J<br>Date: ( | al<br>***<br>JM<br>01/20/99  | 10:00:00      | 76.5    | 0.1                | mg/L  |
| Manganese, Tota<br>Method 6010B                              | al<br>***                    |               | 0.535   | 0.005              | mg/L  |
| Analyzed by: Date: 0   | JM<br>01/20/99               | 10:00:00      |         |                    |       |
| Molybdenum, Tot<br>Method 6010B<br>Analyzed by: J<br>Date: ( | tal<br>***<br>JM<br>01/20/99 | 10:00:00      | 0.03    | 0.02               | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

DATE: 02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-3

| PROJECT NO:    |          |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 14:30:00 |
| DATE RECEIVED: | 01/19/99 |          |

|   |                                       | ANALYTICAL     | DATA     |                    |       |
|---|---------------------------------------|----------------|----------|--------------------|-------|
| PARAMETER   |                                       |                | RESULTS  | DETECTION<br>LIMIT | UNITS |
| Sodium, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99 1               | 0:00:00        | 310      | 0.5                | mg/L  |
| Nickel, Total<br>Method 6010B<br>Analyzed by:<br>Date:  | ***<br>JM<br>01/20/99 1               | 0:00:00        | 0.05     | 0.02               | mg/L  |
| Acid Digestion<br>Method 3010A<br>Analyzed by:<br>Date: | 1-Aqueous,<br>***<br>EE<br>01/19/99 1 | ICP<br>3:00:00 | 01/19/99 | · · · ·            | •     |
| Lead, Total<br>Method 6010B<br>Analyzed by:<br>Date:    | ***<br>EG<br>01/21/99 1               | 5:28:00        | 0.013    | 0.005              | mg/L  |
| Selenium, Tota<br>Method 6010B                          | ***                                   |                | ND       | 0.005              | mg/L  |
| Analyzed by:<br>Date:                                   | EG<br>01/21/99 1                      | 5:28:00        | · · ·    |                    |       |
| Zinc, Total<br>Method 6010B<br>Analyzed by:<br>Date:    | ***<br>JM<br>01/20/99 1               | 0:00:00        | 0.04     | 0.02               | mg/L  |

ND - Not detected.

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed. \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.



Certificate of Analysis No. H9-9901761-03

Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

02/09/99

**PROJECT:** Jct. I-9 Hobbs SWD System **SITE:** 09-T195-R38E, Lea County **SAMPLED BY:** Rice Operating Company **SAMPLE ID:** MW-3

| PROJECT NO:    |          |          |
|----------------|----------|----------|
| MATRIX:        | WATER    |          |
| DATE SAMPLED:  | 01/16/99 | 14:30:00 |
| DATE RECEIVED: | 01/19/99 |          |

| ANALYTICAL                  | DATA    |      |       |
|-----------------------------|---------|------|-------|
| PARAMETER                   | RESULTS | PQL* | UNITS |
| Benzene                     | ND      | 5    | ug/L  |
| Bromobenzene                | ND      | 5    | ug/L  |
| Bromochloromethane          | ND      | 5    | ug/L  |
| Bromodichloromethane        | ND      | 5    | ug/L  |
| Bromoform                   | ND      | 5    | ug/L  |
| Bromomethane                | ND      | 10   | ug/L  |
| n-Butylbenzene              | ND      | 5    | ug/L  |
| sec-Butylbenzene            | ND      | 5    | ug/L  |
| tert-Butylbenzene           | ND      | 5    | ug/L  |
| Carbon tetrachloride        | ND      | 5    | ug/L  |
| Chlorobenzene               | ND      | 5    | ug/L  |
| Chlorodibromomethane        | ND      | 5    | ug/L  |
| Chloroethane                | ND      | 10   | ug/L  |
| Chloroform                  | ND      | 5    | ug/L  |
| Chloromethane               | ND      | 10   | ug/L  |
| 2-Chlorotoluene             | ND      | 5    | ug/L  |
| 4-Chlorotoluene             | ND      | 5    | ug/L  |
| 1,2-Dibromo-3-chloropropane | ND      | 5    | ug/L  |
| 1,2-Dibromoethane           | ND      | 5    | ug/L  |
| Dibromomethane              | ND      | 5    | ug/L  |
| 1,2-Dichlorobenzene         | ND.     | 5    | ug/L  |
| 1,3-Dichlorobenzene         | ND      | . 5  | ug/L  |
| 1,4-Dichlorobenzene         | ND      | 5    | ug/L  |
| Dichlorodifluoromethane     | ND      | 10   | ug/L  |
| 1,1-Dichloroethane          | ND      | 5    | ug/L  |
| 1,2-Dichloroethane          | ND      | 5    | ug/L  |
| 1,1-Dichloroethene          | ND      | 5    | ug/L  |
| cis-1,2-Dichloroethene      | ND      | 5    | ug/L  |
| trans-1,2-Dichloroethene    | ND      | . 5  | ug/L  |
| 1,2-Dichloropropane         | ND      | 5    | ug/L  |
| 1,3-Dichloropropane         | ND      | 5    | ug/L  |
| 2,2-Dichloropropane         | ND      | 5    | ug/L  |
| 1,1-Dichloropropene         | ND      | . 5  | ug/L  |
| Ethylbenzene                | ND      | 5    | ug/L  |
| Hexachlorobutadiene         | ND      | 5    | ug/L  |
| Isopropylbenzene            | ND      | 5    | ug/L  |
| p-Isopropyltoluene          | ND      | 5    | ug/L  |
| Methylene chloride          | ND      | 5    | ug/L  |

METHOD: 8260 Water, Volatile Organics (continued on next page)



Rice Operating Company

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901

ertificate of Analysis No. H9-9901761-03

SAMPLE ID: MW-3

| ANALY                      | TICAL DATA | (cont | inued) |       |       |
|----------------------------|------------|-------|--------|-------|-------|
| PARAMETER                  | RESULT     | S.    | PQL*   | 1     | UNITS |
| Naphthalene                |            | ND .  | 5      |       | ug/L  |
| n-Propylbenzene            |            | ND    | 5      | •     | ug/L  |
| Styrene                    |            | ND    | 5      |       | ug/L  |
| 1,1,1,2-Tetrachloroethane  |            | ND    | 5      |       | ug/L  |
| 1,1,2,2-Tetrachloroethane  |            | ND    | 5      |       | ug/L  |
| Tetrachloroethene          |            | ND    | 5      |       | ug/L  |
| Toluene                    |            | ND    | 5      |       | ug/L  |
| 1,2,3-Trichlorobenzene     |            | ND    | 5      |       | ug/L  |
| 1,2,4-Trichlorobenzene     |            | ND    | 5      |       | ug/L  |
| 1,1,1-Trichloroethane      |            | ND    | 5      |       | ug/L  |
| 1,1,2-Trichloroethane      |            | ND    | · 5    |       | ug/L  |
| Trichloroethene            |            | ND    | 5      |       | ug/L  |
| Trichlorofluoromethane     |            | ND    | 5      |       | ug/L  |
| 1,2,3-Trichloropropane     |            | ND    | 5      |       | ug/L  |
| 1,2,4-Trimethylbenzene     |            | ND    | 5      |       | ug/L  |
| 1,3,5-Trimethylbenzene     |            | ND    | 5      |       | ug/L  |
| Vinyl chloride             |            | ND    | 10     |       | ug/L  |
| Xylenes (total)            |            | ND    | 5      |       | ug/L  |
| Acetone                    |            | ND    | 100    |       | ug/L  |
| Carbon Disulfide           |            | ND    | 5      |       | ug/L  |
| Vinyl Acetate              |            | ND    | 10     |       | ug/L  |
| 2-Butanone                 |            | ND    | 20     |       | ug/L  |
| 1,2-Dichloroethene (total) |            | ND    | 5      |       | ug/L  |
| 2-Chloroethylvinylether    |            | ND    | 10     |       | ug/L  |
| 4-Methyl-2-Pentanone       |            | ND    | 10     |       | ug/L  |
| cis-1,3-Dichloropropene    |            | ND    | 5      |       | ug/L  |
| trans-1,3-Dichloropropene  |            | ND    | 5      |       | ug/L  |
| 2-Hexanone                 |            | ND    | 10     |       | ug/L  |
| Methyl t-Butyl Ether       |            | ND    | 10     |       | ug/L  |
| SURROGATES                 | AMOUNT     | 8     |        | LOWER | UPPER |
|                            | SPIKED     | REC   | OVERY  | LIMIT | LIMIT |
| 1,2-Dichloroethane-d4      | 50 ug/L    |       | 84     | 76    | 114   |
| Toluene-d8                 | 50 ug/L    |       | 106    | 88    | 110   |
| 4-Bromofluorobenzene       | 50 ug/L    |       | 86     | 86    | 115   |

ANALYZED BY: GLT DATE/TIME: 01/23/99 20:38:00 METHOD: 8260 Water, Volatile Organics NOTES: \* - Practical Quantitation Limit ND - Not Detected NA - Not Analyzed

COMMENTS:



© Certificate of Analysis No. H9-9901761-03

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Rice Operating Company 122 West Taylor Hobbs, NM 88240 ATTN: F. Wesley Root

02/09/99

| PROJECT: Jct. I-9 Hobbs SWD System | PROJECT NO:    |          |          |
|------------------------------------|----------------|----------|----------|
| SITE: 09-T195-R38E, Lea County     | MATRIX:        | WATER    |          |
| SAMPLED BY: Rice Operating Company | DATE SAMPLED:  | 01/16/99 | 14:30:00 |
| SAMPLE ID: MW-3                    | DATE RECEIVED: | 01/19/99 |          |

| ANALYTICAL DATA             |         |      |       |  |  |  |
|-----------------------------|---------|------|-------|--|--|--|
| PARAMETER                   | RESULTS | PQL* | UNITS |  |  |  |
| Acenaphthene                | ND      | 5    | ug/L  |  |  |  |
| Acenaphthylene              | ND      | 5    | ug/L  |  |  |  |
| Aniline                     | ND      | 5    | ug/L  |  |  |  |
| Anthracene                  | ND      | 5    | ug/L  |  |  |  |
| Benzo(a)Anthracene          | ND      | 5    | ug/L  |  |  |  |
| Benzo(b)Fluoranthene        | ND      | 5    | ug/L  |  |  |  |
| Benzo(k)Fluoranthene        | ND      | 5    | ug/L  |  |  |  |
| Benzo (a) Pyrene            | ND      | 5    | ug/L  |  |  |  |
| Benzoic Acid                | ND      | 25   | ug/L  |  |  |  |
| Benzo(g,h,i)Perylene        | ND      | 5    | ug/L  |  |  |  |
| Benzyl alcohol              | ND      | 5    | ug/L  |  |  |  |
| 4-Bromophenylphenyl ether   | ND      | 5    | ug/L  |  |  |  |
| Butylbenzylphthalate        | ND      | 5    | ug/L  |  |  |  |
| di-n-Butyl phthalate        | ND      | 5    | ug/L  |  |  |  |
| Carbazole                   | ND      | 5    | ug/L  |  |  |  |
| 4-Chloroaniline             | ND      | 5    | ug/L  |  |  |  |
| bis(2-Chloroethoxy)Methane  | ND      | 5    | uq/L  |  |  |  |
| bis(2-Chloroethyl)Ether     | ND      | 5    | ug/L  |  |  |  |
| bis(2-Chloroisopropyl)Ether | ND      | 5    | ug/L  |  |  |  |
| 4-Chloro-3-Methylphenol     | ND      | 5    | ug/L  |  |  |  |
| 2-Chloronaphthalene         | ND      | 5    | ug/L  |  |  |  |
| 2-Chlorophenol              | ND      | 5    | ug/L  |  |  |  |
| 4-Chlorophenylphenyl ether  | ND      | 5    | ug/L  |  |  |  |
| Chrysene                    | ND      | 5    | ug/L  |  |  |  |
| Dibenz(a,h)Anthracene       | ND      | 5    | ug/L  |  |  |  |
| Dibenzofuran                | ND      | 5    | ug/L  |  |  |  |
| 1,2-Dichlorobenzene         | ND      | 5    | ug/L  |  |  |  |
| 1,3-Dichlorobenzene         | ND      | 5    | ug/L  |  |  |  |
| 1,4-Dichlorobenzene         | ND      | 5    | ug/L  |  |  |  |
| 3,3'-Dichlorobenzidine      | ND      | 10   | ug/L  |  |  |  |
| 2,4-Dichlorophenol          | ND      | 5    | ug/L  |  |  |  |
| Diethylphthalate            | ND      | 5    | ug/L  |  |  |  |
| 2,4-Dimethylphenol          | ND      | 5    | ug/L  |  |  |  |
| Dimethyl Phthalate          | ND      | 5    | ug/L  |  |  |  |
| 4,6-Dinitro-2-Methylphenol  | ND      | 25   | ug/L  |  |  |  |
| 2,4-Dinitrophenol           | ND      | 25   | uq/L  |  |  |  |
| 2,4-Dinitrotoluene          | ND      | 5    | ug/L  |  |  |  |
| 2,6-Dinitrotoluene          | ND      | 5    | ug/L  |  |  |  |

METHOD: 8270C, Semivolatile Organics - Water (continued on next page)


Rice Operating Company

HOUSTON LABORATORY

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8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901

® Certificate of Analysis No. H9-9901761-03

SAMPLE ID: MW-3

| ANALYTICAL DATA (continued) |         |       |       |  |
|-----------------------------|---------|-------|-------|--|
| PARAMETER                   | RESULTS | PQL*  | UNITS |  |
| 1,2-Diphenylhydrazine       | ND      | 5     | ug/L  |  |
| bis(2-Ethylhexyl)Phthalate  | ND      | 5     | ug/L  |  |
| Fluoranthene                | ND      | 5     | ug/L  |  |
| Fluorene                    | ND      | 5     | ug/L  |  |
| Hexachlorobenzene           | ND      | 5     | ug/L  |  |
| Hexachlorobutadiene         | ND      | 5     | ug/L  |  |
| Hexachloroethane            | ND      | · · 5 | ug/L  |  |
| Hexachlorocyclopentadiene   | ND      | 5     | ug/L  |  |
| Indeno(1,2,3-cd)Pyrene      | ND      | 5     | ug/L  |  |
| Isophorone                  | ND      | 5     | ug/L  |  |
| 2-Methylnaphthalene         | ND      | 5     | ug/L  |  |
| 2-Methylphenol              | ND      | 5     | ug/L  |  |
| 4-Methylphenol              | ND      | 5     | ug/L  |  |
| Naphthalene                 | ND      | 5     | ug/L  |  |
| 2-Nitroaniline              | ND      | 25    | ug/L  |  |
| 3-Nitroaniline              | ND      | 25    | ug/L  |  |
| 4-Nitroaniline              | ND      | 25    | ug/L  |  |
| Nitrobenzene                | ND      | 5     | ug/L  |  |
| 2-Nitrophenol               | ND      | 5     | ug/L  |  |
| 4-Nitrophenol               | ND      | 25    | ug/L  |  |
| N-Nitrosodiphenylamine      | · ND    | 5     | ug/L  |  |
| N-Nitroso-Di-n-Propylamine  | ND      | 5     | ug/L  |  |
| Di-n-Octyl Phthalate        | ND      | 5     | ug/L  |  |
| Pentachlorophenol           | ND      | 25    | ug/L  |  |
| Phenanthrene                | ND      | 5     | ug/L  |  |
| Phenol                      | ND      | 5     | ug/L  |  |
| Pyrene                      | ND      | 5     | ug/L  |  |
| Pyridine                    | ND      | 5     | ug/L  |  |
| 1,2,4-Trichlorobenzene      | ND      | 5     | ug/L  |  |
| 2,4,5-Trichlorophenol       | ND      | 10    | ug/L  |  |
| 2,4,6-Trichlorophenol       | ND      | 5     | ug/L  |  |

METHOD: 8270C, Semivolatile Organics - Water (continued on next page)



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054 PHONE (713) 660-0901

Certificate of Analysis No. H9-9901761-03

| Rice Operating Company | SAMPLI           | E ID: MW-3    |                |                |
|------------------------|------------------|---------------|----------------|----------------|
| SURROGATES             | AMOUNT<br>SPIKED | %<br>RECOVERY | LOWER<br>LIMIT | UPPER<br>LIMIT |
| Nitrobenzene-d5        | 50 ug/L          | 86            | 35             | 114            |
| 2-Fluorobiphenyl       | 50 ug/L          | 86            | 43             | 116            |
| Terphenyl-d14          | 50 ug/L          | 56            | 33             | 141            |
| Phenol-d5              | 75 ug/L          | 25            | 10             | 110            |
| 2-Fluorophenol         | 75 ug/L          | 45            | 21             | 110            |
| 2,4,6-Tribromophenol   | 75 ug/L          | 87            | 10             | 123            |

ANALYZED BY: YL DATE/TIME: 01/22/99 20:27:00 EXTRACTED BY: KL DATE/TIME: 01/20/99 13:00:00 METHOD: 8270C, Semivolatile Organics - Water NOTES: \* - Practical Quantitation Limit ND - Not Detected NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

# QUALITY CONTROL DOCUMENTATION

ЗA

#### WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No.: 9901750 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 99-006 A/B

|   | SPIKE    | SAMPLE        | MS              | MS    | QC.    |
|---|----------|---------------|-----------------|-------|--------|
|   | ADDED    | CONCENTRATION | CONCENTRATION   | 8     | LIMITS |
| COMPOUND                                | (ug/L)   | (ug/L)        | (ug/L)          | REC # | REC.   |
| ======================================= | ======== |               | =============== |       | ====== |
| 1,1-Dichloroethene                      | 50       | 0             | 56              | 112   | 61-145 |
| Trichloroethene                         | 50       | 0             | 52              | 104   | 71-120 |
| Benzene                                 | 50       | 0             | 52              | 104   | 76-127 |
| Toluene                                 | 50       | 0             | 53              | 106   | 76-125 |
| Chlorobenzene                           | 50       | 0             | 51              | 102   | 75-130 |
|   |          |               |                 |       |        |

| COMPOUND            | SPIKE<br>ADDED<br>(ug/L) | MSD<br>CONCENTRATION<br>(ug/L)         | MSD<br>%<br>REC # | %<br>RPD # | QC LI<br>RPD | IMITS<br>REC. |
|---------------------|--------------------------|--|-------------------|------------|--------------|---------------|
|                     | =========                | ====================================== | 100               | ======     | 1 /          |               |
| T, I-Dichioroethene | 50                       | 50                                     | 106               | 0          | 14           | 51 - 145      |
| Pongono             | 50                       | 47                                     | 100               | 4          | 14           | 76 127        |
| Toluono             | 50                       | 50                                     | 104               | 0          | 12           | 76 125        |
| Chlorobongono       | 50                       | 40                                     | 100               | 2          | 10           | 75-120        |
| CIITOLODEIIZEIIE    | 50                       | 40                                     | 102               | 0          | 13           | 12-120        |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits Spike Recovery: 0 out of 10 outside limits due to matrix interferences Data File: /var/chem/n.i/n990123.b/n023tl1.d Report Date: 23-Jan-1999 11:37

SPL Houston Labs

RECOVERY REPORT

Client Name:Client SISample Matrix: LIQUIDFraction:ab Smp Id: METHSPIKE-8260WClient SnDevel: LOWOperator:Data Type: MS DATASampleTyppikeList File: 8260\_water.spkQuant Typublist File: 8260\_lcs.subMethod File: /var/chem/n.i/n990123.b/n8260w.mMisc Info: N023W1//N023CW1SampleTyp

Client SDG: n990123 Fraction: VOA Client Smp ID: LCS Operator: GLT SampleType: METHSPIKE Quant Type: ISTD

| SPIKE COMPOUND                        | CONC<br>ADDED<br>ug/L | CONC<br>RECOVERED<br>ug/L | %<br>RECOVERED | LIMITS |
|---------------------------------------|-----------------------|---------------------------|----------------|--------|
| 8 1,1-Dichloroethene                  | 50                    | 53                        | 106.00         | 61-145 |
| 29 Trichloroethene                    | 50                    | 52                        | 104.00         | 71-120 |
| 25 Benzene                            | 50                    | 52                        | 104.00         | 76-127 |
| 37 Toluene                            | 50                    | 53                        | 106.00         | 76-125 |
| 45 Chlorobenzene                      | 50                    | 51                        | 102.00         | 75-130 |
| · · · · · · · · · · · · · · · · · · · |                       |                           |                |        |

| SURROGATE COMPOUND                  | CONC<br>ADDED<br>ug/L | CONC<br>RECOVERED<br>ug/L | %<br>RECOVERED | LIMITS |
|-------------------------------------|-----------------------|---------------------------|----------------|--------|
| <pre>\$ 21 1,2-Dichloroethane</pre> | 50                    | 41                        | 82.00          | 76-114 |
| \$ 36 Toluene-d8                    | 50                    | 51                        | 102.00         | 88-110 |
| \$ 56 Bromofluorobenzene            | 50                    | 43                        | 86.00          | 86-115 |



SPL Blank QC Report

Matrix: Aqueous Sample ID: VLBLK Batch: N990123122720 Reported on: 01/25/99 17:44 Analyzed on: 01/23/99 10:55 Analyst: GLT

#### METHOD 8260/8240 N023B01

| Compound                   | Result | Detection<br>Limit | Units   |
|----------------------------|--------|--------------------|---------|
| Dichlorodifluoromethane    | ND     | 10                 | ug/L    |
| Chloromethane              | ND     | 10                 | ug/L    |
| Vinyl Chloride             | ND     | 10                 | ug/L    |
| Bromomethane               | ND     | 10                 | ug/L    |
| Chloroethane               | ND     | 10                 | ug/L    |
| [Trichlorofluoromethane    | ND     | 5                  | ug/L    |
| Acetone                    | ND     | 100                | ug/L    |
| 1,1-Dichloroethene         | · ND   | 5                  | ug/L    |
| Methylene Chloride         | ND     | 5                  | ug/L    |
| Carbon Disulfide           | ND ND  | 5                  | ug/L    |
| trans-1,2-Dichloroethene   | ND     | 5                  | ug/L    |
| 1,1-Dichloroethane         |        | 5                  | ug/L    |
| Vinyl Acetate              | ND     | 10                 | ug/L    |
| 2-Butanone                 | ND     | 20                 | ug/L    |
| Cis-1,2-Dichioroethene     |        | 5                  | ug/L    |
| 1,2-Dichloroethene (total) |        | 5                  | ug/L    |
| Deemarklasseshare          |        | 5                  | ug/L    |
| Sromochioromethane         |        | 5                  | ug/L    |
| 1 1 1 Trichlereethane      |        | 5                  | ug/L    |
| 1 2 Dishlemethane          |        | 5                  | ug/L    |
| 1,2-Dichioroechane         |        | 5                  | ug/L    |
|                            |        | 5                  | ug/L    |
| Garbon Totrachlorido       |        | 5                  | ug/L    |
| 1.2 Dichloropropano        |        |                    | ug/L    |
| Trichloroothono            |        | 5                  | ug/L    |
| Dibromomethane             | ND     | 5                  | ug/L    |
| Bromodichloromethane       |        | 5                  |         |
| 2-Chloroethylyinylethor    |        | 10                 |         |
| 4-Methyl-2-Pentapone       |        | 10                 |         |
| cis-1 3-Dichloropropere    |        | . <u>5</u>         |         |
| trans-1.3-Dichloropropene  |        | 5                  |         |
| Toluene                    |        | 5                  | 1107/T. |
| 1.1.2-Trichloroethane      |        | 5                  |         |
| Notes                      |        |                    |         |

ND - Not detected.



SPL Blank QC Report

Matrix: Aqueous Sample ID: VLBLK Batch: N990123122720 Reported on: 01/25/99 17:44 Analyzed on: 01/23/99 10:55 Analyst: GLT

#### METHOD 8260/8240 N023B01

| Compound   | Result   | Detection<br>Limit   | Units   |
|--|--|--|---|
| C o m p o u n d<br>1,3-Dichloropropane<br>2-Hexanone<br>Dibromochloromethane<br>1,2-Dibromoethane<br>Tetrachloroethene<br>Chlorobenzene<br>1,1,1,2-Tetrachloroethane<br>Ethylbenzene<br>Bromoform<br>Styrene<br>Xylene (Total)<br>1,1,2,2-Tetrachloroethane<br>1,2,3-Trichloropropane<br>Isopropylbenzene<br>Bromobenzene<br>N-Propylbenzene<br>2-Chlorotoluene<br>4-Chlorotoluene<br>1,3,5-Trimethylbenzene<br>tert-Butylbenzene<br>1,2,4-Trimethylbenzene<br>1,3-Dichlorobenzene<br>sec-Butylbenzene | Result<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND | Detection<br>Limit<br>5<br>10<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5 | Units<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L |
| 1,3-Dichlorobenzene<br>sec-Butylbenzene<br>1,4-Dichlorobenzene   | ND<br>ND<br>ND   | 5<br>5<br>5  | ug/L<br>ug/L<br>ug/L  |
| <pre>p-Isopropyltoluene<br/>1,2-Dichlorobenzene<br/>n-Butylbenzene<br/>1,2-Dibromo-3-Chloropropan<br/>1,2,4-Trichlorobenzene<br/>Naphthalene<br/>Hexachlorobutadiene<br/>1,2,3-Trichlorobenzene<br/>Methyl t-Butyl Ether</pre>   | ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND<br>ND                                   | 5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>10   | ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L<br>ug/L          |

#### <u>Notes</u>

ND - Not detected.



SPL Blank QC Report

Matrix: Aqueous Sample ID: VLBLK Batch: N990123122720 Reported on: 01/25/99 17:44 Analyzed on: 01/23/99 10:55 Analyst: GLT

METHOD 8260/8240 N023B01

. . ......

| Surrogate             | Result | QC<br>Criteria | Units                                       |
|-----------------------|--------|----------------|---|
| 1,2-Dichloroethane-d4 | 86     | 76-114         | <pre>% Recovery % Recovery % Recovery</pre> |
| Toluene-d8            | 102    | 88-110         |   |
| Bromofluorobenzene    | 88     | 86-115         |   |

Samples in Batch 9901761-01 9901761-02 9901761-03 Notes ND - Not detected.

3C

#### WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:

#### Contract:

SAS No:

SDG

No:

Lab Code:

Matrix Spike - EPA

Case No:

SPL

Sample No:

Level (low/med):

|                            | SPIKE  | SAMPLE       | MS            | MS    | QC      |
|----------------------------|--------|--------------|---------------|-------|---------|
|                            | ADDED  | CONCENTRATIO | CONCENTRATION | %     | LIMITS  |
| COMPOUND                   | (ug/L) | (ug/L)       | (ug/L)        | REC # | REC     |
| Phenol                     | 75     | 0            | 16            | 21    | 12-110  |
| 2-Chlorophenol             | 75     | 0            | 38            | 51    | 27-123  |
| 1,4-Dichlorobenzene        | 50     | 0            | . 29          | 58    | 36-97   |
| N-Nitroso-di-n-propylamine | 50     | 0            | 32            | 64    | 41-116  |
| 1,2,4-Trichlorobenzene     | 50     | 0            | 34            | . 68  | 39- 110 |
| 4-Chloro-3-methylphenol    | 75     | 0            | 47            | 63    | 23-110  |
| Acenaphthene               | 50     | 0            | 38            | 76    | 46-125  |
| 4-Nitrophenol              | 75     | 0            | 19            | 25    | 25-150  |
| 2,4-Dinitrotoluene         | 50     | 0            | 38            | 76    | 50-150  |
| Pentachiorophenol          | 75     | 0            | 51            | 68    | 9-125   |
| Pyrene                     | 50     | 0            | 58            | 116   | 26-127  |

|  | SPIKE  | MSD          | MSD   |       |    |        |
|--|--------|--------------|-------|-------|----|--------|
| the second s | ADDED  | CONCENTRATIO | %     | %     | QC | LIMITS |
| COMPOUND   | (ug/L) | (ug/L)       | REC # | RPD # | RP | REC    |
| Phenol   | 75     | 18           | 24    | 13    | 42 | 12-110 |
| 2-Chlorophenol   | 75     | 47           | 63    | 21    | 40 | 27-123 |
| 1,4-Dichlorobenzene  | 50     | 34           | 68    | 16    | 28 | 36-97  |
| N-Nitroso-di-n-propylamine   | 50     | 46           | 92    | 36    | 38 | 41-116 |
| 1,2,4-Trichlorobenzene   | 50     | 40           | 80    | 16    | 28 | 39-110 |
| 4-Chioro-3-methylphenol  | 75     | 56           | 75    | 17    | 42 | 23-110 |
| Acenaphthene   | 50     | 45           | 90    | 17    | 31 | 46-125 |
| 4-Nitrophenol  | 75     | 19           | 25    | 0     | 50 | 25-150 |
| 2,4-Dinitrotoluene   | 50     | 44           | 88    | 15    | 50 | 50-150 |
| Pentachlorophenol  | 75     | 56           | 75.   | 10    | 50 | 9-125  |
| Pyrene   | 50     | 62           | 124   | 7     | 31 | 26-127 |

# Column to be used to flag recovery and RPD values with an asterisk

0

0

RPD: Spike Recovery: out of 11 outside limits out of 22 outside limits

FORM III SV-1

3/90



#### SPL Blank QC Report

HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901 page

1

Matrix: Aqueous Sample ID: BLANK Batch: E990120042258 Reported on: 02/02/99 17:15 Analyzed on: 01/21/99 19:37 Analyst: YL

METHOD 8270 H020B03

| Compound                     | Result | Detection<br>Limit | Units |
|------------------------------|--------|--------------------|-------|
| Pyridine                     | ND     | 5                  | ug/L  |
| Phenol                       | ND ND  | 5                  | ug/L  |
| Aniline                      |        | 5                  | ug/L  |
| 2-Chlorophenol               |        | 5                  | ug/L  |
| 1 3-Dichlorobenzene          |        | 5                  | ug/L  |
| 1,4-Dichlorobenzene          | ND     | 5                  | ug/L  |
| Benzyl alcohol               | ND     | 5                  | uq/L  |
| 1,2-Dichlorobenzene          | ND     | 5                  | ug/L  |
| 2-Methylphenol               | ND     | 5                  | ug/L  |
| bis(2-chloroisopropyl)ethe   | ND     | 5                  | ug/L  |
| 4-Methylphenol               | ND     | 5                  | ug/L  |
| N-Nitroso-di-n-propylamine   | ND     | , <b>5</b>         | ug/L  |
| Hexachloroethane             | ND     | 5                  | ug/L  |
| Nitrobenzene                 | ND     | 5                  | ug/L  |
| Isophorone                   | ND     | 5                  | ug/L  |
| 2-Nitrophenoi                |        | 5                  | ug/L  |
| 2,4-Dimethylphenol           |        | 5                  | ug/L  |
| big (2-Chloroethory) methane |        | 45                 | ug/L  |
| 2 4-Dichlorophenol           |        |                    |       |
| 1 2 4-Trichlorobenzene       |        | 5                  |       |
| Naphthalene                  | ND     | 5                  |       |
| 4-Chloroaniline              | ND     | 5                  |       |
| Hexachlorobutadiene          | ND     | 5                  | ug/L  |
| 4-Chloro-3-methylphenol      | ND     | 5                  | ug/L  |
| 2-Methylnaphthalene          | ND     | 5                  | ug/L  |
| Hexachlorocyclopentadiene    | ND     | 5                  | ug/L  |
| 2,4,6-Trichlorophenol        | ND     | 5                  | ug/L  |
| 2,4,5-Trichlorophenol        | ND     | 10                 | ug/L  |
| 2-Chloronaphthalene          | ND     | 5                  | ug/L  |
| 2-Nitroaniline               | ND     | 25                 | ug/L  |
| Dimethylphthalate            | ND     | 5                  | ug/L  |
| 2,6-Dinitrotoluene           | וטע    | 5                  | ug/L  |

ND - Not detected.



#### SPL Blank QC Report

HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901 page

2

Matrix: Aqueous Sample ID: BLANK Batch: E990120042258 Reported on: 02/02/99 17:15 Analyzed on: 01/21/99 19:37 Analyst: YL

METHOD 8270 H020B03

|   | Compound   | Result   | Detection<br>Limit | Units                |
|---|--|----------|--------------------|----------------------|
|   | Acenaphthylene<br>3-Nitroaniline<br>Acenaphthene | ND<br>ND | 5<br>25<br>5       | ug/L<br>ug/L<br>ug/L |
|   | 2.4-Dinitrophenol                                |          | 25                 |                      |
|   | 4-Nitrophenol                                    | ND       | 25                 | ug/L                 |
|   | Dibenzofuran                                     | ND       | 5                  | uq/L                 |
| - | 2,4-Dinitrotoluene                               | ND       | 5                  | ug/L                 |
|   | Diethylphthalate                                 | ND       | 5                  | ug/L                 |
|   | 4-Chlorophenyl-phenylether                       | ND       | 5                  | ug/L                 |
|   | Fluorene   | ND       | 5                  | ug/L                 |
|   | 4-Nitroaniline                                   | ND       | 25                 | ug/L                 |
|   | 4,6-Dinitro-2-methylphenol                       | ND       | 25                 | ug/L                 |
|   | n-Nitrosodiphenylamine                           | ND       | 5                  | ug/L                 |
|   | 1,2-Diphenylhydrazine                            | ND       | 5                  | ug/L                 |
|   | 4-Bromophenyl-phenylether                        | ND       | 5                  | ug/L                 |
|   | Hexachlorobenzene                                | ND       | 5                  | ug/L                 |
|   | Pentachlorophenol                                | ND       | 25                 | ug/L                 |
|   | Phenanthrene                                     |          | 5                  | ug/L                 |
|   | Anthracene                                       |          | 5                  | ug/L                 |
|   | Carbazore  |          | 5                  | ug/L                 |
| 1 | DI-M-Ducyiphinarate                              |          | 5                  | ug/L                 |
|   | Purrone  |          |                    | ug/L                 |
| ľ | Putulbongulahthalato                             |          | . 5                |                      |
|   | 2 31-Dichlorobenzidine                           | ND       | 10                 | ug/I                 |
|   | Benzo[a]anthracene                               |          | 5                  |                      |
|   | Chrysene   | ND       | 5                  |                      |
|   | bis(2-Ethylhexyl)phthalate                       | ND       | 5                  | ug/L                 |
|   | Di-n-octvlphthalate                              | ND       | 5                  | ug/L                 |
|   | Benzo[b]fluoranthene                             | ND       | . 5                | uq/L                 |
|   | Benzo[k]fluoranthene                             | ND       | 5                  | ug/L                 |
|   | Benzo[a] pyrene                                  | ND       | 5                  | ug/L                 |
|   | Indeno[1,2,3-cd]pyrene                           | ND       | 5                  | ug/L                 |
|   | Dibenz[a,h]anthracene                            | ND       | 5                  | ug/L                 |
| Ň | lotes  | · ·      | · ·                |                      |

ND - Not detected.

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SPL Blank QC Report

HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901 page

3

Matrix: Aqueous Sample ID: BLANK Batch: E990120042258 Reported on: 02/02/99 17:15 Analyzed on: 01/21/99 19:37 Analyst: YL

METHOD 8270 H020B03

| Compound             | Result | Detection<br>Limit | Units |
|----------------------|--------|--------------------|-------|
| Benzo[g,h,i]perylene | ND     | 5                  | ug/L  |

| Surrogate            | Result | QC<br>Criteria | Units                 |
|----------------------|--------|----------------|-----------------------|
| Nitrobenzene-d5      | 74     | 35-114         | <pre>% Recovery</pre> |
| 2-Fluorobiphenyl     | 84     | 43-116         | % Recovery            |
| Terphenyl-d14        | 112    | 33-141         | % Recovery            |
| Phenol-d5            | 19     | 10-110         | % Recovery            |
| 2-Fluorophenol       | 36     | 21-110         | % Recovery            |
| 2,4,6-Tribromophenol | 73     | 10-123         | % Recovery            |

. . . . . . . . .

Samples in Batch 9901761-01 9901761-02 9901761-03 Notes ND - Not detected.

....

|  |  | ICP Spe  | ctrosco  | py Method   |   | anty Contr   | orkeh                              |                                  | Analyst: E                       | •                      |
|--|--|--|--|---|---|--|------------------------------------|----------------------------------|----------------------------------|------------------------|
|  |  |  |  | Matrix: Wat   | er  | Units: mg/L  |                                    |                                  | HOUSTON<br>8880 INTER<br>HOUSTON | LABORATO               |
|  |  |  | (0)  | Date:012199   | Time:1528   | File Name:   | 0121PB                             | 6                                | PHONE (                          | 713) 660-0901          |
|  | La   | boratory C   | ontrol San                                     | nple  |   |  |                                    |                                  |                                  |                        |
| Element  | Mth. Blank   | True Value   | Result   | % Recovery  | Lower Limit   | Upper Limit  | Wo                                 | rk Orde                          | rs in Batch                      |                        |
| Sliver   |  |  |  |   |   |  | VVork                              | Order                            | Fractions                        |                        |
| Araania  |  | 4.00   | 1 1 20   | 107   | 2.00  | 4 00   | 00.04                              | 704                              | 040 000                          |                        |
| Arsenic  |  | 4.00   | 4.29   | 107   | 3.20  | 4.80   | 99-01-                             | .761                             | 010-030                          |                        |
| Banum  | · · · ·  | <u> </u>   |  |   |   |  |                                    |                                  |                                  |                        |
| Coloium  |  |  |  |   |   |  |                                    |                                  | •                                |                        |
| Calcium  |  | <u> </u>   |  |   |   |  |                                    |                                  |                                  |                        |
| Cabalt   | <u> </u>   |  |  | <u> </u>  |   |  |                                    |                                  |                                  |                        |
| Cobait   | <u> </u>   |  |  |   |   |  |                                    |                                  |                                  |                        |
| Connor   | <b> </b>   | <u> </u>   | +  |   |   |  |                                    |                                  |                                  |                        |
| Copper   | <u> </u>   |  |  |   |   |  |                                    |                                  |                                  |                        |
| Potoosium  | <u> </u>   |  | <u> </u>                                       | <u> </u>  |   |  |                                    |                                  |                                  |                        |
| Mognosium  |  | ļ  |  |   |   | [  |                                    |                                  |                                  |                        |
| Vagnesium  | [  |  |  |   |   |  |                                    |                                  |                                  |                        |
| Vianganese   |  | <u> </u>   |  |   |   |  |                                    |                                  |                                  |                        |
| Soaium   |  |  |  | <u> </u>  |   |  |                                    |                                  |                                  |                        |
|  | ND   | 2.00   | 2.07   | 102   | 1.00  |  |                                    | ·                                |                                  |                        |
|  |  | 2.00   | 2.07   | 103   | 1.60  | 2.40   |                                    |                                  |                                  |                        |
| Antimony   | ND   | 4.00   | 4.20   | 100   |   | 4.80   |                                    |                                  |                                  |                        |
| • / 1 / 2 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1  |  |  |  | 1 IIIn  |   |  |                                    |                                  |                                  |                        |
|  |  | 4.00   | 4.20   |   | 3.20  | 4.80   |                                    |                                  |                                  |                        |
| Thallium   |  | 4.00   | 4.20   |   | 3.20  | 4.80   |                                    |                                  |                                  |                        |
| Thallium<br>Vanadium   |  | 4.00   | 4.20   |   | 3.20  | 4.80   |                                    |                                  |                                  |                        |
| Thallium<br>Vanadium<br>Zinc   |  | 4.00   | 4.20   |   | 3.20  | 4.80   |                                    |                                  |                                  |                        |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike   | e - Spike Du   | uplicate Re  | esults   |   | 3.20<br>Work Order  | 4.80<br>• Spiked: 99   | 01761-0                            | <br>1D                           |                                  |                        |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike   | e - Spike Du<br>Sample                               | uplicate Re  | esults   | rix Spike   | 3.20<br>Work Order<br>Matrix Spi  | 4.80<br>Spiked: 99<br>ke Duplicate   | 01761-0                            | 1D<br>imits                      | Spike                            | QC                     |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike<br>Element  | e - Spike Du<br>Sample<br>Result                     | uplicate Re<br>Spike<br>Added                              | sults<br>Result                                | ix Spike<br>Recovery  | 3.20<br>Work Order<br>Matrix Spi<br>Result  | 4.80<br>r Spiked: 99<br>ke Duplicate<br>Recovery                                 | 01761-0<br>QC L<br>% Rec           | 1D<br>imits<br>covery            | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike<br>Element<br>Silver  | e - Spike Du<br>Sample<br>Result                     | uplicate Re<br>Spike<br>Added                              | sults<br>Result                                | rix Spike<br>Recovery   | 3.20<br>Work Order<br>Matrix Spi<br>Result  | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery                                   | 01761-0<br>QC L<br>% Rec           | 1D<br>imits<br>covery            | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spiko<br>Element<br>Silver  | e - Spike Du<br>Sample<br>Result                     | uplicate Re<br>Spike<br>Added                              | sults<br>Mati<br>Result                        | ix Spike<br>Recovery  | 3.20<br>Work Order<br>Matrix Spi<br>Result  | 4.50<br>Spiked: 99<br>ke Duplicate<br>Recovery                                   | 01761-0<br>QC L<br>% Rec           | 1D<br>imits<br>covery            | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike<br>Element<br>Silver<br>Aluminum<br>Arsenic   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added                      | 4.20<br>esults<br>Mati<br>Result<br>1.921      | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium<br>Vanadium<br>Zinc<br>Matrix Spike<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium   | e - Spike Du<br>Sample<br>Result<br>0.0249           | Jplicate Re<br>Spike<br>Added                              | A.20   | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Fhallium<br>/anadium<br>Zinc<br>Matrix Spike<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium  | e - Spike Du<br>Sample<br>Result<br>0.0249           | Iplicate Re<br>Spike<br>Added                              | A.20   | rix Spike<br>Recovery<br>94.8   | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br><b>Spiked: 99</b><br>ke Duplicate<br>Recovery<br>96.2                    | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>overy<br>120      | Spike<br>RPD %                   | QC<br>Limits %         |
| Selenium       Fhallium       /anadium       /anadium       Zinc       Matrix Spike       Element       Silver       Numinum       Arsenic       Barium       Beryllium       Calcium       Calcium  | e - Spike Du<br>Sample<br>Result<br>0.0249           | 2.0  | sults<br>Matu<br>Result                        | rix Spike<br>Recovery<br>94.8   | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>     |
| Selenium       Fhallium       /anadium       /anadium       Zinc       Matrix Spike       Element       Silver       Auminum       Arsenic       Barium       Beryllium       Calcium       Cadmium  | e - Spike Du<br>Sample<br>Result<br>0.0249           | 2.0  | A.20   | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>     |
| Thallium Vanadium Vanadium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Cadmium Cobalt Chromium   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 2.0  | 4.20 sults Mati Result 1.921                   | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium Thallium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Calcium Cobalt Chromium Concer   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 2.0  | 4.20 sults Mati Result 1.921                   | 94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium Vanadium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Calcium Calcium Cobalt Chromium Copper Ton   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added                      | A.20   | rix Spike<br>Recovery<br>94.8   | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium Thallium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Cadmium Cobalt Chromium Copper Ton Potassium   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 2.0  | 4.20 sults Matu Result 1.921                   | rix Spike<br>Recovery<br>94.8   | 3.20<br>Work Order<br>Matrix Spi<br>Result  | 4.80<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>     |
| Selenium         Thallium         /anadium         Zinc         Matrix Spike         Element         Silver         Auminum         Arsenic         Barium         Barium         Calcium         Cadmium         Cobalt         Chromium         Copper         on         Potassium  | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added                      | 4.20 esults Mati Result 1.921                  | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.30<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>20.0 |
| Thallium /anadium /anadium /anadium /anadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Cadmium Cobalt Chromium Cobalt Chromium Copper Fon Potassium Magnesium   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added                      | 4.20 sults Mati Result 1.921                   | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.80<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>20.0 |
| Selenium         Thallium         Vanadium         Zinc         Matrix Spike         Element         Silver         Aluminum         Arsenic         Barium         Beryllium         Calcium         Cobalt         Chromium         Copper         ron         Potassium         Aagnesium         Anganese         Codurn   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added                      | 4.20 Sults Mati Result 1.921                   | 94.8  | Work Order<br>Matrix Spi<br>Result<br>1.949   | 4.30<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Thallium Thallium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Cobalt Chromium Cobalt Chromium Copper Ton Potassium Magnesium Magnese Godium licket   | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added<br>2.0               | 4.20 Sults Mati Result 1.921                   | 94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.30<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2                         | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %<br>     |
| Selenium         Thallium         Vanadium         Zinc         Matrix Spike         Element         Silver         Aluminum         Arsenic         Barium         Cadmium         Cadmium         Cobalt         Chromium         Copper         Yon         Potassium         Anganese         Codium         Lickel         ead  | e - Spike Du<br>Sample<br>Result<br>0.0249           | 4.00<br>uplicate Re<br>Spike<br>Added<br>2.0               | 4.20 sults Mati Result 1.921                   | rix Spike<br>Recovery<br>94.8   | 3.20<br>Work Orden<br>Matrix Spi<br>Result<br>1.949                                       | 4.30<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2<br>96.2<br>87.5           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %                   | QC<br>Limits %         |
| Selenium         Thallium         Vanadium         Zinc         Matrix Spike         Element         Silver         Aluminum         Arsenic         Barium         Barium         Cadmium         Cadmium         Cadmium         Cobalt         Chromium         Copper         Yon         Potassium         Aagnesium         Aaganese         Godium         lickel         ead         attmony | e - Spike Du<br>Sample<br>Result<br>0.0249           | 1.0  | 4.20 sults Mata Result 1.921                   | 100<br>rix Spike<br>Recovery<br>94.8  | 3.20<br>Work Order<br>Matrix Spi<br>Result<br>1.949                                       | 4.30<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2<br>96.2<br>87.5           | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %<br>1.5            | QC<br>Limits %<br>20.0 |
| Selenium         Thallium         Vanadium         Zinc         Matrix Spike         Element         Silver         Aluminum         Arsenic         Barium         Barium         Cadmium         Cobalt         Chromium         Copper         ron         Potassium         Magnesium         Manganese         Sodium         lickel         ead         ntimony                                | e - Spike Du<br>Sample<br>Result<br>0.0249<br>0.0249 | 1.0  | 4.20  sults Matu Result  1.921   0.8777  1.869 | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Orden<br>Matrix Spi<br>Result<br>1.949<br>1.949<br>0.8826<br>0.8826          | 4.30<br>Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2<br>96.2<br>87.5<br>87.5   | 01761-0<br>QC L<br>% Rec<br>80     | 1D<br>imits<br>covery<br>120     | Spike<br>RPD %<br>1.5            | QC<br>Limits %<br>20.0 |
| Thallium Vanadium Vanadium Vanadium Vanadium Zinc Matrix Spike Element Silver Aluminum Arsenic Barium Beryllium Calcium Cadmium Cobalt Chromium Cobalt Chromium Aagnesium Magnesium Magnesium Iickel ead Iickel ead Intimony Elenium ballium   | e - Spike Du<br>Sample<br>Result<br>0.0249<br>0.0249 | 4.00<br>uplicate Re<br>Spike<br>Added<br>2.0<br>1.0<br>2.0 | 4.20 sults Mati Result 1.921 0.8777 1.869      | ix Spike<br>Recovery<br>94.8  | 3.20<br>Work Orden<br>Matrix Spi<br>Result<br>1.949<br>1.949<br>0.8826<br>0.8826<br>1.883 | 4.30<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2<br>96.2<br>87.5<br>94.2 | 01761-0<br>QC L<br>% Rec<br>80<br> | 1D<br>imits<br>covery<br>120<br> | Spike<br>RPD %<br>1.5            | QC<br>Limits %<br>20.0 |
| Thallium Vanadium Vanadium Vanadium Vanadium Zinc Matrix Spiku Element Silver Aluminum Arsenic Barium Baryllium Calcium Cadmium Cobalt Chromium Cobalt Chromium Cobalt Chromium Aagnesium Magnesium Magnesium Magnese Sodium lickel ead antimony Selenium hallium  | e - Spike Du<br>Sample<br>Result<br>0.0249<br>0.0249 | 4.00<br>uplicate Re<br>Spike<br>Added<br>2.0<br>1.0<br>2.0 | 4.20 sults Mati Result 1.921 0.8777 1.869      | 100<br>ix Spike<br>Recovery<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8<br>94.8 | Vork Order<br>Matrix Spi<br>Result<br>1.949<br>0.8826<br>0.8826<br>1.883                  | 4.30<br>r Spiked: 99<br>ke Duplicate<br>Recovery<br>96.2<br>96.2<br>87.5<br>94.2 | 01761-0<br>QC L<br>% Rec<br>80<br> | 1D<br>imits<br>covery<br>120<br> | Spike<br>RPD %<br>1.5            | QC<br>Limits %<br>20.0 |

| | |

Checked: <u>69. 1/22/</u>99

L

L



Matrix: Water

Units: mg/L

Date:012099 Time:1000 File Name: 0120PB2

Analyst: JM

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901

Laboratory Control Sample

| Element    | Mth. Blank | True Value | Result | % Recovery | Lower Limit | Upper Limit |
|------------|------------|------------|--------|------------|-------------|-------------|
| Silver     | ND         | 2.00       | 2.07   | 103        | 1.60        | 2.40        |
| Aluminum   | ND         | 2.00       | 2.03   | 101        | 1.60        | 2.40        |
| Arsenic    |            |            |        |            |             |             |
| Barium     | ND         | 2.00       | 2.01   | 100        | 1.60        | - 2.40      |
| Beryllium  |            |            |        |            |             |             |
| Calcium    | ND         | 20.00      | 21.07  | 105        | 16.00       | 24.00       |
| Cadmium    | ND         | 2.00       | 2.07   | 104        | 1.60        | 2.40        |
| Cobalt     | ND         | 2.00       | 2.09   | 104        | 1.60        | 2.40        |
| Chromium   | ND         | 2.00       | 2.12   | 106        | 1.60        | 2.40        |
| Copper     | ND         | 2.00       | 2.05   | 102        | 1.60        | 2.40        |
| lron       | ND         | 2.00       | 2.12   | 106        | 1.60        | 2.40        |
| Potassium  | ND         | 20.00      | 20.52  | 103        | 16.00       | 24.00       |
| Magnesium  | ND         | 20.00      | 20.37  | 102        | 16.00       | 24.00       |
| Manganese  | ND         | 2.00       | 2.04   | 102        | 1.60        | 2.40        |
| Molybdenum | ND         | 2.00       | 2.12   | 106        | 1.60        | 2.40        |
| Nickel     | ND         | 2.00       | 2.09   | 104        | 1.60        | 2.40        |
| Lead       |            |            |        |            |             |             |
| Antimony   |            |            |        |            |             |             |
| Selenium   |            |            |        |            |             |             |
| Thallium   |            |            |        |            |             |             |
| Vanadium   |            |            |        |            |             |             |
| Zinc       | ND         | 2.00       | 2.07   | 103        | 1.60        | 2.40        |

Work Orders in Batch Work Order Fractions 99-01-761 01D-03D 99-01-705 04B 99-01-734 01A

#### Matrix Spike - Spike Duplicate Results

#### Work Order Spiked: 9901761-01D

|            | Sample | Spike | Matr   | ix Spike | - | Matrix Spi | ke Duplicate |   | QCI   | imits  | Spike |    | QC       |
|------------|--------|-------|--------|----------|---|------------|--------------|---|-------|--------|-------|----|----------|
| Element    | Result | Added | Result | Recover  | y | Result     | Recovery     |   | % Red | covery | RPD % |    | Limits % |
| Silver     | ND     | 1.0   | 0.886  | 88.6     | T | 0.9046     | 90.5         |   | 80    | 120    | 2.1   | Γ  | 20.0     |
| Aluminum   | 16.53  | 1.0   | 20.81  | 428.0    | * | 21.15      | 462.0        | * | 80    | 120    | 7.6   |    | 20.0     |
| Arsenic    |        |       |        |          |   |            |              |   |       |        |       |    |          |
| Barium     | 0.9704 | 1.0   | 1.857  | 88.7     |   | 1.856      | 88.6         |   | 80    | 120    | 0.1   |    | 20.0     |
| Beryllium  |        |       |        |          |   |            |              |   |       |        |       |    |          |
| Calcium    | 578.2  | 100.0 | 665.8  | 87.6     |   | 677.8      | 99.6         |   | 80    | 120    | .12.8 |    | 20.0     |
| Cadmium    | ND     | 1.0   | 0.8877 | 88.8     |   | 0.9043     | 90.4         |   | 80    | 120    | 1.9   | Γ  | 20.0     |
| Cobait     | ND     | 1.0   | 0.8559 | 85.6     | Π | 0.8698     | 87.0         |   | 80    | 120    | 1.6   |    | 20.0     |
| Chromium   | 0.015  | 1.0   | 0.8921 | 87.7     |   | 0.9073     | 89.2         |   | 80    | 120    | 1.7   |    | 20.0     |
| Copper     | 0.0248 | 1.0   | 0.9108 | 88.6     |   | 0.9355     | 91.1         |   | 80    | 120    | 2.7   |    | 20.0     |
| Iron       | 11.58  | 1.0   | 13.38  | 180.0    | * | 13.5       | 192.0        | * | 80    | 120    | 6.5   |    | 20.0     |
| Potassium  | 30.28  | 10.0  | 39.69  | 94.1     |   | 41.04      | 107.6        |   | 80    | 120    | 13.4  |    | 20.0     |
| Magnesium  | 100.9  | 10.0  | 109.5  | 86.0     |   | 112.6      | 117.0        |   | 80    | 120    | 30.5  | ** | 20.0     |
| Manganese  | 0.2882 | 1.0   | 1.131  | 84.3     |   | 1.152      | 86.4         |   | 80    | 120    | 2.5   |    | 20.0     |
| Molybdenum | ND     | 1.0   | 0.8831 | 88.3     |   | 0.8925     | 89.3         |   | 80    | 120    | 1.1   |    | 20.0     |
| Nickel     | ND     | 1.0   | 0.8679 | 86.8     |   | 0.8882     | 88.8         |   | 80    | 120    | 2.3   |    | 20.0     |
| Lead       |        |       |        |          |   |            |              |   |       |        |       |    |          |
| Antimony   |        |       |        | ·        |   |            |              |   |       |        |       |    |          |
| Selenium   |        |       |        |          |   |            |              |   |       |        |       | 1  |          |
| Thallium   |        |       |        |          |   |            |              |   |       |        |       |    |          |
| Vanadium   |        |       |        |          |   |            |              |   |       |        |       |    |          |
| Zinc       | 0.0435 | 1.0   | 0.9025 | 85.9     |   | 0.9227     | 87.9         |   | 80    | 120    | 2.3   |    | 20.0     |

\* Spike Results Outside Method Limits

\*\* Spike RPD Outside Method Limits

Elements Post Spiked:Ca (10x dilution)

Checked: m1/2/99



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

| Reported | on: | 01/20/99 |
|----------|-----|----------|
| Analyzed | on: | 01/20/99 |
| Analyst: |     | AG       |

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total Method 7470 A\*\*\*

| SPL Sample<br>ID Number | Blank<br>Value<br>ug/L | LCS<br>Concentration<br>ug/L | Measured<br>Concentration<br>ug/L | %<br>Recovery | QC Limits<br>Recovery |
|-------------------------|------------------------|------------------------------|-----------------------------------|---------------|-----------------------|
| LCS                     | ND                     | 2.0                          | 2.0                               | 100           | 80 - 120              |

-9901533

Samples in batch:

9901761-01D 9901761-02D 9901761-03D

COMMENTS: LCS= SPL ID# 94-452-49-12

|   |                                  | ICP Spe                        | ctrosco                 | opy Method           | d 6010 Qu                           | ality Contr  | ol Report   | Analyst: JN           | Λ                              |
|---|----------------------------------|--------------------------------|-------------------------|----------------------|-------------------------------------|--|---|-----------------------|--------------------------------|
|   | T                                | 2/                             | 7                       | Matrix: Wat          | er                                  | Units: mg/L  |   | HOUSTON<br>8880 INTER | LABORATOR                      |
|   |                                  | aboratory C                    | ®                       | Date:012099          | Time:1000                           | File Name:   | 0120PB4   | HOUSTON<br>PHONE (    | , TEXAS 77054<br>713) 660-0901 |
| Element   | Mth. Blank                       | True Value                     | Result                  | % Recovery           | Lower Limit                         | Upper Limit  | Work Orde   | ers in Batch          |                                |
| Silver  |                                  | 1                              | 1                       |                      | <u> </u>                            |  | Work Order  | Fractions             |                                |
| Aluminum  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Arsenic   |                                  |                                |                         |                      |                                     |  | 99-01-761   | 01D-03D               |                                |
| Barium  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Beryllium   |                                  |                                |                         |                      |                                     |  |   | •                     |                                |
| Calcium   |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Cadmium   |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Cobalt  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Chromium  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Copper  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Iron  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Potassium   |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Magnesium   |                                  |                                |                         |                      |                                     |  |   |                       | . ,                            |
| Manganese   |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Sodium  | ND                               | 20.00                          | 19.95                   | 100                  | 16.00                               | 24.00  |   |                       |                                |
| Nickel  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Lead  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Antimony  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Selenium  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Thallium  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Vanadium  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Zinc  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| •••··•  |                                  |                                |                         |                      |                                     |  |   |                       |                                |
| Matrix Spik   | e - Spike Du                     | uplicate Res                   | sults                   |                      | Work Order                          | Spiked: 990  | )1761-01D   |                       |                                |
| Matrix Spik   | e - Spike Du<br>Sample           | uplicate Res<br>Spike          | sults<br>Matr           | ix Spike             | Work Order<br>Matrix Spil           | Spiked: 990<br>Re Duplicate  | 01761-01D   | Spike                 |                                |
| Matrix Spik   | e - Spike Du<br>Sample<br>Result | uplicate Res<br>Spike<br>Added | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>ke Duplicate<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver  | e - Spike Du<br>Sample<br>Result | uplicate Res<br>Spike<br>Added | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Construction<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum  | e - Spike Du<br>Sample<br>Result | Iplicate Res<br>Spike<br>Added | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Recovery  | QC Limits<br>% Recovery   | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic   | e - Spike Du<br>Sample<br>Result | Iplicate Re<br>Spike<br>Added  | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Re Duplicate<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium   | e - Spike Du<br>Sample<br>Result | uplicate Res<br>Spike<br>Added | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium  | e - Spike Du<br>Sample<br>Result | uplicate Re<br>Spike<br>Added  | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium   | e - Spike Du<br>Sample<br>Result | uplicate Res<br>Spike<br>Added | sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium   | e - Spike Du<br>Sample<br>Result | Iplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium  | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium  | e - Spike Du<br>Sample<br>Result | Iplicate Re<br>Spike<br>Added  | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper  | e - Spike Du<br>Sample<br>Result | Iplicate Re<br>Spike<br>Added  | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990  | QC Limits<br>% Recovery   | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Calcium<br>Cobalt<br>Chromium<br>Copper<br>Iron  | e - Spike Du<br>Sample<br>Result | Iplicate Re<br>Spike<br>Added  | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Contracts<br>Recovery   | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Calcium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium   | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | sults<br>Matr<br>Result | ix Spike Recovery    | Work Order<br>Matrix Spil<br>Result | Spiked: 990  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Calcium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium   | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium  | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | Sults<br>Matr<br>Result | ix Spike Recovery    | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Contracts Recovery  | 01761-01D<br>QC Limits<br>% Recovery  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Manganese<br>Sodium   | e - Spike Du<br>Sample<br>Result | Iplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Contracts<br>Recovery   | QC Limits           % Recovery           % R | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Manganese<br>Sodium  | e - Spike Du<br>Sample<br>Result | Jplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Contracts<br>Recovery   | QC Limits       % Recovery       % Recovery   | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Manganese<br>Sodium<br>Nickel<br>Lead   | e - Spike Du<br>Sample<br>Result | Jplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Contracts<br>Recovery<br>101.0  | QC Limits       % Recovery       % Recovery <td< td=""><td>Spike<br/>RPD %</td><td>QC<br/>Limits %</td></td<>   | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Calcium<br>Calcium<br>Calcium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Manganese<br>Sodium<br>Nickel<br>Lead<br>Antimony                       | e - Spike Du<br>Sample<br>Result | Jplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Control Control C | 01761-01D<br>QC Limits<br>% Recovery<br>  | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Magnesium<br>Nickel<br>Lead<br>Antimony<br>Selenium   | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Control Control C | QC Limits       % Recovery       %                      | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik<br>Element<br>Silver<br>Aluminum<br>Arsenic<br>Barium<br>Beryllium<br>Calcium<br>Cadmium<br>Cobalt<br>Chromium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Potassium<br>Magnesium<br>Magnese<br>Sodium<br>Nickel<br>Lead<br>Antimony<br>Selenium<br>Thallium | e - Spike Du<br>Sample<br>Result | Iplicate Res                   | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Control Control C | QC Limits       % Recovery       %                      | Spike<br>RPD %        | QC<br>Limits %                 |
| Matrix Spik Element Silver Aluminum Arsenic Barium Beryllium Calcium Cadmium Cobalt Chromium Cobalt Chromium Magnesium Magnesium Magnesium Nickel Lead Antimony Selenium Thallium Vanadium  | e - Spike Du<br>Sample<br>Result | Jplicate Res<br>Spike<br>Added | Sults<br>Matr<br>Result | ix Spike<br>Recovery | Work Order<br>Matrix Spil<br>Result | Spiked: 990<br>Control Control C | QC Limits         % Recovery   | Spike<br>RPD %        | QC<br>Limits %                 |

\* Spike Results Outside Method Limits \*\* Spike RPD Outside Method Limits

Checked: 2599

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#### \*\* SPL QUALITY CONTROL REPORT \*\*

| Matrix: | Aqueous | Reported on: | 01/31/99 |
|---------|---------|--------------|----------|
|         | -       | Analyzed on: | 01/29/99 |
|         |         | Analyst:     | CV       |

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

#### Chloride Method 325.3 \*

| SPL Sample<br>ID Number | Blank<br>Value<br>mg/L | LCS<br>Concentration<br>mg/L | Measured<br>Concentration<br>mg/L | %<br>Recovery | QC Limits<br>Recovery |
|-------------------------|------------------------|------------------------------|-----------------------------------|---------------|-----------------------|
| LCS                     | ND                     | 105.0                        | 99.3                              | 94.6          | 94 <del>-</del> 106   |

-9901837

Samples in batch:

| 9901409-01D | 9901409-02D | 9901409-03D | 9901409-04D |
|-------------|-------------|-------------|-------------|
| 9901410-01D | 9901410-02D | 9901410-03D | 9901410-04D |
| 9901411-01D | 9901411-02D | 9901411-03D | 9901411-04D |
| 9901761-01C | 9901761-02C | 9901761-03C |             |
|             |             |             |             |

COMMENTS:

LCS-SPL ID#94453222-14



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#### \*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

| Analyzed on: 01/<br>Analyst: CV | 29/99 |
|---------------------------------|-------|
|---------------------------------|-------|

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride Method 325.3 \*

| SPL Sample  | Method        | Sample         | Spike         | Matrix Spike   |               | Matrix Spike<br>Duplicate |               | RPD | ()         | AC LIMITS | ;  |
|-------------|---------------|----------------|---------------|----------------|---------------|---------------------------|---------------|-----|------------|-----------|----|
| ID Number   | Blank<br>mg/L | Result<br>mg/L | Added<br>mg/L | Result<br>mg/L | Recovery<br>% | Result<br>mg/L            | Recovery<br>% | (%) | RPD<br>Max | % REC     | :  |
| 9901761-01c | ND            | 46.1           | 50.0          | 95.7           | 99.2          | 95.7                      | 99.2          | 0   | 5          | 92 -10    | 19 |

-9901836

Samples in batch:

| 9901409-01D | 9901409-02D | 9901409-03D | 9901409-04D |
|-------------|-------------|-------------|-------------|
| 9901410-01D | 9901761-01C | 9901761-02C | 9901761-03C |



#### \*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

Reported on: 01/19/99 Analyzed on: 01/19/99 Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO3 Method SM 4500-CO2D \*\*

-- DUPLICATE ANALYSIS --

| SPL Sample ID | Original Sample<br>Concentration<br>mg/L | Duplicate<br>Sample<br>mg/L | RPD | RPD<br>Max. |
|---------------|--|-----------------------------|-----|-------------|
| 9901705-04A   | ND                                       | ND                          | 0   | 5           |

-9901480

Samples in batch:

9901705-04A 9901761-01C 9901761-02C 9901761-03C



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

Reported on: 01/19/99 Analyzed on: 01/19/99 Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO3 Method SM 4500-CO2D \*\*

-- DUPLICATE ANALYSIS --

| SPL Sample ID | Original Sample<br>Concentration<br>mg/L | Duplicate<br>Sample<br>mg/L | RPD | RPD<br>Max. |
|---------------|--|-----------------------------|-----|-------------|
| 9901705-04A   | 722.2                                    | 722.4                       | 0   | 5           |

-9901479

Samples in batch:

9901705-04A 99017

9901761-01C

9901761-02C 9901761-03C



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

| Reported | on: | 01/19/99 |
|----------|-----|----------|
| Analyzed | on: | 01/19/99 |
| Analyst: |     | TK       |

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH Method 150.1 \*

-- DUPLICATE ANALYSIS --

| SPL Sample ID | Original Sample<br>Concentration<br>pH Units | Duplicate<br>Sample<br>pH Units | RPD | RPD<br>Max. |
|---------------|--|---------------------------------|-----|-------------|
| 9901705-04A   | 6.87   | 6.86                            | 0.1 | 1.0         |

-9901483

Samples in batch:

9901705-04A 9901761-01C 9901761-02C 9901761-03C



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

| Reported | on: | 01/19/99 |
|----------|-----|----------|
| Analyzed | on: | 01/19/99 |
| Analyst: |     | TK       |

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity Method 120.1 \*

-- DUPLICATE ANALYSIS --

| SPL Sample ID Original Sample<br>Concentration<br>Momhs-cm |      | Duplicate<br>Sample<br>Momhs-cm | RPD | RPD<br>Max. |
|--|------|---------------------------------|-----|-------------|
| 9901761-02C  | 0.74 | 0.74                            | 0   | 1.0         |

-9901484

Samples in batch:

9901705-04A 9901761-01C 9901761-02C 9901761-03C



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

| Reported | on: | 01/29/99 |
|----------|-----|----------|
| Analyzed | on: | 01/28/99 |
| Analyst: |     | TW       |

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate Method 375.4 \*

| SPL Sample<br>ID Number | Blank<br>Value<br>mg/L | LCS<br>Concentration<br>mg/L | Measured<br>Concentration<br>mg/L | %<br>Recovery | QC Limits<br>Recovery |
|-------------------------|------------------------|------------------------------|-----------------------------------|---------------|-----------------------|
| LCS                     | ND                     | 26.80                        | 25.64                             | 95.7          | 82 - 111              |

-9901785

Samples in batch:

| 9901408-01D | 9901408-02D | 9901408-03D | 9901408-04D |
|-------------|-------------|-------------|-------------|
| 9901416-01D | 9901520-01D | 9901761-01C | 9901761-02C |
| 9901761-030 |             |             |             |

COMMENTS:

SPL LCS#95535252-14



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

Reported on: 01/29/99 Analyzed on: 01/28/99 Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate Method 375.4 \*

| SPL Sample  | <br> Method   | <br> <br> Sample | Spike | Matr:          | ix Spike      | Matr<br>Dup    | ix Spike<br>licate | RPD  | (1         | QC LIMITS<br>Advisory) |
|-------------|---------------|------------------|-------|----------------|---------------|----------------|--------------------|------|------------|------------------------|
| ID Number   | Blank<br>mg/L | Result<br>mg/L   | Added | Result<br>mg/L | Recovery<br>% | Result<br>mg/L | Recovery           | (\$) | RPD<br>Max | * REC                  |
| 9901408-01D | ND            | 8.58             | 10.00 | 18.17          | 95.9          | 18.61          | 100                | 4.2  | 9.5        | 84 -120                |

-9901784

Samples in batch:

| 9901408-01D | 9901408-02D | 9901408-03D | 9901408-04D |
|-------------|-------------|-------------|-------------|
| 9901416-01D | 9901520-01D | 9901761-01C | 9901761-02C |
| 9901761-03C |             |             |             |

COMMENTS :

<u>JPL</u><sub>o</sub>

HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 PHONE (713) 660-0901

\*\* SPL QUALITY CONTROL REPORT \*\*

| Matrix: | Aqueous | Reported on: | 02/02/99 |
|---------|---------|--------------|----------|
|         | -       | Analyzed on: | 02/02/99 |
|         |         | Analyst:     | DS       |
|         |         |              |          |

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity ASTM D1429

-- DUPLICATE ANALYSIS --

| SPL Sample ID | Original Sample<br>Concentration<br>g/cm3 | Duplicate<br>Sample<br>g/cm3 | RPD | RPD<br>Max. |
|---------------|---|------------------------------|-----|-------------|
| 9901761-01C   | 0.9849                                    | 0.9852                       | 0   | 1.0         |

-9902059

Samples in batch:

9901761-01C 9901761-02C 9901762-03C

COMMENTS: ----



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqu

Aqueous

Reported on: 02/09/99 Analyzed on: 02/05/99 Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids Method 160.1 \*

| SPL Sample<br>ID Number | Blank<br>Value<br>mg/L | LCS<br>Concentration<br>mg/L | Measured<br>Concentration<br>mg/L | %<br>Recovery | QC Limits<br>Recovery |
|-------------------------|------------------------|------------------------------|-----------------------------------|---------------|-----------------------|
| LCS                     | nd                     | 430.9                        | 425                               | 98.6          | 93 - 107              |

-9902251

Samples in batch:

9901761-01C 9901761-02C 9901761-03C

COMMENTS:

lcs= spl id#95535254-2



\*\* SPL QUALITY CONTROL REPORT \*\*

Matrix: Aqueous

Reported on: 02/09/99 Analyzed on: 02/05/99 Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids Method 160.1 \*

-- DUPLICATE ANALYSIS --

| SPL Sample ID | Original Sample<br>Concentration<br>mg/L | Duplicate<br>Sample<br>mg/L | RPD | RPD<br>Max. |
|---------------|--|-----------------------------|-----|-------------|
| 9901761-01C   | 1182                                     | 1186                        | 0.3 | 5           |

-9902250

Samples in batch:

9901761-01C 9901761-02C 9901761-03C

COMMENTS:\_\_

|  |                       |                     | 5         | PL, I        | nc.           |               |                 |                 |               | Vorkorder<br>^ | Ž        |          | H<br>H   | )7210            |            |
|--|-----------------------|---------------------|-----------|--------------|---------------|---------------|-----------------|-----------------|---------------|----------------|----------|----------|----------|------------------|------------|
|  | V                     | nalysis Re          | guest .   | k Chai       | n of C        | ustody        | Recor           | p               |               | 906            | 176      |          | page     | / of 2           |            |
| Client Name: RICE ODERATI                          | is Come               | シタクイ                |           | matrix       | bottle        | size          | pres.           |                 |               | Z              | squest   | ed Ana   | lysis    |                  |            |
| Address/Phone: 122 West TA                         | y Lor, Ho             | 6 WN , 294          | 8240      | :            | sselg .       | [ßiv=         |                 | s               |               | **             | *        |          |          |                  |            |
| Client Contact: F. Westery<br>Project Name: T.+ T9 | Koot                  |                     |           | other        | vial<br>amber | zog<br>=07- z | orper:<br>HNO3  | ainer:          | (             | N Y Y          | . 575    | <u> </u> |          |                  |            |
| Project Number: Hokks 5 W                          | D Suster              | 2                   |           | =0<br>s=s    | x=V<br>≈=A    | 9 I = 9       | 0=0<br>7=1      | inoD            | 851           | ₩₩             | iten     |          |          |                  |            |
| Project Location: 09-7195-R                        | 38E . Leg (           | aunty, New          | REXICO    | dge<br>ter   | Si.           | 4 15<br>1     | ₽0              | 10 I<br>        |               | לי             | U T      |          |          |                  |            |
| Imoice To: RICE Operation                          | COMPANY               |                     |           | nis=<br>1ew= | glass         | zo8<br>zo8    | H7S<br>HCI      | uper            | QΛ<br>        | Y SN           | 360      |          |          |                  |            |
| SAMPLE ID  | DATE                  | TIME                | comp grab | =7S<br>=M    | с=<br>Ъ=I     | 3=8<br>[=[    | [=[<br>[=£      | in <sub>N</sub> | 5_            | 'W             | M        |          |          |                  | _          |
| MW-2   | 1-16-99               | 11:20               | 7         | M            | 7             | 0#            | / /             | 3 2             |               |                |          |          |          |                  |            |
| MW~ 2  | 1-16-93               | 11:20               | 7         | X            | A             | ~             | 1C E            |                 | 7             |                |          |          |          |                  |            |
| MW-2   | 66-91-1               | 11:20               | 2         | 3            | ط             | -             | 10 8            |                 |               | 2              |          |          |          |                  | <u> </u>   |
| MW- 2  | 1-16-39               | 11:20               | 2         | 2            | d             | -             | 2               | 2               |               |                | 7        |          |          |                  |            |
| MW-1   | 1-16-99               | 12:30               | 7         | M            | Ņ             | 40            | <b>\</b>        | 2<br>m          |               |                |          |          |          |                  | <b>T</b> . |
| /MW-/  | 116-99                | /2;30               | 7         | M            | A             | /             | /CE             | /               |               |                |          |          |          |                  |            |
| MW-1   | 66-91-1               | 12:30               | 7         | Ŕ            | ٩             | 1             | ICE             | /               |               | 7              |          |          |          |                  |            |
| /-/mW/   | 1-16-39               | 12:30               | 7         | M            | م             | /             | 23              | 2               |               |                | 7        |          |          |                  |            |
| E-MM   | 1-16-39               | 14:30               | 7         | À            | ۷             | 0#            |                 | м<br>2          |               | <br>           |          |          |          |                  |            |
| MW- 3  | 66-91-1               | 14:30               | 7         | À            | 4             | ~             | <u>/حد</u>      |                 | 7             |                |          |          |          |                  |            |
| Client/Consultant Remarks: Sec. A                  | Hacked                | List for A.         | valytici  | Laborato     | ry remark     |               |                 |                 |               |                |          | Int      | lad?     | JY UN            |            |
|  |                       |                     | 53        | -16          | (             |               | <u>ہ</u><br>  ر |                 |               |                |          | Te       | Ю<br>äu  | C                |            |
| Requested TAT                                      | inday manade          | ung nequuenen       | Fax       | Results      | ]             | Raw Data      |                 | pectal LUCI     |               | linoqu) si     | ÷        |          | M ici    | view (initial):  |            |
| 24hr   72hr  | Sta<br>Relinedistic   | dard QC             | Icve      | 13 QC        | ┓             | Level 4 Q     |                 |                 | 2             |                |          |          | 33       |                  |            |
|  | J                     | the case            | 140       |              |               | all B         | 199             | X.00            | 2             | cerved by:     |          |          |          |                  |            |
| 48hr   | 3. Relinquistre       | d by:               |           | 1            |               | date          |                 | ž               | <b>.</b><br>8 | cived by:      |          |          |          | / /              | <b></b> {  |
| Other  | 5. Relinquishe        | d by:               |           |              |               | date          |                 | 2               | - <u>6</u>    | AP             | Aborator | L.       | K        | <del>9/6//</del> | à ĉ        |
| <b>X</b> 8880 Interchange Drive,                   | Houston, <sup>]</sup> | X 77054 (71         | 3) 660-0  | 901          |               | 0             | 500 Am          | bassado         | r Caffe       | y Parkv        | vay, So  | At, LA 7 | 0583 (31 | 8) 237-477:      | 7          |
| L 459-Hughes Drive, Trav                           | erse City, N          | <b>11 49684 (61</b> | 6) 947-5  | 777          |               |               |                 |                 |               |                |          |          |          |                  |            |

|  |                        |                           |                      |                  |                        |                       |             |               | S         | L Workon   |           |           |           |                 |          |
|--|------------------------|---------------------------|----------------------|------------------|------------------------|-----------------------|-------------|---------------|-----------|------------|-----------|-----------|-----------|-----------------|----------|
|  |                        | •                         |                      |                  |                        | _                     |             |               |           |            | ì         |           | -1        | TTJIN           | Т        |
|  |                        | unalysis <b>F</b>         | leques               | C<br>S<br>S      | lain of                | Custo                 | dy Rec      | ord           |           | 5          | × 110     |           | page      | 2 of 2          | ]        |
| INT NAME: RICE OPERATIO                                  | Ng Com                 | oAvy                      |                      | mat              | rix bot                | tle size              | pres.       |               |           | -          | Reque     | sted An   | alysis    |                 |          |
| irentPhone: 122 West 7.<br>m Contact: F. Wesley          | Aylor, H<br>Root       | obbs, NM                  | 97588                |                  | Der glass<br>Der glass | lsiv=0f               | ıet:<br>103 | JETS          | **^*      | *          |           |           |           |                 |          |
| ect Name: Jet. Z-9                                       |                        |                           |                      | ios=             | 110=                   | 209<br>               | =0f}        | ristr         | hsH       | \$         |           |           |           |                 |          |
| ject Number: Hobbs SWI                                   | D Syster               | 2                         |                      | =S               | =¥                     | [=9<br>₽₽=₹<br>       | 0=<br>5=    | roD           | Aq        | 7∀}²       |           |           |           |                 |          |
| ject Location: 07-T195-R381                              | E, Len Cou             | inty, New                 | Merico               |                  | agb<br>Lic             | ۲<br>ور ۲<br>م        | ¥0          | 10 1          | 1.4       | W          |           |           |           | <u>-</u>        |          |
| oice To: RICE Operation                                  | V- Comp                | やいら                       |                      | EW=              | 155ic                  | seig<br>l lite<br>soz | H7S<br>HCI  | əqu           | 494       | 22         |           |           |           |                 |          |
| SAMPLE ID  | DATE                   | TIME                      | comp 8               | = M              | I=d<br>=75             | ]=9<br>[=[<br>]       | 1=5<br>I=1  | INN           | lu        | DM         |           |           |           |                 |          |
| MW-3   | 1-16-39                | 14:30                     |                      | Σ                | d                      | /                     | /c          | \<br>\        | 7         |            |           |           |           |                 |          |
| MW-3   | 1-16-99                | 14:30                     | 4                    | N N              | ٩                      | × -                   | Ъ           | 2             |           | 7          |           |           |           |                 |          |
|  |                        |                           |                      |                  |                        |                       |             |               |           |            |           |           |           |                 |          |
|  |                        |                           |                      |                  |                        |                       |             |               | ╞╌┟       |            |           |           |           |                 | 1        |
|  |                        |                           |                      |                  |                        |                       |             |               | <br>      |            |           |           |           |                 |          |
|  |                        |                           |                      |                  |                        |                       |             |               |           |            |           |           |           |                 | <u> </u> |
|  |                        |                           |                      |                  |                        |                       |             |               |           |            |           |           |           |                 | 1        |
|  |                        |                           |                      |                  |                        |                       |             |               |           |            |           |           |           |                 | <u> </u> |
|  |                        | $\mathbb{A}$              | V                    | $\left  \right $ |                        |                       |             |               |           |            |           |           |           |                 |          |
|  |                        |                           |                      |                  |                        | <u>+</u>              | +           | Ţ             | 4         |            |           |           |           | · · · · ·       | 1        |
| acConsultant Remarks: See . 41<br>Rametars of Mineral F. | ttacica 1<br>Atten d L | list for A.               | nacytus<br>als       | cat Labo         | ratory ren             | uarks:                |             |               |           |            |           | <u>-1</u> | ntact?    |                 |          |
| Requested TAT  | Special Repo           | rting Requirem            | ents F               | ax Results       | D                      | Raw D                 | ata         | Special [     | letection | imits (spo | ify):     |           |           | view (initial): |          |
| . (  | Σ.                     | andard QC                 |                      | evel 3 QC        | σ                      | Level 4               | 8           |               |           |            |           |           | 5         | e               |          |
|  | 1. Relinquish          | ed by Sampler             |                      | *                |                        | date -                | 8           | Lime<br>14:00 | 8         | Received 1 | JA-       |           |           |                 | 1        |
| 8hr 🚺 Standard 💟   | 3. Relinquish          | cd by:                    |                      |                  |                        | date                  |             | lime          | 4         | Received 1 | ž         |           |           |                 |          |
| ther []  | 5. Relinquish          | ed by:                    |                      |                  |                        | date                  |             | time          | e         | N CAN      | y Laborat | P is      | R         | 1001            |          |
| 8880 Interchange Drive,<br>459-Huehes Drive, Trav        | Houston,<br>erse Citv. | TX 77054 (<br>MI 49684 (( | 713) 660<br>616) 947 | -0901            |                        | σ                     | 500 A       | mbassa        | dor Cal   | fery Par   | kway, S   | cott, LA  | 70583 (31 | 8) 237-4775     | 7        |
|  |                        |                           | re v lata            |                  |                        |                       |             |               |           |            |           |           |           |                 |          |

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## SPL Houston Environmental Laboratory

## Sample Login Checklist

|     | 1-19-99 10                            | 100                                   |       |        |
|-----|---------------------------------------|---------------------------------------|-------|--------|
|     |                                       |                                       | •     |        |
| SPL | , Sample ID:                          |                                       |       |        |
|     | 9901761                               |                                       | ,     |        |
|     |                                       | · · · · · · · · · · · · · · · · · · · | Yes   | No     |
| 1   | Chain-of-Custody (COC) form is pre    | esent.                                |       |        |
| 2   | COC is properly completed.            |                                       |       |        |
| 3   | If no, Non-Conformance Worksheet      | has been completed.                   |       |        |
| 4   | Custody seals are present on the ship | oping container.                      |       |        |
| 5   | If yes, custody seals are intact.     |                                       |       |        |
| 6   | All samples are tagged or labeled.    |                                       |       | -      |
| 7   | If no, Non-Conformance Worksheet      | has been completed.                   |       |        |
| 8   | Sample containers arrived intact      |                                       |       | -      |
| 9   | Temperature of samples upon arrival   | :                                     |       |        |
| 10  | Method of sample delivery to SPL:     | SPL Delivery                          |       |        |
| -   |                                       | Client Delivery                       |       |        |
|     |                                       | FedEx Delivery (airbill #)            | 80819 | 848332 |
|     |                                       | Other:                                |       |        |
| 11  | Method of sample disposal:            | SPL Disposal                          |       |        |
|     |                                       | HOLD                                  |       |        |
|     |                                       | Return to Client                      |       |        |

1-19-99

|                 | ·····                       |        | ~~ ~~ ~ ~ ~ ~ |                    |                 | TOPO               |                |          |
|-----------------|-----------------------------|--------|---------------|--------------------|-----------------|--------------------|----------------|----------|
|                 |                             | Result | Units         | Reporting<br>Limit | Date<br>Prepare | Date<br>d Analyzed | Analyzed<br>By | Dilution |
| Client Sample I | D: <b>B-3</b>               |        |               |                    |                 | Sample Num         | ber: 98-35     | 44-001   |
| Date Sampled:   | 10/21/98                    |        |               |                    |                 | Sample Matri       | ix: Liqui      | iđ       |
| Time Sampled:   | 9:30                        |        |               |                    |                 | Sampled By:        | SL             |          |
| EPA 8021B       | Benzene                     | 14200  | µg/L          | 50                 | 10/23/98        | 3 10/23/98         | DWT            | 50       |
|                 | Toluene                     | <50    | µg/L          | 50                 | 10/23/98        | 3 10/23/98         | DWT            | 50       |
|                 | Ethyl benzene               | 1310   | µg/L          | 50                 | 10/23/98        | 10/23/98           | DWT            | 50       |
|                 | Xylenes (Total)             | 780    | µg/L          | 150                | 10/23/98        | 10/23/98           | DWT            | 50       |
|                 | Total BTEX (Calculated)     | 16290  | μg/L          |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
|                 | **Quality Control Surrogat  | te     |               |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
|                 | Difluorobenzene (SS)        | 108%   | 74-116%       |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
|                 | 4-Bromofluorobenzene (SS)   | 102%   | 80-151%       |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
| EPA 160.1       | Total Dissolved Solids      | 1710   | mg/L          | 10                 | 10/28/98        | 10/28/98           | SM             | 1        |
| SM 4500 CLB     | Chloride                    | 230    | mg/L          | 50                 | 10/28/98        | 10/28/98           | AJ             | 10       |
|                 |                             |        |               |                    |                 |                    |                |          |
| lient Sample ID | : <b>B</b> -4               |        |               |                    | S               | ample Numbe        | er: 98-354     | 4-002    |
| Date Sampled:   | 10/21/98                    |        |               |                    | S               | ample Matrix       | : Liquid       |          |
| Time Sampled:   | 10:55                       |        |               |                    | S               | ampled By:         | SL             |          |
| CPA 8021B       | Benzene                     | 618    | µg/L          | 5                  | 10/23/98        | 10/23/98           | DWT            | 5        |
|                 | Toluene                     | 331    | μg/L          | 5                  | 10/23/98        | 10/23/98           | DWT            | 5        |
|                 | Ethyl benzene               | 182    | µg/L          | 5                  | 10/23/98        | 10/23/98           | DWT            | 5        |
|                 | Xylenes (Total)             | 226    | μg/L          | 15                 | 10/23/98 ·      | 10/23/98           | DWT            | 5        |
|                 | Total BTEX (Calculated)     | 1357   | µg/L          |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
|                 | **Quality Control Surrogate | !      |               |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
|                 | Difluorobenzene (SS)        | 110%   | 74-116%       |                    | 10/23/98        | 10/23/98           | DWT            | 1 .      |
|                 | 4-Bromofluorobenzene (SS)   | 111%   | 80-151%       |                    | 10/23/98        | 10/23/98           | DWT            | 1        |
| PA 160.1        | Total Dissolved Solids      | 5460   | mg/L          | 10                 | 10/28/98        | 10/28/98           | SM             | 1        |
| M 4500CLB       | Chloride                    | 2400   | mg/L          | 250                | 10/28/98        | 10/28/98           | AJ             | 50       |

Page 2 of 2

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| Certes   | Environmental<br>2209 Wisconsin<br>Dallas, Texas 75<br>972-620-7966                           | Laboratories, L.L.C<br>Street, Suite 200<br>5229<br>972-620-7963 Fax                |   |                      | nalysis(es) Requested  |
|--|---|---|---|----------------------|--|
| Elice Conservented Client Address<br>12-というをニア 「かくしてん  | City City State   | 1141 252 2<br>1141 112 2<br>1141 112 2  |   |                      |  |
| Purchase Order No.<br>Project Manager<br>Cerrtes<br>No | To ensure proper billing, please refere<br>EV 'VE'E'<br>Site Location<br>Terrer of the CVE' H | nce quotation number.   | ETEX  | ZAT SKUNS            |  |
| K-3  | 10年130日   | 2 2   | >   | >                    |  |
| 8-4  | 10/21/95 16 55 L  | 1 2   | <u> </u>  | >                    |  |
|  |   |   |   |                      |  |
|  |   |   |   |                      |  |
| Sampled By   | 1 Matrix: A   | Air. Bago C.S.Charcoal Tuth   |   |                      |  |
| AL-<br>TAT<br>Standard: Date Benuited الارتان          | Client Project ID   | 40mi VOA Viat: G. Amber<br>1. Hydrochloric Acid HNO<br>Special Instructions (includ | or Glass 1 Liter,<br>or Glass 1 Liter,<br><u>a Nitic Acid</u> , H   |                      | olid: SL- Sludge; WP Wipe W WaterWastev<br>Blass Jar; O- Other<br>Other<br>Certes Job Number |
| RUSH: Date Required<br>Relinquished by Sempler         | 5   | Date 10/22 / 15   | emi   | Received By          |  |
| Relinquished by<br>Relinquished by                     |   | Date Date   | ime   | Received By          |  |
| NOTE: By submitting these samples, you s               | agree to the terms and conditions con   | tained in Certes. Schedule o  | ime از ج<br>از جزر المحمد المحم<br>1 Fees: Cartes ca | Received By Laborato | V NIC/ No set  |
|  |   |   |   |                      | 22.1.1.14339 FAX WIIII60 Chariges to (972) 620-7963  |

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6701 Aberdeen Avenue, Suite 9 4725 Ripley Avenue, Suite A Lubbock, Texas 79424 800 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298 915•585•3443 FAX 915•585•4944

### **Analytical and Quality Control Report**

Tom Larson Geraghty & Miller, Inc. 1030 Andrews Highway, Suite 120 Midland, TX 79701

Report Date:

7/13/99

Project Number:MT000591.0001Project Name:N/AProject Location:Rice (Hobbs)

Order ID Number: 99070811

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to TraceAnalysis, Inc. for analysis:

| Sample Number | Sample Description | Matrix | Date<br>Taken | Time<br>Taken | Date<br>Received |
|---------------|--------------------|--------|---------------|---------------|------------------|
| 127806        | MW-2               | Water  | 7/7/99        | 11:00         | 7/8/99           |
| 127807        | MW-1               | Water  | 7/7/99        | 11:45         | 7/8/99           |

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 3 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

r. Blair Leftwich, Director

## **Analytical Results Report**

Sample Number: 127806 Description: MW-2

Sample Number:

127807

| Param                                   | Flag | Result                   | Dilution           | Analytical<br>Method          | Date<br>Prepared        | Date<br>Analyzed                        | Analyst             | Prep<br>Batch #                       | QC<br>Batch #                       | RDL   |
|---|------|--------------------------|--------------------|-------------------------------|-------------------------|---|---------------------|---------------------------------------|-------------------------------------|-------|
| Benzene (mg/L)                          |      | 0.289                    | 5                  | S 8021B                       | 7/8/99                  | 7/8/99                                  | RC                  | PB01429                               | QC01776                             | 0.001 |
| Toluene (mg/L)                          |      | < 0.005                  | 5                  | S 8021B                       | 7/8/99                  | 7/8/99                                  | RC                  | PB01429                               | QC01776                             | 0.001 |
| Ethylbenzene (mg/L)                     |      | 0.061                    | 5                  | S 8021B                       | 7/8/99                  | 7/8/99                                  | RC                  | PB01429                               | QC01776                             | 0.001 |
| M,P,O-Xylene (mg/L)                     |      | 0.008                    | 5                  | S 8021B                       | 7/8/99                  | 7/8/99                                  | RC                  | PB01429                               | QC01776                             | 0.001 |
| Total BTEX (mg/L)                       |      | 0.358                    | 5                  | S 8021B                       | 7/8/99                  | 7/8/99                                  | RC                  | PB01429                               | QC01776                             | 0.001 |
| Surrogate<br>TFT (mg/L)<br>4-BFB (mg/L) |      | Result<br>0.623<br>0.619 | Dilution<br>5<br>5 | Spike<br>Amount<br>0.1<br>0.1 | %<br>Rec.<br>125<br>124 | % Rec.<br>Limit<br>72 - 128<br>72 - 128 | Analyst<br>RC<br>RC | Prep<br>Batch #<br>PB01429<br>PB01429 | QC<br>Batch #<br>QC01776<br>QC01776 |       |

| Description: MW-1   |      |        |          |            |          |          |         |         |         |       |
|---------------------|------|--------|----------|------------|----------|----------|---------|---------|---------|-------|
| -                   |      |        |          | Analytical | Date     | Date     |         | Prep    | QC      |       |
| Param               | Flag | Result | Dilution | Method     | Prepared | Analyzed | Analyst | Batch # | Batch # | RDL   |
| Benzene (mg/L)      |      | 0.262  | 5        | S 8021B    | 7/8/99   | 7/8/99   | RC      | PB01429 | QC01776 | 0.001 |
| Toluene (mg/L)      |      | 0.01   | 5        | S 8021B    | 7/8/99   | 7/8/99   | RC      | PB01429 | QC01776 | 0.001 |
| Ethylbenzene (mg/L) |      | 0.286  | 5        | S 8021B    | 7/8/99   | 7/8/99   | RC      | PB01429 | QC01776 | 0.001 |
| M,P,O-Xylene (mg/L) |      | 0.131  | 5        | S 8021B    | 7/8/99   | 7/8/99   | RC      | PB01429 | QC01776 | 0.001 |
| Total BTEX (mg/L)   |      | 0.689  | 5        | S 8021B    | 7/8/99   | 7/8/99   | RC      | PB01429 | QC01776 | 0.001 |
|                     |      |        |          | Spike      | %        | % Rec.   |         | Prep    | QC      |       |
| Surrogate           |      | Result | Dilution | Amount     | Rec.     | Limit    | Analyst | Batch # | Batch # |       |
| TFT (mg/L)          |      | 0.642  | 5        | 0.1        | 128      | 72 - 128 | RC      | PB01429 | QC01776 |       |
| 4-BFB (mg/L)        |      | 0.626  | 5        | 0.1        | 125      | 72 - 128 | RC      | PB01429 | QC01776 |       |

### Quality Control Report Method Blanks

| Param               | Flag | Blank<br>Result | Reporting<br>Limit | Date<br>Analyzed | Prep<br>Batch # | QC<br>Batch # |
|---------------------|------|-----------------|--------------------|------------------|-----------------|---------------|
| Benzene (mg/L)      |      | <0.001          | 0.001              | 7/8/99           | PB01429         | QC01776       |
| Toluene (mg/L)      |      | <0.001          | 0.001              | 7/8/99           | PB01429         | QC01776       |
| Ethylbenzene (mg/L) |      | <0.001          | 0.001              | 7/8/99           | PB01429         | QC01776       |
| M,P,O-Xylene (mg/L) |      | <0.001          | 0.001              | 7/8/99           | PB01429         | QC01776       |
| Total BTEX (mg/L)   |      | <0.001          | 0.001              | 7/8/99           | PB01429         | QC01776       |

Order ID Number: 99070811 N/A Page Number: 3 of 3 Rice (Hobbs)

## Quality Control Report Lab Control Spikes and Duplicate Spike

|                          | Param                                     | Blank<br>Result | Dil.           | Spike<br>Amount<br>Added      | Matrix<br>Spike<br>Result | %<br>Rec.               | RPD | % Rec.<br>Limit                         | RPD<br>Limit | QC<br>Batch #                       |
|--------------------------|---|-----------------|----------------|-------------------------------|---------------------------|-------------------------|-----|---|--------------|-------------------------------------|
| LCS                      | MTBE (mg/L)                               | < 0.001         | 1              | 0.1                           | 0.117                     | 117                     |     | 80 - 120                                | 0 - 20       | QC01776                             |
| LCS                      | Benzene (mg/L)                            | <0.001          | 1              | 0.1                           | 0.115                     | 115                     |     | 80 - 120                                | 0 - 20       | QC01776                             |
| LCS                      | Toluene (mg/L)                            | < 0.001         | 1              | 0.1                           | 0.116                     | 116                     |     | 80 - 120                                | 0 - 20       | QC01776                             |
| LCS                      | Ethylbenzene (mg/L)                       | < 0.001         | 1              | 0.1                           | 0.116                     | 116                     |     | 80 - 120                                | 0 - 20       | QC01776                             |
| LCS                      | M,P,O-Xylene (mg/L)                       | <0.001          | 1              | 0.3                           | 0.349                     | 116                     |     | 80 - 120                                | 0 - 20       | QC01776                             |
| Standard<br>LCS<br>LCS   | l Surrogate<br>TFT (mg/L)<br>4-BFB (mg/L) |                 | Dil.<br>1<br>1 | Spike<br>Amount<br>0.1<br>0.1 | Result<br>0.100<br>0.103  | %<br>Rec.<br>100<br>103 |     | % Rec.<br>Limit<br>72 - 128<br>72 - 128 |              | QC<br>Batch #<br>QC01776<br>QC01776 |
| LCSD                     | MTBE (mg/L)                               | <0.001          | 1              | 0.1                           | 0.115                     | 115                     | 2   | 80 - 120                                | 0 - 20       | QC01776                             |
| LCSD                     | Benzene (mg/L)                            | <0.001          | 1              | 0.1                           | 0.117                     | 117                     | 2   | 80 - 120                                | 0 - 20       | QC01776                             |
| LCSD                     | Toluene (mg/L)                            | <0.001          | 1              | 0.1                           | 0.117                     | 117                     | 1   | 80 - 120                                | 0 - 20       | QC01776                             |
| LCSD                     | Ethylbenzene (mg/L)                       | <0.001          | 1              | 0.1                           | 0.117                     | 117                     | 1   | 80 - 120                                | 0 - 20       | QC01776                             |
| LCSD                     | M,P,O-Xylene (mg/L)                       | <0.001          | 1              | 0.3                           | 0.353                     | 118                     | 1   | 80 - 120                                | 0 - 20       | QC01776                             |
| Standard<br>LCSD<br>LCSD | l Surrogate<br>TFT (mg/L)<br>4-BFB (mg/L) |                 | Dil.<br>1<br>1 | Spike<br>Amount<br>0.1<br>0.1 | Result<br>0.102<br>0.104  | %<br>Rec.<br>102<br>104 |     | % Rec.<br>Limit<br>72 - 128<br>72 - 128 |              | QC<br>Batch #<br>QC01776<br>QC01776 |

## Quality Control Report Continuing Calibration Verification Standard

| Standard | Param               | Flag | CCVs<br>TRUE<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed | QC Batch<br># |
|----------|---------------------|------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|---------------|
| ICV      | Benzene (mg/L)      |      | 0.1                   | 0.093                  | 93                          | 80 - 120                      | 7/8/99           | QC01776       |
| ICV      | Toluene (mg/L)      |      | 0.1                   | 0.092                  | 92                          | 80 - 120                      | 7/8/99           | QC01776       |
| ICV      | Ethylbenzene (mg/L) |      | 0.1                   | 0.091                  | 91                          | 80 - 120                      | 7/8/99           | QC01776       |
| ICV      | M,P,O-Xylene (mg/L) |      | 0.3                   | 0.262                  | 87                          | 80 - 120                      | 7/8/99           | QC01776       |
| CCV (1   | Benzene (mg/L)      |      | 0.1                   | 0.113                  | 113                         | 80 - 120                      | 7/8/99           | QC01776       |
| CCV (1   | Toluene (mg/L)      |      | 0.1                   | 0.114                  | 114                         | 80 - 120                      | 7/8/99           | QC01776       |
| CCV (1   | Ethylbenzene (mg/L) |      | 0.1                   | 0.110                  | 110                         | 80 - 120                      | 7/8/99           | QC01776       |
| CCV (1   | M,P,O-Xylene (mg/L) |      | 0.3                   | 0.330                  | 110                         | 80 - 120                      | 7/8/99           | QC01776       |

| $\frac{L_{\text{Lic}}}{L} = \frac{1}{12} $ | MT 000591, 0001                     | SAMPLE BC  |                         | Page                      |
|--|-------------------------------------|------------|-------------------------|---------------------------|
| On     McAuterie     McAut       Ari Jland     Mission     Mission       Ari Jland     Mission     Mission       V cole     Damenter     Damenter       L     7-7-97     1145     3       L     17-7-17     Mission     Containes       L     1440     Date     200  | Kice (Hobes)                        |            |                         |                           |
| $v \text{ cole Sampled Links} / \delta$  | on Mentesse AGM X &                 |            |                         |                           |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$   | Y Code Sampled Lab. A               |            |                         | TOTAL                     |
| L     7-7-99     1145     3       I     7-7-99     1145     3       I     1     1     1       I     1     1     1       I     1     1     1       I     1     1     1       I     1     1     1       I     0     0     0       I     0     0     0       I     0     0     0       I     0     0     0       I     0     0     0       I     0     0     0       I     0     0     0  | L 7-7-99 [100 3                     | 122806     |                         | 3                         |
| = Lquid:     S = Solid:     A = Air       Organization:     Model A = Air     Total No. of Bottles!       Date     21.21/91 Time     2.20       Seal Intact?     Organization:     Model A = Air       Organization:     Model A = Air     Date       Date     21.07/91 Time     2.00       Model A = Air     Date     21.07/91 Time       Date     1.1     Time       Seal Intact?     Date     1.1   | L 7-7-99 1145 3                     | (08cel     |                         | <u>~</u>                  |
| = Liquid: S = Solit: A = Ait   |                                     |            |                         |                           |
| = Liquid: S = Solid: A = Air   |                                     |            |                         |                           |
| = Liquid: S = Solid: A = Air   |                                     |            |                         |                           |
| - Liquid:     S = Solid:     A = Air       - Diate     - Diate     - Diate       - Organization:     - Diate     - Diate  |                                     |            |                         |                           |
| = Liquid;     S = Solid;     A = Air       = Liquid;     S = Solid;     A = Air       = Liquid;     S = Solid;     A = Air       Date     7 / 2/37 Time     7 / 2/37 Time       Organization:     And     And       All     Date     7 / 2/37 Time       All     Date     7 / 2/37 Time       All     Date     7 / 2/37 Time       All     Date     7 / 0/147 Time   | y<br>                               |            |                         |                           |
| = Liquid:     S = Solid;     A = Ait       = Liquid:     D = Ait     Total No. of Bottles/<br>Containers       = Liquid:     S = Solid;     A = Ait       = Liquid:     D = Ait     Total No. of Bottles/<br>Containers       = Liquid:     D = Ait     Total Ait       = Liquid:     D = Ait     Containers       = Liquid:     D = Ait     Containers       = Liquid:     D = Ait     D = Ait       = D = Ait     D = Ait     D = Ait       = D = Ait     D = Ait     D = Ait       = Organization:     D = Ait     D = Ait       = Organization:     D = Ait     D = Ait       = Seal Intervection:     D = Ait     Lime       = Organization:     D = Ait     D = Ait       = Organization:     D = Ait     D = Ait       = Seal Intervection:     D = Ait     Lime       = Organization:     D = Ait     Lime </td <td></td> <td></td> <td></td> <td></td>   |                                     |            |                         |                           |
| - Liquid; S = Solid; A = Air     - Induid; S = Solid; A = Air     - Induid; S = Solid; A = Air       - Liquid; S = Solid; A = Air     - Induid; S = Solid; A = Air     - Induid; S = Solid; A = Air       - Liquid; S = Solid; A = Air     - Organization: Array (Array)     - Date 71/27 Time 1/20/20/20/20/20/20/20/20/20/20/20/20/20/   |                                     |            |                         |                           |
| = Liquid; S = Solid; A = Ait     Total No. of Bottes/<br>Containers     Total No. of Bottes/<br>Containers       = Liquid; S = Solid; A = Ait     Total No. of Bottes/<br>Containers     Total No. of Bottes/<br>Containers       • Containers     Date 7/7/97 Time 7:200 PM     Seal Intract/<br>Ves No Nitro       • Pellew of U Way     Organization:     Date 7/07/97 Time 6:30 PM     Seal Intract/<br>Ves No Nitro       • Shemarks:     • Organization:     • Organization:     • Organization:     • Organization:   |                                     |            |                         |                           |
| = Liquid; S = Solid; A = Air     Total No. of Bottles/<br>Containers     Total No. of Bottles/<br>Containers       • Liquid; S = Solid; A = Air     Total No. of Bottles/<br>Containers     Total No. of Bottles/<br>Containers       • Organization:     Marker     Date 7/7/197 Time     ZooPM     Seal Intact?       • Nee No.     Organization:     Marker     Date 7/07/197 Time     Seal Intact?       • Nee No.     Organization:     Marker     Date 7/07/197 Time     Seal Intact?       • Nee No.     Organization:     Date 7/07/197 Time     Ves No.N/P  |                                     |            |                         |                           |
| = Liquid; S = Solid; A = Air       Total No. of Bottles/       Total No. of Bottles/       Total No. of Bottles/         = Liquid; S = Solid; A = Air       Organization: MacMUS       Date 7/2/37 Time 7:02 PM       Seal Intact?         Active MacMUS       Organization: MacMUS       Date 7/07/47 Time 4:30 PM       Yes No N/A         Active MacMUS       Date 7/07/14 Time 4:30 PM       Yes No N/A         Seal Intact?       Organization: MacMUS       Date 7/07/14 Time 4:30 PM       Yes No N/A         Seal Intact?       Date 7/07/14 Time 4:30 PM       Yes No N/A       Yes No N/A         Seal Intact?       Date 7/07/14 Time 4:30 PM       Yes No N/A       Yes No N/A   |                                     |            | /                       | 7                         |
| = Liquid; S = Solid; A = Air       Total No. of Bottles/       Total No. of Bottles/       Containers       Containers         A = Air       Organization:       Max       Organization:       Max       Date 7/7/17 Time 7:00 Min       Yes No       No         A = U = V = V = V = V = V = V = V = V = V   |                                     |            |                         | ¢                         |
| Active Are Jan Organization: AlcANS Date 7/2/97 Time 7200 Seal Intact?<br>Active Are Jan Organization: Jace Are Are Date 7/07/97 Time 6:30 PM Yes No N/A<br>Constraint: Area Area Area Date 7/07/97 Time 6:30 PM Seal Intact?<br>Date 1 / Time 6:30 PM Yes No N/A<br>Yes No N/A  | - = Liquid; S = Solid; A = Air      |            | Total No. of<br>Cor     | ottles/                   |
| No.     Organization:     NARQ     Overlage     Overlage     Overlage     Overlage     Overlage     Nate     Nat   | ACTION ARE TON Organization: ARCAN  | 25 anilyin | Date 7/07/99 Time / 700 | M Yes No N/A              |
| ns/Remarks:  | Ciganization: NAN Organization: NAN | analique   | Date 7/07/19 Time 10:30 | A Seal Intact? Yes No N/A |
|  | ns/Remarks:                         |            |                         |                           |
|  |                                     | 00. in A   |                         |                           |
6/01 Aberdeen Avenue, Surte S Lubhock, Jexas 79424 800-

4725 Hipley Avenue, Suite A

Lubhnck, lexas 79424 800=378=1296 806+794+1296 El Paso, Texas 79922 888+588+3443 915=585=3443 E-Mail, tab@traceanalysis.com

96 FAX 806+794+1298 43 FAX 015+585+4044

#### Analytical and Quality Control Report

 Sharon Hall
 Geraghty & Miller, Inc.
 Report Date:
 9/8/99

 1030 Andrews Highway, Suite 120
 Midland, TX 79701
 Project Number:
 MT000591.0002

 Project Name:
 N/A
 Order ID Number:
 99090329

 Project Location:
 Rice (Hobbs, NM)
 Order ID Number:
 99090329

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to TraceAnalysis, Inc. for analysis:

| Sample Number | Sample Description | Matrix | Date<br>Taken | Time<br>Taken | Date<br>Received |
|---------------|--------------------|--------|---------------|---------------|------------------|
| 131289        | MW-4               | Water  | 9/2/99        | •             | 9/3/99           |

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

| Sheet       |
|-------------|
| Balance     |
| ation-Anion |
| Ü           |

|                   |            |       | Percantage | Error    | 20.01185364   |   |           | 177               |
|-------------------|------------|-------|------------|----------|---------------|---|-----------|-------------------|
|                   |            | Tyt   |            | im reg/L | <u>р</u><br>= |   |           | neers to e 0.55-0 |
| SOL               | und l      | 151cT | Cations    | in meq/L | 13.92         |   | TDS/Anion | C.68              |
| Fluoride          | mda<br>₽₹  |       | Fluoride   | in meq.L | 0.215824      |   | TDS/Cat   | 0.55              |
| Nitrate           | ррт<br>2.8 |       | Nitrate    | in meq/L | 0.207031      |   | TDS/EC    | IO/MO#            |
| Chloride          | 130        |       | Chloride   | in meq/L | 2.82          |   |           |                   |
| Sulfate           | 180<br>180 |       | Sultate    | in meq/L | 3.75          |   |           | 0                 |
| Alkalinity        | 220.00     |       | Alkalinity | in meq/L | 4.40          |   |           | 2                 |
| Polassium         | 3.6        |       | Potassium  | in meq/L | 0.09          |   |           | •                 |
| Sodium            | ррш<br>146 |       | Sodium     | in meq.  | 6.35          |   |           | agusi             |
| Magnesium         | udd<br>R   |       | Magnesium  | in meq/L | 1.89          |   | EC/Anion  | 1139,1455         |
| 9/9/99<br>Calcium | 112        |       | Calcium    | n meq.   | 558           |   | EC/Cation | -392.4558         |
| DATE:<br>Sample # | 131289     | -     |            |          | 131289        | • |           | 131239            |

6701 Aberdeen Avenue, Guite 9 1725 Riplay Avenue, Suite A

Lubbock, Tcxo3 73424 000 • 370 • 1230 El Pugo, Tunug 70022 888 - 648 - i1111 L-Mali: lab@traceanalysis.com

000+704+1200 FAX 888+794+1798 815-585-8143 FAX 915+505+4944

#### ANALYTICAL RESULTS FOR GERAGHTY & MILLER Attention: Sharon Miller 1030 Andrews Hwy., Suite 120 Midland, Texas 79261

September 8, 1999 Receiving Date: 09/03/99 Sample Type: Water C/ujaot No. MT300001.6300 Project Loc: Rice Hobbs, NM

Sampling Date: 08/09/99 Sample Condition: I & C Comple Realized by: VW Project Name: N/A

|                |            | ĊI       | NQ3-N*   | SO4      | F        |
|----------------|------------|----------|----------|----------|----------|
| TA#            | Field Code | (mg/L)   | (mg/L)   | (mg/L)   | (mg/L)   |
| T131289        | MW-4       | 100      | 2.9      | 180      | 4.1      |
| ICV            |            | 11.50    | 4.62     | 11.60    | 1.06     |
| CCV            |            | 11.53    | 4.65     | 11.61    | 1.08     |
| Reporting Limi | t          | 0.5      | 0.2      | 0.5      | 0.1      |
| Prep Date:     |            | 09/07/99 | 09/07/99 | 09/07/99 | 09/08/99 |
| Analysis Date. |            | 09/07/99 | 09/07/99 | 09/07/99 | 09/08/99 |
| RFD            |            | 0        | 1        | t        | 1        |
| % Extraction A | ccuracy    | 90       | 97       | 93       | 98       |
| % Instrument / | Accuracy   | 92       | 92       | 93       | 106      |

METHUDS' EPA 300.0, 340.2 CHEMIST: JS TOTAL CI SPIKE: 625 mg/L TOTAL NO3-N SPIKE: 250 mg/L TOTAL SO4 SPIKE: 625 mg/L TOTAL F SPIKE: 5.0 mg/L

Disastar, Dr. Blair I afhriab

TOTAL CI CV: 12.5 mg/L TOTAL NO3-NCV: 5.0 mg/L TOTAL SO4 CV: 12.5 mg/L TOTAL F CV: 1.0 mg/L

9-8-99

01/4 9059:428 dol ;MAE2:0 00'qa2 0

sent By: TRACEANALYSIS;

A MULLING TRACEANALYSIS, INC. MULLING MULLING

6701 Aberdeen Avenue, Suite 9 4/25 Ripley Avenue, Suite A Lubbuck, Texas 79424 800=378=1296 El Paso, Texas 79922 888=588=3443 E Mail: lab@traceonalysis.com

ANALYTICAL RESULTS FOR GERAGHTY & MILLER, INC. Attention: Sharon Hall 1030 Andrews Highway, Suite 120 Midland, Texas 79701 1806=794=1296 I AX 806=794=1298 915=585=3443 FAX 915=585=4944

> September 8, 1999 Receiving Date: 09/03/99 Sample Type: Water Project No: MT000591.0002 Project Loc: Rice Hobbs, NM Project Name: N/A Sampling Date: 09/02/99 Sample Condition: I & C Sample Received by: VW Extraction Date: 09/07/99 Analysis Date: 09/08/99

| PAH                    | Reporting | T131289    |    | ······································ | Analysis Date: 0 | 9/08/99    |
|------------------------|-----------|------------|----|--|------------------|------------|
| 8270 Compounds (mg/L)  | Limit     | MW-4       | QC | RPD                                    | %EA              | %IA        |
| Naphthalene            | 0.005     | ND         | 57 | 11                                     | 86               | 96         |
| Acenaphthylene         | 0.005     | ND         | 58 | 11                                     | 95               | 96         |
| Acenaphthene           | 0.005     | ND         | 58 | 9                                      | 91               | 96         |
| Fluorene               | 0.005     | ND         | 55 | 11                                     | 92               | 91         |
| Phenanthrene           | 0.005     | ND         | 56 | 6                                      | 87               | 93         |
| Anthracene             | 0.005     | ND         | 7  | 4                                      | 84               | 95         |
| Fluoranthene           | 0.005     | ND         | 58 | 11                                     | 86               | 93         |
| Pyrene                 | 0.005     | ND         | 50 | 8                                      | 80               | 84         |
| Bonzo[a]anthracené     | 0.005     | ND         | 57 | 3                                      | 76               | 85         |
| Chrysene               | 0.005     | ND         | 58 | 4                                      | 72               | 96         |
| Benzo[b]fluoranthene   | 0.005     | ND         | 60 | 7                                      | 77               | 100        |
| Benzo[k]fluoranthene   | 0.005     | ND         | 57 | 13                                     | 75               | <b>9</b> 4 |
| Benzolalpyrene         | 0.005     | ND         | 58 | 10                                     | 79               | 97         |
| Indenoi1.2.3-cdipyrene | 0.005     | ND         | 48 | 15                                     | 87               | 81         |
| Dibenz(a,h)anthracene  | 0.005     | ND         | 52 | 16                                     | 72               | 86         |
| Benzolg,h,ijperviene   | 0.005     | ND         | 50 | 12                                     | 72               | 83         |
| ND = Not Detected      |           |            |    |  |                  |            |
| SURROGATES             |           | % RECOVERY |    |  |                  |            |
| Nitrobenzana-d5 SURR   |           | 98         |    |  |                  |            |

Nitrobenzene-d5 SURR 2-Fluorobiphenyl SURR Terphenyl-d14 SURR METHODS: EPA SW 846-8270, 3510. CHEMIST: MA

9-8-99

Director, Dr. Blair Leftwich

87 64

Date

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ANALYTICAL RESULTS FOR GERAGHTY & MILLER, INC. Attention: Sharon Hall 1030 Andrews Highway, Suite 120 Midland, Texas 79701

September 8, 1999 Receiving Date: 09/03/99 Sample Type: Water Project No: MT000591.0002 Project Loc: Rice Hobbs, NM

Sampling Date: 09/02/99 Sample Condition: 1 & C Sample Received by: VW Project Name: N/A

| A# FIELD CODE         |      | RESISTIVITY    |
|-----------------------|------|----------------|
|                       |      | (meg ohm - cm) |
| T131289               | MW-4 | 0.0009         |
| ICV                   |      | 1,360          |
| CCV                   |      | 1,393          |
| RPD                   |      | 1              |
| % Extraction Accuracy |      |                |
| % Instrument Accuracy |      | 96             |
|                       |      | 00/07/00       |
|                       |      | 09/07/99       |
|                       |      | 09/07/99       |

METHODS: EPA SM 2510B CHEMIST: JS

Director, Dr. Blair Leftwich

7-8-99

Date

ANNAHAMAHAMATRACEANATES INCOMMULANIA

6701 Aberdeen Avenue, Suite 9 4725 Ripley Avenue, Suite A Lubbock, Texas 79424 800+378+1290 El Pasu, Texas 79922 888+588+3443 I -Mail: lab@traceanalysis.com 806+794+1290 FAX 806+794+1298 915+585+3443 FAX 915+585+4944

ANALYTICAL RESULTS FOR GERAGHTY & MILLER, INC. Attention: Sharon Hall 1030 Andrews Highway, Suite 120 Midiand, Texas 79701

Séptémbér 8, 1999 Receiving Date: 09/03/99 Cumpic Type: Theici Project No: MT000501.0002 Project Loc: Rice Hobbs, NM

Sampling Date: 09/02/99 Cample Contaition. The O Sample Received by: VW Project Name: N/A

ALKAL INITY

| TA#                   | FIELD CODE |    | (mg/L as CaCo3) |         |       |  |  |  |
|-----------------------|------------|----|-----------------|---------|-------|--|--|--|
|                       |            | ОН | CO3             | HC03    | TOTAL |  |  |  |
| T131289               | MW-4       | 0  | 0               | 220     | 220   |  |  |  |
| ICV                   |            |    |                 |         |       |  |  |  |
| CCV                   |            |    | :               | 2,220   |       |  |  |  |
|                       |            |    | 1               | 2,260   |       |  |  |  |
| REPORTING LIMIT       |            |    |                 | 1       |       |  |  |  |
| RPD                   |            |    |                 | 3       |       |  |  |  |
| % Extraction Accuracy |            |    |                 | 90      |       |  |  |  |
| % Instrument Accuracy |            |    |                 | 94      |       |  |  |  |
|                       |            |    | 08              | 9/08/99 |       |  |  |  |
| PREP DATE             |            |    | 09              | 9/08/99 |       |  |  |  |
| ANALYSIS DATE         |            |    |                 |         |       |  |  |  |

METHODS: EPA 310.1 CHEMIST: MD

Director, Dr. Blair Leftwich

Date

01/E 9059:428 dol (MAE2:0 00'qa2 0

| Report Date: 9/8/99 | Order ID Number: 99090329 | Page Number: 2 of 4 |
|---------------------|---------------------------|---------------------|
| MT000591.0002       | N/A                       | Rice (Hobbs, NM)    |

# **Analytical Results Report**

| Description: MW-4             |      |        |          |                      | _                | _                |         |                 |               |       |
|-------------------------------|------|--------|----------|----------------------|------------------|------------------|---------|-----------------|---------------|-------|
| l'aram                        | Flag | Result | Dilution | Analytical<br>Method | Date<br>Prepared | Date<br>Analyzed | Analyst | Prep<br>Batch # | QC<br>Batch # | RDL   |
| lienzene (mg/l.)              |      | <0.005 | 5        | S 8021B              | 9/3/99           | 9/3/99           | RC      | PB02234         | QC02784       | 0.001 |
| Taluene (mg/L)                |      | <0.005 | 5        | S 8021B              | 9/3/99           | 9/3/99           | RC      | PB02234         | QC02784       | 0.001 |
| Ethylbenzene (mg/L)           |      | <0.005 | 5        | S 8021B              | 9/3/99           | 9/3/99           | RC      | PB02234         | QC02784       | 0.001 |
| M,P,O-Xylene (mg/L)           |      | <0.005 | 5        | S 8021B              | 9/3/99           | 9/3/99           | RC      | PB02234         | QC02784       | 0.001 |
| Total BTEX (mg/L)             |      | <0.005 | 5        | S 8021B              | 9/3/99           | 9/3/99           | RC      | PB02234         | QC02784       | 0.001 |
| Surrogate                     |      | Result | Dilution | Spike<br>Amount      | %<br>Kec.        | % Rcc.<br>Limit  | Analyst | Prep<br>Batch # | QC<br>Batch # | -     |
| TFT (mg/L)                    |      | 0.444  | 5        | 0.1                  | 89               | 72 - 128         | RC      | PB02234         | QC02784       |       |
| 4-BFB (mg/L)                  |      | 0.437  | 5        | 0.1                  | 87               | 72 - 128         | RC      | PR02234         | QC02784       |       |
| pH (s.u.)                     |      | 7.5    | 1        | E 150.1              | 9/3/99           | 9/3/99           | RS      | PB02225         | QC02770       | 1     |
| Specific Gravity (g/mL)       |      | 1.0017 | 1        | D854-92              | 9/7/99           | 9/7/99           | JS      | PB02222         | QC02769       |       |
| Yotal Dissolved Solids (mg/L) |      | 770    | ι        | E 160.1              | 9/4/99           | 9/7/99           | MD      | PB02229         | QC02776       | 10    |

# Quality Control Report Method Blanks

| Param                         | Flag | Biank<br>Result | Reporting<br>Limit                     | Date<br>Analyzed | Prep<br>Batch # | QC<br>Batch # |
|-------------------------------|------|-----------------|--|------------------|-----------------|---------------|
| Benzene (mg/L)                |      | <0.001          | 0.001                                  | 9/3/99           | PB02234         | QC02784       |
| Toluene (mg/L)                |      | <0.001          | 0.001                                  | 9/3/99           | PB02234         | QC02784       |
| Ethylbenzene (mg/L)           |      | <0.001          | 0.001                                  | 9/3/99           | PB02234         | QC02784       |
| M,P,O-Xylene (mg/L)           |      | <0.001          | 0.001                                  | 9/3/99           | PB02234         | QC02784       |
| Total BTEX (mg/L)             |      | <0.001          | 0.001                                  | 9/3/99           | PB02234         | QC02784       |
| Param                         | Flag | Blank<br>Result | Reporting<br>Limit                     | Date<br>Analyzed | Prep<br>Batch # | QC<br>Batch # |
| Specific Gravity (g/mL)       |      | 1.0053          | ······································ | 9/7/99           | PB02222         | QC02769       |
| Param                         | Flag | Blank<br>Result | Reporting<br>Limit                     | Date<br>Analyzed | Piep<br>Batch # | QC<br>Batch # |
| Total Dissolved Solids (mg/L) |      | <10             | 10                                     | 9/7/99           | PB02229         | QC02776       |

fomple Humber

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| Muluu.  |  | Mulli                                   | TR                      | ACEAU                                    | NALY   | sıs, Li                             | NCAL   |                                       |  |  |                                 | { |
|---|--|---|-------------------------|--|--|-------------------------------------|--|---------------------------------------|--|--|---------------------------------|---|
|   | 5701<br>472E 1                               | Aberdeen Arenu ;,<br>Rioley, Armue , Su | Suite 3 Lut<br>(e.A. El | obje, eva 79.<br>Pas- eva 79.<br>Eval: 1 | 424 - 300+378<br>922 - 388+588<br>et@uraceanelvs | - 1256 803<br>- 3443 915<br>- 5.com | 794•1296   | AX 805+794+1<br>AX 915+585+4          | 296<br>344   |  |                                 |   |
| Septembe <sup>-</sup><br>Receiving - <u>5</u><br>Samnle Tvn | 08, 1999<br>late: 09/03/99<br>le- 1 lauric   |   |                         | AFALYTIC<br>GER 1G 1TN                   | AL RESULTS                                       | S FOR                               |  |                                       | Sampling  <br>Sample Co  | Late: 09/0<br>Indition: II<br>Mained Bur | 2/95<br>htact & Cool<br>- \\\\' |   |
| Project Loc   | MT000591.0002<br>ation: Rice Hobbs, NM)      |   |                         | 1020 Andi<br>1020 Andi<br>Mili and, 1    | rews High<br>IX 79701                            | way, suite                          | 120<br>TOTAL MI                                  | ETALS                                 | Project Na   | ine: NA                                  |                                 |   |
| TA∦   | HELD CODE                                    | <b>الا</b> لله)                         | As<br>(mg/L)            | <b>Ba</b><br>Cng/L)                      | Cd<br>(mg/L)                                     | cr<br>(mg/L)                        | Co<br>(mg/L)                                     | CI<br>(Ing/I)                         | Fe<br>(mg/L)   | <b>qd</b><br>(1)'Bw)                     | <b>614</b><br>(1/8/11)          |   |
| 1131289   | P-WW   | 31                                      | 0.03                    | 011                                      | < 0.005  | <0.01                               | <0.01  | 0.03                                  | 2.4  | 0.008                                    | 23                              |   |
| ខ្ម   |  |   | 0.99                    | 0, (<br>1, 1                             | 1.0  | 1.0                                 | 10   | 0.09                                  | 0.98   | 1.0                                      | 61                              |   |
|   |  |   | 0.1                     |  | 1.0  | 0.1                                 | 01   | 0.1                                   | 0.99   | 1.0                                      | - <u>7</u> 0                    |   |
| REPORTING   | LIMIT  | 070<br>57                               | <0.005<br>0.005         | 1<br>20<br>20<br>20                      | <00.0<br>20000                                   | 10.0<br>10.0                        | 500  |                                       | <0.02  | <pre>&lt;0.005</pre>                     | 61.0<br>0,1                     |   |
| RPD   |  |   | <del>~</del>            | đ  | ~  | 0                                   |  | 0                                     | 0  | -  | <br>۱                           |   |
| % Extractic   | In Accuracy                                  | 13                                      | 66                      | <b>26</b>                                | 97   | 56                                  | 83   | 36                                    | 100  | <u>95</u>                                | <b>9</b> 6                      |   |
|   | ANE ACOURACY                                 |   | 66<br>50                |  | 103  | 102                                 | 13   | 10)                                   | 86<br>86   | 101                                      | 66                              |   |
| PREP DATE   | ATE  |   | 66//0/60                | 6(-//=/=0                                | 99/20/60   | 09/20/60                            | 09/07/99<br>09/07/99                             | 00/10/60                              | 66/20/60   | 96/20/91                                 | 09/20/60                        |   |
|   | 1  |   | Mo                      |  | ×  | Ca<br>Ca                            |  | Sectorious<br>Se                      | Ag   |  | <b>H</b>                        |   |
|   |  | - 1/ (445)                              | (1/8m)                  |  | (T/Bw)   | ( <b>T/BW</b> )                     |  | (mg/l)                                | (I)<br>(I)<br>(I)<br>(I)<br>(I)<br>(I)<br>(I)<br>(I)<br>(I)<br>(I) | ( <b>J/Bu</b> )                          | (WB/T)                          |   |
| <b>F131289</b>  | MW-4   | 50.0                                    | 0.02                    | 0140                                     | 3.6  | 112                                 | 116  | 0.02                                  | <0.01  | 0.04                                     | <0.0002                         |   |
| ₹<br>2§   |  | <del>6</del> 4                          | 1.0                     | 0.4                                      | 18   | 88                                  | ត្ត ខ្ម  | <b>8</b> .0                           | 0.202  | <u>, ,</u>                               | 0.00094                         |   |
|   |  |   | 0.1<br>2 2 2            |  | 81   |                                     |  | D                                     |  | 0.1                                      | 0.00103                         |   |
|   |  |   |                         |  |  |                                     | 0.7 ×  | <ul><li>20.05</li><li>20.05</li></ul> | 50°  | 70'0<br>V                                |                                 |   |
| RPD   |  |   | 1                       | -  | 20   | <u>;</u> 6                          | 3~   | 2                                     | 13   | 40.0                                     | 2007                            |   |
| % Extractic   | In Accuracy                                  | មា                                      | <b>8</b> 6              | 6 <b>.</b>                               | 109  | <b>32</b>                           | 123  | ĸ                                     | 6  | 9  | 8                               |   |
| % Instrum   | int Accuracy                                 | 1=2                                     | Ę                       | 133                                      | 9  | <del>1</del> 0                      | ស  | ж                                     | 102  | 101                                      | 85                              |   |
| PREP DATE   |  | <del>66</del> /D/60                     | 66/20/60                | 05/01/ <del>1</del> 9                    | 66/20/60   | 66/ <i>L</i> 0/6C                   | 66/12/60   | 66/20/60                              | 66/20/60   | 66:10/6-                                 | 66/20/60                        |   |
| ANALYSIS C.   | ATE  | <del>66</del> /D/60                     | 66/20/60                | 05/22/20                                 | 66/20/60   | 66/L0/6C                            | 66/12/60   | 66/20/60                              | 66/20/60   | 66;'20/6-                                | 66/20/60                        |   |
| METHODS: J  | EPA SW 846-3015, 6010B                       | , 7470a.                                |                         |  |  |                                     |  |                                       |  |  |                                 |   |
| CHEMIST: A  | I, As, Ba, Cd, Cr, Co, Cu, I                 | te, Pb, M⊆ n                            | an, Mo, Ni<br>22 Oct    | , K ca, Na                               | , Se, Ag, Zr                                     | - RR H                              | g: 8P<br>5 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 |                                       |  |  |                                 |   |
| I U AF MEL  | als shike: 1.0 filgit Al, A<br>0.50 ma/l. Aq | ני, ba, ∎u, ני<br>ניתו 0.00 10 וייו     | , co, cu, r<br>/, Ha    | ¢'.∋`⊫u'                                 | MO, NI, SE                                       | 1 MUL (117                          | ngyl Ng, K                                       |                                       |  |  |                                 |   |
| TOTAL MET   | ALS CV: 1.0 mg/L AI, AS, I                   | sa, cd, cr, ci                          | o, Cu, Fe, I            | Pb Mn Mc                                 | o, Ni, Se, Zi                                    | 1 20 mg/l                           | Mg, K, Ca,                                       | Na;                                   |  |  |                                 |   |
|   | 0.20 mg/L Ag                                 | 0:00 mm                                 | /L Hg.                  |  |  |                                     | 6  | 55-2                                  |  |  |                                 |   |
|   | Director, Dr. Blai                           | Leftvicr                                |                         |  |  |                                     | DATE   |                                       |  |  |                                 |   |

Sent By: TRACEANALYSIS;

 Report Date:
 9/8/99
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 3 of 4

 MT000591.0002
 N/A
 Rice (Hobbs, NM)

### Quality Control Report Duplicates

| Standard  | Param                         | Flag | Duplicate<br>Result | Sample<br>Result | Dilution | RPD | RPD<br>Limit | QC<br>Batch # |
|-----------|-------------------------------|------|---------------------|------------------|----------|-----|--------------|---------------|
| Duplicate | pH (s.u.)                     |      | 8.7                 | 8.7              | I        | 0   | 0 - 20       | QC02770       |
| Standard  | Param                         | Flag | Duplicate<br>Result | Sample<br>Result | Dilution | RPD | RPD<br>Limit | QC<br>Batch # |
|           | Specific Oravity (Quitt.)     |      | 1.0000              | 1.0017           | 1        | 0   | 0=10         | QC01709       |
| Standard  | Param                         | Flag | Duplicate<br>Result | Sample<br>Result | Dilution | RPD | RPD<br>Limit | QC<br>Batch # |
| Duplicate | Total Dissolved Solids (mg/L) |      | 749                 | 760              | 1        | 1   | 0 - 20       | QC02776       |

#### Quality Control Report Lab Control Spikes and Duplicate Spike

|         |                           | Blank  |           | Spike                  | Matrix        | 9/              |                | % Pag                       | חספ    | 00                       |
|---------|---------------------------|--------|-----------|------------------------|---------------|-----------------|----------------|-----------------------------|--------|--------------------------|
|         | Param                     | Result | Dil.      | Added                  | Result        | Rec.            | RPD            | Limit                       | Limit  | Batch #                  |
| LCD     | IriTDD (mgL)              | -ស.ស.  |           | 811                    | 8.878         | ዮያ              |                | 99 129                      | 9 29   | 8292791                  |
| LCS     | Benzonc (mg/L)            | <0.001 | 1         | 0.1                    | 0.093         | 93              |                | 80 - 120                    | 0 - 20 | QC02784                  |
| LCS     | Toluene (mg/L)            | <0.001 | 1         | 0.1                    | 0.091         | 91              |                | 80 - 120                    | 0 - 20 | QC02784                  |
| LCS     | Ethylbenzene (mg/L)       | <0.001 | L         | 0.1                    | 0.09          | 90              |                | 80 - 120                    | 0 - 20 | QC02784                  |
| LCS     | M,P,O-Xylene (mg/L)       | <0.001 | 1         | 0.3                    | 0.267         | 89              |                | 80 - 120                    | 0 - 20 | QC02784                  |
| Standar | d Surrogate               |        | Dii       | Spike<br>Amount        | Regult        | %<br>11.00      | 'ı             | % Rec.<br>Limit             |        | QC<br>Butch #            |
| LCS     | TFT (mg/L)                |        | 1         | 0,1                    | 0.1           | 100             | )              | 72 - 128                    |        | QC02784                  |
| LCS     | 4-BFB (mg/L)              |        | 1         | 0.1                    | 0.098         | 98              |                | 72 - 128                    |        | QC02784                  |
| LCSD    | MTBE (mg/L)               | <0.001 | 1         | 0.1                    | 0.104         | 104             | 6              | 80 - 120                    | 0 - 20 | QC02784                  |
| LCSD    | Benzene (mg/L)            | <0.001 | 1         | 0.1                    | 0.098         | <del>9</del> 8  | 5              | 80 - 120                    | 0 - 20 | QC02784                  |
| LC3D    | Tolucine (ing/E)          | 70.001 | 1         | Ŭ, 1                   | 0.097         | 97              | - <del>6</del> | 89 129                      | 0 20   | QC02781                  |
| LCSD    | Ethylhenzene (mg/L)       | <0.001 | 1         | 0.1                    | 0.098         | 98              | 9              | 80 - 120                    | 0 - 20 | QC02784                  |
| LCSD    | M,P,O-Xylene (mg/L)       | <0.001 | 1         | 0.3                    | 0.291         | 97              | 9              | 80 - 120                    | 0 - 20 | QC02784                  |
| Standar | d Surrogate<br>TFT (mo/L) |        | Dil.<br>1 | Spike<br>Amount<br>0.1 | Result<br>0.1 | %<br>Rcc<br>100 | )              | % Rec.<br>Limit<br>72 - 128 |        | QC<br>Batch #<br>OC02784 |
| LCSD    | 4-BFB (mg/L)              |        | 1         | 0.1                    | 0.099         | 99              |                | 72 - 128                    |        | QC02784                  |

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Sent By: TRACEANALYSIS;

| Report Date: 9/8/99 | Order ID Number: 99090329 | Page Number: 4 of 4 |
|---------------------|---------------------------|---------------------|
| MT000591.0002       | N/A                       | Rice (Hobbs, NM)    |

### Quality Control Report Continuing Calibration Verification Standard

| Standard | Param                         | Flag | COVo<br>TRUE<br>Conc. | GGYa<br>Found<br>Conc. | GGVa<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed | QC Batch<br># |
|----------|-------------------------------|------|-----------------------|------------------------|-----------------------------|-------------------------------|------------------|---------------|
| ICV      | Benzene (mg/1.)               |      | 0.1                   | 0.094                  | 94                          | 80 - 120                      | 9/3/99           | QC02784       |
| ICV      | Toluenc (mg/L)                |      | 0.1                   | 0.092                  | 92                          | 80 - 120                      | 9/3/99           | QC02784       |
| ICV.     | Ethylbenzene (mg/L)           | ,    | 0.1                   | 0.092                  | 92                          | 80 - 120                      | 9/3/99           | QC02784       |
| ICV      | M,P,O-Xylene (mg/L)           |      | 0.3                   | 0.274                  | 91                          | 80 - 120                      | 9/3/99           | QC02784       |
| CCV (I   | Benzene (mg/1.)               |      | 0.1                   | 0.098                  | 98                          | 80 - 120                      | 9/3/99           | QC02784       |
| CCV (I   | Tuluene (mg/L)                |      | 0.1                   | 0.094                  | 96                          | 80 120                        | 9/1/99           | QG02784       |
| CCV (I   | Ethylbenzene (mg/L)           |      | 0.1                   | 0.095                  | 95                          | 80 - 120                      | 9/3/99           | QC02784       |
| CCV (1   | M,P,O-Xylene (mg/L)           |      | 0.3                   | 0.281                  | 94                          | 80 - 120                      | 9/3/99           | QC02784       |
| Standard | Parani                        | Flag | CCVs<br>TRUE<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed | QC Batch<br># |
| ICV      | pH (s.u.)                     |      | 7                     | 7.0                    | 100                         | 80 - 120                      | 9/3/99           | QC02770       |
| CCV (1   | pH (s.u.)                     |      | 7                     | 7.1                    | 101                         | 80 - 120                      | 9/3/99           | QC02770       |
| Stundard | Param                         | Flag | CCVs<br>TRUE<br>Conc. | CCVs<br>Found<br>Conc. | CCVs<br>Percent<br>Recovery | Percent<br>Recovery<br>Limits | Date<br>Analyzed | QC Batch<br># |
| ECV      | Total Dissolved Solids (mg/L) |      | 1000                  | 970                    | 97                          | 80 - 120                      | 9/7/00           | OC02776       |
| IC V     | Total Dissolved Source (mg/C) |      | 1000                  | 214                    | 2.                          | JV - 120                      |                  | 2002/10       |
| CCV (1   | Total Dissolved Solids (mg/L) |      | 1000                  | 971                    | 97                          | 80 - 120                      | 9/7/99           | QC02776       |

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|  | 4725 Rip ey Aven | le, Sule A      | EIFa         | en, levas 7395<br>20. Taxas 7957<br>5.1.1.1.1.1.1 | 2 386-586<br>2 386-586 | -1230 CL2   | 535•3443 F      | 4X 913 585 4    | 957<br>176                         |  |                           |
|--|------------------|-----------------|--------------|---|------------------------|-------------|-----------------|-----------------|------------------------------------|--|---------------------------|
| September 09, 1999<br>Receiving Date: (19/03/99<br>Sample Type: Liquid |                  |                 | 404          | ERAGHTY<br>Itention:                              | & MILLER,              | FOR<br>INC. |                 |                 | Sampling<br>Sample Co<br>Sample Re | Date: 09/0<br>Indition: Ir<br>celved by: | 2/99<br>tact & cool<br>WV |
| Project No: MT000591.0002<br>Project Location: Rice Hobb               | s, NM)           |                 | :← 2         | 030 Andre<br>Ildland, TJ                          | ews Highv<br>K 79701   | vay, sulte  | 120<br>Total MI | ETALS           | Project Na                         | me: NA                                   |                           |
|  | R                | A               | 5            | Ba  | 5                      | 5           | 8               | 5               | j,                                 | qq                                       | 6W                        |
| TA# FIELD CODI   | <b>GW</b> ) =    | (T) (MB         | 2            | (1/ <b>Gw</b> )                                   | (mg/L)                 | (mg/L)      | ( <b>1/6</b> m) | (mg/L)          | ( <b>mg/l</b> )                    | (J/Bm)                                   | (mg/l)                    |
| T131289 MW-4   | 3.1              | 0.0             | 3            | 0.11  | < 0.005                | <0.01       | <0.01           | 0.03            | 2.4                                | 0.008                                    | 23                        |
| ĪCV  | 1.0              | 0.0             | Ø            | 1,0   | 1.0                    | 1.0         | 1.0             | 0.99            | 0.98                               | 1.0                                      | 19                        |
| CCV  | 1.0              | 1.0             | 0            | 1.0   | 1.0                    | 1.0         | 1.0             | 1.0             | 0.99                               | 1.0                                      | 19                        |
| METHOD BLANK   | ,0<br>V          | 10 < 0.0        | <u> 9</u> 05 | < 0.005   | <0.005                 | <0.0        | <0.0            | <0.0>           | < 0.02                             | <0.005                                   | < 0.50                    |
| REPORTING LIMIT  | 0.1              | 0.0             | 35           | 0.005   | 0.005                  | 0.01        | 0.01            | 0.01            | 0.02                               | 0.005                                    | 0.50                      |
| RPD  | 9                | ~               |              | 4   | ~                      | 0           | ~               | 0               | ٥                                  | <del>, -</del>                           | 2                         |
| % Extraction Accuracy  | 50               | 56              | •            | 93  | 97                     | 66          | <u> 38</u>      | <b>8</b> 6      | 100                                | 95                                       | <b>8</b> 6                |
| % Instrument Accuracy  | 100              | <u> </u>        | •            | <u>1</u> 02                                       | -103                   | 102         | 101             | 100             | <u> 38</u>                         | 101                                      | 66                        |
| PREP DATE  | 20/60            | 10/60 66/       | ) 66//       | 66/20/60  | 66/20/60               | 66/20/60    | 66/10/60        | 66/10/60        | 66/20/60                           | 66/20/60                                 | 66/60/60                  |
| ANALYSIS DATE  | 20/60            | 20/60 66/       | ) 66/4       | 66/20/60  | 66/10/60               | 66/10/60    | 66/10/60        | 66/10/60        | 66/20/60                           | 66/20/60                                 | 66/60/60                  |
|  | Ē                | ž               | 0            | Z   | ¥                      | 8           | <b>N</b> a      | Se              | Ag                                 | ĽN                                       | ВH                        |
|  | igm)             | (1) ( <b>mg</b> | 7            | (1/6w)  |                        | (J/Bw)      |                 | ( <b>mg</b> /L) | ( <b>mg/L</b> )                    |  | (1/GW)                    |
| T131289 NNV-4  | 0.0              | 3 0.0           | 12           | 0.10  | 2.4                    | 93          | 124             | 0.02            | <0.01                              | 0.04                                     | < 0.0002                  |
| ICV .  | 1.0              | 1.(             | 0            | 0,1   | 20                     | 20          | 19              | 0.99            | 0.202                              | 1.0                                      | 0.00094                   |
| CCV  | 1.0              |                 | 0            | 1.0   | 20                     | 20          | 19              | 1.0             | 0.209                              | 1.0                                      | 0.00103                   |
| <b>METHOD BLANK</b>  | 0.0>             | 05 < 0.         | 8            | <0.02   | < 0.50                 | < 0.50      | <0.50           | < 0.005         | <0.01                              | <0.02                                    | <0.0002                   |
| REPORTING LIMIT  | 0.0              | 5 0.0           | 12           | 0.02  | 0.50                   | 0.50        | 0.50            | 0.005           | 0.0                                | 0.02                                     | 0.0002                    |
| RPD  | ۴-               | ~               |              | ~   | N                      | 0           | 0               | 7               | 13                                 | ~  | м                         |
| 56 Extraction Accuracy   | 96               | 86              |              | 66  | 8                      | 66          | 95              | 8               | 06                                 | <b>1</b> 0                               | 83                        |
| % Instrument Accuracy  | 10,              | ğ               | -            | 103   | ē                      | 101         | 86              | 8               | 102                                | 5  | <b>3</b> 8                |
| PREP DATE  | 06/60            | 10/60 66/       | 66/4         | 66/20/60  | 66/60/60               | 66,'60,'60  | 66/60/60        | 66/20/60        | 66/20/60                           | 66/10/60                                 | 09/03/99                  |
| ANALYSIS DATE  | 20/60            | 10/60 66/       | 66/4         | 99'70'99  | 66/60/60               | 66/60/60    | 66/60/60        | 66/10/60        | 66/20/60                           | 66/10/60                                 | 66/E0/60                  |

METHODS: EPA SW 846-3015, 60108, 7470A.

CHEMIST: AI, AS, Ba, Cd, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Ca, Na, Se, Ag, Zn: RR Hg: BP TOTAL METALS SPIKE: 1.0 mg/L AI, AS, Ba, Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Se, Zn; 100 mg/L Mg, K, Ca, Na; 0.50 mg/L Ag; 0.0010 mg/L Hg. TOTAL METALS CV: 1.0 mg/L Aj, AS, Ba, Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Se, Zn; 20 mg/L Mg, K, Ca, Na; 0.20 mg/L Ag; 0.0010 mg/L Hg.

Director, Dr. Blair Leftwich

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DATE

Sent By: TRACEANALYSIS;

9 Sep'99 2:06PM; Job 877;Page 1/2

|        | Fluoride TDS EC | ppm ppm µMHOs/cm | 4.1 770 | Total Total | Filuoride Cations Anions Percentage | in med/L in med/L in med/L Error | 0.213824 11.99 11.39 5.109507752 | TDS/Cat TDS/Anion |
|--------|-----------------|------------------|---------|-------------|-------------------------------------|----------------------------------|----------------------------------|-------------------|
|        | Nitrate         | udd              | 2.9     |             | Nitrate                             | in meaf                          | 0.207031                         | TDS/EC            |
|        | Chloride        | mqq              | 100     |             | Chloride                            | in meq/L                         | 2.82                             |                   |
|        | Sulfate         | mqq              | 180     |             | Sulfate                             | in meq/L                         | 3.75                             |                   |
|        | Alkalinity      | ррлп             | 220.00  |             | Alkalinity                          | in meq/L                         | 4.40                             |                   |
|        | Polassium       | bpm              | 2.4     |             | Potassium                           | in meq.L                         | 90 D                             |                   |
|        | Sodium          | mqq              | 124     |             | Sodium                              | in meq/L                         | 5.38                             |                   |
|        | Magnesium       | mqq              | 23      |             | Magnesium                           | in meq/L                         | 1.89                             | EC/Anion          |
| 66/6/6 | Calcium         | mqq              | 69      |             | Calcium                             | in meq/L                         | 4.64                             | EC/Cation         |
| DATE:  | Sample #        |                  | 131289  |             | Sample #                            |                                  | 131289                           |                   |
|        |                 |                  |         |             |                                     |                                  | -                                |                   |

**Cation-Anion Balance Sheet** 

eds to be 0.55-0.77

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eBuej

El

9 Sep'99 2:06PM; Job 877; Page 2/2

|   |                           | TOTAL   | 8                         |  |  |  | $\sim$                              | Seal intact?<br>Yes No N/A  | Seal Intact?<br>Yes No N/A       |                         |                            |
|---|---------------------------|---|---------------------------|--|--|--|-------------------------------------|---|----------------------------------|-------------------------|----------------------------|
|   | Land Land Land            | ANT WE WIL  |                           |  |  |  | Total No. of Bottles/<br>Containers | Date <b>クレス 1分</b> Time <b>バムの</b><br>Date <b>イ</b> レス 1分 Time 16 00                  | Date / / Time<br>Date / / Time   |                         | X Lab Courier   Other      |
| Ture Laboratory Task Order No. CHAIN-OF       | E (Habbs M. M.) A BY A BY | Werese Acri + + + 10 00 000 000 000 000 000 000 000 | 9-2-99 1200 3 1 1 1 1 1 1 |  |  |  | iquid; S = Solid; A = Air           | A CAR & AL JULA Organization: ACAQ15<br>A CAR & AL JULA Organization: TPALE AAIALYSIS | Organization:Organization:       | garks: A Nord by 9.8-89 | In Person B Common Carrier |
| Environment and Infrastruc<br>a heidernij con | Project Location          | ampler(s)/Affiliation                               | MW + L                    |  |  |  | ample Code: L = Li                  | Relinquished by:  | Relinquished by:<br>Received by: | pecial Instructions/Rep | Jelivery Method:           |

# ARCADIS GERAGHTY& MILLER

# APPENDIX E

# **RECOVERY WELL VOLUMES**

| 021X     |  |          |                        |   |                                       |   |                          |             |                            |   |  |                      |                      |                      |   |         |        |  |   |
|----------|--|----------|------------------------|---|---------------------------------------|---|--------------------------|-------------|----------------------------|---|--|----------------------|----------------------|----------------------|---|---------|--------|--|---|
| / New Mo | 35   |          |                        |   |                                       |   |                          |             |                            |   |  |                      |                      |                      |   |         |        |  |   |
| County   | 570R611<br>1261 14<br>8:30   | 6:20     | R 21 -1                | Luck  | и<br>и<br>и<br>и                      | 5 0   | 11.02                    | 15, 20      | mawwol<br>Bailw            | 2 aprenti                               | m he   | * 2                  | <b>x</b> '2          |                      |   |         |        |  | t |
| LEA.     | 5/ 24.11<br>74299999   | 9.15     | FLUSL<br>FLUSL         | Lock .                                      | a                                     | 2   | ter. It                  | /01         | mawww.l                    | Ma                                      | 2  | × 12                 | × /2                 |                      | - |         |        |  |   |
| R38E     | 574811<br>Janz, 99<br>8.30   | 05:7     | Kush<br>Kush<br>Moueit | Lock<br>N,                                  | A / / A                               | :<br>                                       | p.jt                     | 1203        | Manuell<br>Bailing         | ~/a                                     | N/A  | N/0                  | n la                 |                      |   |         | -      |  |   |
| - 7/95   | 5708 Cell<br>Tause 89<br>8: 50   | 1.1.1    | mout                   | Lock  | *                                     | · · · · /                                   | 1-1-1-2                  | 12.03       | MANNUAL<br>Bailing         | 4/2                                     | 4  | 2/2                  | u de                 |                      |   |         |        |  | 1 |
| SEC 9.   | 57446111<br>Janas, 99<br>7:00  | R n) -1  | FLUSH<br>MOUNT         | Lock .                                      | 10<br>31.7"                           | - 57  | -<br>Zuint               | 0403        | Bailing                    | 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | V/A  |                      | NIN                  |                      |   |         |        |  |   |
| SEJ.4    | 57086111<br>Jan22,99<br>8:30   | R.W1     | + C. UOM               | Lock  | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | ÷_/~  | -) -<br>-) -2<br>-) -2   | / 03        | 80.1.23                    | 14                                      | a/m  | NIE                  | 1/10                 |                      |   |         |        |  |   |
| NE/4     | 5 200 100 1 | RW-1     | Flush<br>Mouut         | Lock<br>N,                                  | 31.7"                                 | -[4]  | z piut                   | 1000 201.   | Berling                    | =                                       | 110  | N'I R                | aln                  |                      |   |         |        |  |   |
| YSTEm    | STURGIN<br>Jawso 99<br>8: 30<br>9: 30  | 1-38     | Flush<br>Mowt          | Lock  | 31.7"                                 | 22.   | 10:01                    | 201         | Builing                    |   | 1 P  | 4 / H                | ël/n                 |                      |   |         |        |  |   |
| Saws     | 57086,11<br>Jan 19 99<br>8:30  | RW-1     | FLUSH<br>MOUNT         | Leck<br>2,                                  | 31'7"                                 | 22.   | 20.07                    | 303         | 84:1.14                    |   | NIA  | 118                  | NIA                  |                      |   |         |        |  |   |
| Hobbs    | 571102.11<br>Jan 18 99<br>8:30   | Rw-1     | FLUSL                  | Lock  | 31'6"                                 | -170  | たらっト                     | Il allow    | BAiling                    | Sereration<br>Sereration<br>Diltwater   | N/A  | NIN                  | N/A                  |                      |   |         | Ki5 02 |  |   |
|          | NICE EMPLOYEE<br>DATE<br>IME - START<br>IME - END  | WHA, NO. | WEI.L<br>COMSITUCTION  | ידוזוגו) אופיאין איפואי<br>אואור טאופאווטיו | TULII TO WATER<br>(T <sup>-1</sup> )  | ГSH 1111СКИЕSS<br>(1°1)<br>101 и ле и и нек | RECOVERED<br>VOLUME FSIL | (HECOVENED) | TECHNIOUE<br>SAMELING TIME | SAMITLING<br>TISCHNIDUE                 | יןי בוועררגאוביזאפיר<br>יוי בוועררגאוביזאפיר | พกายแ <sub>ก</sub> ม | SPECIFIC<br>SPECIFIC | אסנוזומאסס אפוווראנש |   | UMANKS: |        |  | - |

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| New Mexico  |                                       |   |   |                        |   |   |                 |
|-------------|---------------------------------------|---|---|------------------------|---|---|-----------------|
| County      |                                       |   |   |                        |   |   |                 |
| <b>F</b> EA | 2-26-9                                | RW-1<br>Foush<br>Mount                                | 1, 16 | 1                      | Bailing<br>V/ A<br>Screento   | N/a<br>N/a  |                 |
| R382        | 57429ill<br>2-2599                    | Rw-1<br>F1001<br>medut                                | N/A<br>31.8"  | i e pist               | m re would for<br>Builing<br>V/ A<br>Serentation  | N/N<br>N/N  | . <b>1</b>      |
| - 7195      | 57026.11<br>2-23-99                   | RW-1<br>RW-1<br>Mount<br>Mount                        | 1/1 P   | 1.5 FLB.               | 11 12 10 11 11 11 11 11 11 11 11 11 11 11 11  | 2/10  | 666             |
| 3209        | 2-22-99                               | RW-1<br>FLUSL<br>MAUNT                                | 21,5°   | 2 rt                   | mawell<br>Boilis  | N/A<br>N/A  | Feb 26-1        |
| SE14 3      | £ 570 € 7 18 - 79                     | Rw-)<br>FLUSh<br>mount                                | 21:12   | 1/1pt<br>2 1-2 03      | Mandell<br>Bailiog<br>N/A<br>Superation   | 0/10<br>10/10   | 999 to          |
| NEJU        | J. Sakel                              | RW-1<br>FLOSH<br>Moswl                                | 21.6.   | 1/2 pt                 | ma when we will a service of a | 2/10<br>N/10  | Jan 18,         |
| YSTEM       | J. S TWEN                             | RW-1<br>FLUST<br>MONAT                                | N/A<br>31:4:  | 12 FL 03               | Bailing<br>N/A  | N/A<br>N/A  | c from          |
| Sams        | 7. STUREI                             | Rw-1<br>FLUSL<br>Mount<br>Locked                      | N/A<br>31.6<br>25   | /2 pt                  | mounel<br>Boilist<br>V/A<br>Soveration  | etr<br>etr  | 2017 a (TIA     |
| Hobbs       | 7. Storgil                            | RW-1<br>FLUSA<br>MOUNT<br>Locked                      | N/N<br>31.17<br>2.  | 1 pt                   | MANNel<br>Bailing<br>W/A<br>Seperation  | N/A<br>N/A<br>N/A   | et 31FL         |
| 6-7-19      | RICE EMPLOYEE<br>DATE<br>TIME - START | WIELL, NO.<br>WELL<br>CONSTITUCTION<br>WIELL SECULITY | וואור טאוטטונוז<br>טפראט וודט שאראפת<br>רדין<br>רדין<br>ראס עאראפא  | RECOVENIE<br>INCOVENIE | FUNGING<br>TI:CINIOUE<br>SAMPLING TIME<br>SAMPLING<br>TI:CUNIOUE  | WATER<br>TEMPERATURE TE<br>WATUR ALI<br>STECHTC<br>COMDITICTANCIE<br>COMDITICTANCIE | UBINIKS & Colle |

|                          | Hobbes                | Saus           | VSTEM   | NEN      | 5 E.14     | 340 9-          | 7195             | R38E     | LEA COUNTY New M | 7ex 100 |
|--------------------------|-----------------------|----------------|---------|----------|------------|-----------------|------------------|----------|------------------|---------|
|                          |                       |                |         |          | europ Ar   |                 |                  |          |                  |         |
| E EMPLOYEE               | 5708611               | 5+ 4 6 4 11    | 57429.1 | 574911   | ST049:11   | 57026111        | 570×611          | Sturgill |                  |         |
| ATE                      | 3-4-99                | 3-5-99         | 3-10-99 | 3-11-99  | 3-15-99    | 66.71-5         | 3-17-99          | 3-22     |                  |         |
| E - START                | 8;30                  | 8 30           | 0       | 8:30     | 845        | 8:00            | 9:00             | 9:00     |                  |         |
| E - END                  | 9:00                  | 9:00           | 9.00    | 9:10     | 9:45       | 8:30            | 9:30             | 4.30     |                  |         |
| WHILL NO.                | 80-1                  | Rw-1           | R w-1   | 1-02     | Rw-1       | R - 1           | 1-01-1           | R W-1    |                  |         |
| WELL<br>WEILL            | Jeuzz                 | FLUSH<br>mount | 1-4042  | 1=405 h  | FLUSH      | FLUSh<br>Manart | FLUSA<br>Monut   | FLUSH    |                  |         |
| ELL SECURTY              | Lonked                | 1.00100        | 1 neted | Locked   | Lekel      | Locked          | Lakel            | Löcked   |                  |         |
| וואור טאוטאונו           | N/4                   | "/"            | 5/2     | N/4      | w/a        | "/"             | 2/4              | N/A      |                  |         |
| ביוו דס שאזשת<br>(ויד)   | 31"5                  | 31"4'          | 31" ()  | 31.6     | 31.7       | 31",            | 31.6             | 31.2     |                  |         |
| SII THICKHESS<br>(1"1)   | 2.5'                  | ъ.             | 1.51    | 4        | ۶.5        |                 | 7                | ;<br>78  |                  |         |
| UME WAFR                 | i et                  | i pt           | 24      | +1-1-2   | -t-<br>zot | +               | +<br>-\'         | 72+24    |                  |         |
| VOLUME FSII              | 25402                 | 1.5 Flor       | 1562    | 1. 5 May | 2 Heag     | 2 FLiz          | athes            | 3 1612   |                  |         |
| TURGING                  | MANU-1<br>Bailer      | Ma iler        | Bailer  | Stilee   | Bailce     | manuel<br>Baika | mawdel<br>Briter | Reifer   |                  |         |
| ANFLUNG TIME             | NN                    | 2/4            | 2/4     | n/u      | 2/4        | N/N             | 1/1              | n/c      |                  |         |
| SAMPLING<br>SUUDINICITE  | Seperato<br>Dilewater | •              |         |          |            |                 |                  |          |                  |         |
| אנודאש<br>אי נוועראונוזא | 2/2                   | 2/2            | ×/N     | N/W      | <b>N</b>   | 2/19            | NIA              | 2/2      |                  |         |
| พุศาษา                   | 14                    | NA             | 2/4     | 2/2      | NIA        | 1/14            | N/M              | alla     |                  |         |
| SPECIFIC<br>CONDUCTANCIS | ~//a                  | 2/6            | 2/18    | */*      | 2/4        | 2/4             | 2/2              | 2/14     | •                |         |
| ופווונא                  | NS:                   |                |         |          |            | •               | ~                |          |                  |         |
|                          |                       |                |         |          |            |                 |                  |          |                  |         |
|                          |                       |                |         |          |            |                 |                  |          |                  |         |
| SMAILKS:                 |                       |                |         |          |            |                 | · .              | Ŧ        |                  |         |
|                          |                       |                |         |          |            |                 |                  |          |                  |         |
|                          |                       |                |         |          |            |                 |                  |          |                  |         |
|                          |                       |                |         |          |            | 1<br>  ·        |                  |          |                  |         |
|                          |                       |                | · .     |          |            |                 | ı                |          |                  |         |

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|            | w // 6 × 1 6 0 |               |              |            |           |          |                      |              |               |                           |                        |                           | , <del></del> |                  |                    |                 |                        |   |               |                                     |                      |      |          |   |     |     |
|------------|----------------|---------------|--------------|------------|-----------|----------|----------------------|--------------|---------------|---------------------------|------------------------|---------------------------|---------------|------------------|--------------------|-----------------|------------------------|---|---------------|-------------------------------------|----------------------|------|----------|---|-----|-----|
|            | TINNOS         |               |              |            |           |          |                      |              |               |                           |                        | •                         |               | ~                |                    |                 | 201                    |   |               |                                     |                      |      |          |   |     | . 1 |
|            | 2              | 1 5 84.00     | 5.7          | 00:01      | 10:31     | Rw-I     | 1-2054               | MOUN         | Locke         | A/N                       | 31.0                   | י <u>ז</u>                | 39015         | 20 540           | RA: 1              |                 | 410                    | N#re<br>N   | x 12          | 42                                  | 18                   | <br> | -    -   |   | -   |     |
| R381       | );<br>);       | J. Sturail    | 4-56         | 9:00       | 10,00     | Rw-1     | 1=2451               | Incons       | koe/ccd       | A N                       | 31.6                   | 5                         | 29,918        | 1415405          | MANNell<br>Roll    |                 | w has                  | ~/~   | N/.           | N/.                                 | 41                   |      |          | 9 |     |     |
| S611 -     |                | J.57029.11    | 4 - 23       | 10:12      | 10:36     | Rw-1     | FLU84                | 10 Meth      | NIA           | 112                       | 9:12                   | 5. //                     | 1001          | 51763            | MANWell<br>Bail is | N/A             |                        | NIA   | N             | -   A<br>                           | x/x                  |      |          |   |     |     |
| 3209.      |                | J. Stua: 1    | 4-19         | 8.45       | 9.30      | Rwil     | hound t              |              | N/            | ۲ مر<br>۱ مر              |                        | 1/1                       | Wit           | 4 51-202         | MANNEII<br>Bailine | 110             |                        | 4/10  |               | N/N                                 | utu                  |      |          |   |     |     |
| SE/4       |                | I. Sturil     | +-12         | 00;6       | 9:30      | R.W-1    | rhoust<br>moust      | 07.1         | w             | 31.5                      |                        | , , ,                     | 405           | 4. FLOY          | Bailing            | N IR            | Seperation<br>offer    | N/B   |               | N/N                                 |                      |      |          |   |     |     |
| N # /4     |                | J.STURGI      | 4-6          | 9:11-      | 10:00     | Rw-1     | FLUS 4               | 1            | N/A           | 31.6                      | "1"                    | 1 7                       | 19-51         | 3.574            | Ja: / w            | NIP             | •                      | 110   | 611           | 1/0                                 |                      |      |          |   |     |     |
| ■<br>YSTEm |                | I STURGIL     | 4-5          | 00.00      | 8147      | R w -1   | Ficus +              | 100400       | N/A           | 31.7                      | i<br>V                 | +                         | 10 2          | 41=202           | Bailing            | N/A             |                        | 2/2   | 210           | NA                                  |                      |      |          |   |     |     |
| S dmS      |                | I. Sturgi     | 4-1          | 8.15       | 1.00      | Rw-1     | HXUS4<br>MOUNT       | 1 sokel      | wa            | 31.7                      | . 1                    | +                         | 2             | 3FLO3<br>MANNell | 80.1.05            | N/A             |                        | NA  | "/"           | N1,0                                |                      |      |          |   |     |     |
| Hobbs      |                | J. Stury.     | 02.0         | 200        | 2 . 7 . 8 | I-9 Rw-1 | MOWA                 | Locked       | N/A           | 31.6                      | 4                      | -10                       | 112.00        | 3FLos<br>neuvel  | Briling            | NA              | Soperatio              | r/,   | NIA           | w/a                                 |                      |      |          |   |     |     |
| -t-        |                | RICE EMPLOYEE | TIME - STORT | TIME - FND |           | ON TRIM  | WELL<br>CONFITUCTION | WELL SECURTY | ับทน อิงแรมกา | טונדנון דס שאזעת<br>(דיו) | rsii Thickness<br>(FT) | VOLUME WATER<br>RECOVEREN | VOLUME FSII   | ILICOVENIED      | TICUNIOUE          | SAMIFI, NG TIME | SAMPLING<br>TIECHNIQUE | ગરામત્રારા કાર્યો છે. ગાંધવા છે.<br>ગાંધવા ગાંધવા | ี้ เม่น มะมาพ | SFILDA'IS<br>SFILDA'IS<br>SFILDARDD | SNOLLIGNOD JIEITLYIM |      | RUMINKS: |   | , - |     |