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**GENERAL  
CORRESPONDENCE**

**YEAR(S):**

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2000

215

# RICE Operating Company

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

NOV 27 2000

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. 7099 3220 0002 3946 8196**

November 21, 2000

Mr. William C. Olson  
NM Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
2040 S. Pacheco  
Santa Fe, NM 87505

RE: GROUND WATER CONTAMINATION  
ARCO SOUTH JUSTIS UNIT F-230  
JUSTIS SALT WATER DISPOSAL SYSTEM  
UNIT LETTER C, SEC 25, T25S, R37E  
LEA COUNTY, NEW MEXICO

Dear Mr. Olson:

Rice Operating Company (ROC) has completed the investigation and delineation of the near-area surrounding a Justis SWD System 4" PVC pipeline at the above-described site as directed by your letter of August 9, 2000. ROC confirms that the pipeline is active at this site, and to the southwest of the site, a pipeline vent is installed.

ROC was informed about this environmental project in August of 1998 by Bob Allen of Safety and Environmental Solutions, Inc., (SESI) a Hobbs NM consulting firm working for ARCO Permian. A meeting was conducted with ARCO Permian at the SESI office in Hobbs on August 24, 1998 to share information. A site investigation, visual and historic record review was conducted at that time (letter describing results is enclosed) and because of a clean boring near the pipeline and no record or evidence of accidental discharge from this pipeline or pressure vent device, it was determined that the Justis pipeline and nearby vent were not likely to have contributed to the groundwater impact at this site.

After receipt of NMOCD's August 9, 2000 request for a site investigation, ROC discussed this site impact with BP (formerly ARCO Permian), Margaret Lowe, and made plans to include BP in a near-pipeline investigative dig. ROC representatives again went to this site on August 18<sup>th</sup> and reviewed the topographical nature of the surrounding area. It was decided that on a date suitable to ROC and BP, ROC would arrange for a backhoe, work crew, and environmental technician to be at this site and conduct the following work plan:

1. The vadose zone on both sides and beneath the 4" PVC pipeline will be exposed in several strategic places for sample procurement.
2. Samples will be collected from several depths at each sampling site.

3. Samples will be field analyzed for volatile hydrocarbons with a PID meter, and for chlorides by silver nitrate titration.
4. Selected samples will have field results confirmed at Cardinal Laboratory in Hobbs, NM.
5. Sample results of this work plan will be compiled and reviewed.
6. Results, interpretation, conclusion, future work plan, etc. will be submitted to NMOCD with copies to BP and any other interested parties.

This site investigation was conducted November 3, 2000 with BP representative Kelley Murrish on site. James Sturgill, ROC, performed field chloride tests. Ms. Donna Williams of the Hobbs NMOCD was contacted before the work began but was unable to attend. (Because of wet and stormy weather conditions and uncertainty of a work-window, 48 hours notice was not given.)

Delineation results of the area surrounding the Justis SWD pipeline indicate that the SWD pipeline has not contributed to the groundwater impact at this site. Chloride tests were conducted at the site with clean background samples ranging 20-40 mg/l. Impact was revealed to range from 240 mg/l at 3' BGS to 150 mg/l at 8" BGS, indicative of a minor surface saltwater introduction that has been gradually migrating downward. Samples for TPH levels were submitted to Cardinal Labs of Hobbs and revealed no appreciable TPH content. Results of the chloride tests are compiled in the table below. Sample points define a section of the pipeline that is approximately 115' long and located the area to the south of the ARCO pit.

SOIL CHLORIDE CONTENT OF JUSTIS SWD PIPELINE EAST OF VENT C-25

| Feet BGS | C-2501     | C-2502      | C-2503     | C-2504      | C-2505     | C-2506      |
|----------|------------|-------------|------------|-------------|------------|-------------|
| 3'       |            | 230 mg/l Cl |            | 190 mg/l Cl |            |             |
| 5'       | 20 mg/l Cl |             |            |             |            |             |
| 6'       | 20 mg/l Cl | 240 mg/l Cl | 40 mg/l Cl | 190 mg/l Cl |            | 210 mg/l Cl |
| 8'       |            | 190 mg/l Cl |            | 150 mg/l Cl | 40 mg/l Cl | 150 mg/l Cl |

ROC is the service provider (operator) for the Justis Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Justis SWD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. If you have any questions or if I can be of any service, please don't hesitate to call.

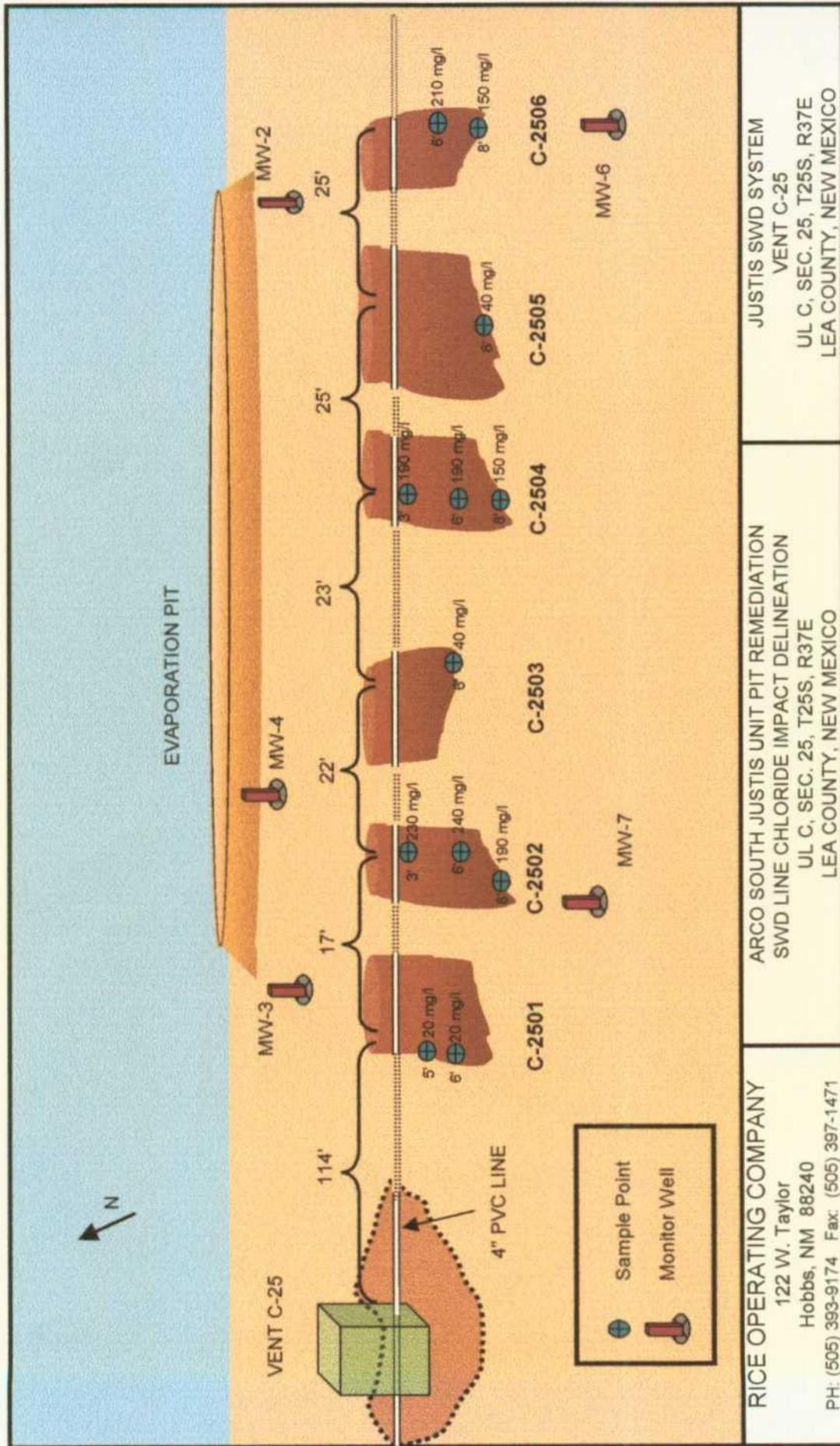
RICE OPERATING COMPANY



Carolyn Doran Haynes  
Operations Engineer

Enclosure: Analytical Results  
Cc: file, Ms. Donna Williams  
NMOCD, District I Office  
1625 N. French Drive  
Hobbs, NM 88240

Ms. Margaret Lowe  
BP - ARCO Permian Unit  
600 North Marienfeld  
Midland, TX 79702



**RICE OPERATING COMPANY**  
 122 W. Taylor  
 Hobbs, NM 88240  
 PH: (505) 393-9174 Fax: (505) 397-1471

**ARCO SOUTH JUSTIS UNIT PIT REMEDIATION**  
 SWD LINE CHLORIDE IMPACT DELINEATION  
 UL C, SEC. 25, T25S, R37E  
 LEA COUNTY, NEW MEXICO

**JUSTIS SWD SYSTEM**  
 VENT C-25  
 UL C, SEC. 25, T25S, R37E  
 LEA COUNTY, NEW MEXICO



# ARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

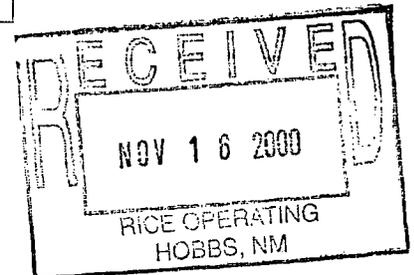
ANALYTICAL RESULTS FOR  
RICE OPERATING CO.  
ATTN: JAMES STURGILL  
122 W. TAYLOR  
HOBBS, NM 88240  
FAX TO:

Receiving Date: 11/13/00  
Reporting Date: 11/15/00  
Project Number: NOT GIVEN  
Project Name: UC-SEC25-T25S  
Project Location: NOT GIVEN

Sampling Date: 11/03/00  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: BC  
Analyzed By: BC

| LAB NUMBER                  | SAMPLE ID        | GRO<br>(C <sub>6</sub> -C <sub>10</sub> )<br>(mg/Kg) | DRO<br>(>C <sub>10</sub> -C <sub>28</sub> )<br>(mg/Kg) |
|-----------------------------|------------------|--|--|
| ANALYSIS DATE:              |                  | 11/14/00   | 11/14/00   |
| H5336-1                     | C-2501-114'E-6'D | <50  | <50  |
| H5336-2                     | C-2502-17'E-6'D  | <50  | <50  |
| H5336-3                     | C-2503-22'E-6'D  | <50  | <50  |
| H5336-4                     | C-2504-25'E-8'D  | <50  | <50  |
| H5336-5                     | C-2505-25'E-8'D  | <50  | <50  |
| H5336-6                     | C-2506-25'E-8'D  | <50  | <50  |
| Quality Control             |                  | 787  | 804  |
| True Value QC               |                  | 800  | 800  |
| % Recovery                  |                  | 98.3   | 100  |
| Relative Percent Difference |                  | 7.7  | 0.9  |

METHOD: SW-846 8015 M



James Sturgill  
Chemist

11/15/00  
Date

H5336.XLS

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



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

**CARDINAL LABORATORIES, INC.**

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240  
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page \_\_\_\_\_ of \_\_\_\_\_

| BILL TO                                     |  | ANALYSIS REQUEST |                   |                   |                   |                  |                  |              |                  |            |             |              |                  |            |            |           |           |            |             |              |                  |                  |      |      |
|---|--|------------------|-------------------|-------------------|-------------------|------------------|------------------|--------------|------------------|------------|-------------|--------------|------------------|------------|------------|-----------|-----------|------------|-------------|--------------|------------------|------------------|------|------|
| Company Name: <i>Rice Operating Company</i> |  | P.O. #:          | PRESERV           |                   | MATRIX            |                  |                  |              |                  | SAMPLING   |             |              |                  |            |            |           |           |            |             |              |                  |                  |      |      |
| Project Manager: <i>James Stegall</i>       |  | Company:         | OTHER:            | ICE/COOL          | OTHER:            | ACID/BASE:       | SLUDGE           | CRUDE OIL    | SOIL             | WASTEWATER | GROUNDWATER | # CONTAINERS | (G)RAB OR (COMP) | DATE       | TIME       |           |           |            |             |              |                  |                  |      |      |
| Address: <i>122 W TAYLOR</i>                |  | Attn:            | OTHER:            | CRUDE OIL         | SOIL              | WASTEWATER       | GROUNDWATER      | # CONTAINERS | (G)RAB OR (COMP) | DATE       | TIME        | OTHER:       | ICE/COOL         | OTHER:     | ACID/BASE: | SLUDGE    | CRUDE OIL | SOIL       | WASTEWATER  | GROUNDWATER  | # CONTAINERS     | (G)RAB OR (COMP) | DATE | TIME |
| City: <i>Hobbs</i>                          |  | State: <i>NM</i> | Zip: <i>88240</i> | Project Name:     | Project Location: | Sampler Name:    | FOR LAB USE ONLY | Lab I.D.     | Sample I.D.      | DATE       | TIME        | OTHER:       | ICE/COOL         | OTHER:     | ACID/BASE: | SLUDGE    | CRUDE OIL | SOIL       | WASTEWATER  | GROUNDWATER  | # CONTAINERS     | (G)RAB OR (COMP) | DATE | TIME |
| Phone #: <i>3928174</i>                     |  | Fax #:           | Project #:        | Project Name:     | Project Location: | Sampler Name:    | FOR LAB USE ONLY | Lab I.D.     | Sample I.D.      | DATE       | TIME        | OTHER:       | ICE/COOL         | OTHER:     | ACID/BASE: | SLUDGE    | CRUDE OIL | SOIL       | WASTEWATER  | GROUNDWATER  | # CONTAINERS     | (G)RAB OR (COMP) | DATE | TIME |
| Project #: <i>UC-See 25 Tass</i>            |  | Project Owner:   | Project Name:     | Project Location: | Sampler Name:     | FOR LAB USE ONLY | Lab I.D.         | Sample I.D.  | DATE             | TIME       | OTHER:      | ICE/COOL     | OTHER:           | ACID/BASE: | SLUDGE     | CRUDE OIL | SOIL      | WASTEWATER | GROUNDWATER | # CONTAINERS | (G)RAB OR (COMP) | DATE             | TIME |      |
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# **RICE** Operating Company

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

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. 7099 3220 0002 3946 8004**

September 21, 2000

Mr. William C. Olson  
NM Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
2040 S. Pacheco  
Santa Fe, NM 87505

RE: GROUND WATER CONTAMINATION  
ARCO SOUTH JUSTIS UNIT F-230  
JUSTIS SALT WATER DISPOSAL SYSTEM  
UNIT LETTER C, SEC 25, T25S, R37E  
LEA COUNTY, NEW MEXICO

Dear Mr. Olson:

Rice Operating Company (ROC) is in receipt of your letter informing of groundwater contamination at the above-described site. ROC confirms that a Justis SWD System 4" PVC pipeline is active at this site, and to the southwest of the site, a pipeline vent is installed.

ROC was informed about this environmental project in August of 1998 by Bob Allen of Safety and Environmental Solutions, Inc., (SESI) a Hobbs NM consulting firm working for ARCO Permian. A meeting was conducted with ARCO Permian at the SESI office in Hobbs on August 24 to share information. A site investigation, visual and historic record review was conducted at that time (letter describing results is enclosed) and because of a clean boring near the pipeline and no record or evidence of accidental discharge from this pipeline or pressure vent device, it was determined that the Justis pipeline and nearby vent were not likely to have contributed to the groundwater impact at this site.

After receipt of NMOCD's August 9, 2000 request for a site investigation, ROC discussed this site impact with BP (formerly ARCO Permian), Margaret Lowe, and made plans to include BP in a near-pipeline investigative dig. ROC representatives again went to this site on August 18<sup>th</sup> and reviewed the topographical nature of the surrounding area. It was decided that on a date

suitable to ROC and BP, ROC would arrange for a backhoe, work crew, and environmental technician to be at this site and conduct the following work plan:

1. The vadose zone on both sides and beneath the 4" PVC pipeline will be exposed in several strategic places for sample procurement.
2. Samples will be collected from several depths at each sampling site.
3. Samples will be field analyzed for volatile hydrocarbons with a PID meter, and for chlorides by silver nitrate titration.
4. Selected samples will have field results confirmed at Cardinal Laboratory in Hobbs, NM.
5. Sample results of this work plan will be compiled and reviewed.
6. Results, interpretation, conclusion, future work plan, etc. will be submitted to NMOCD with copies to BP and any other interested parties.

An estimated timeline for this site investigation to be conducted is the first week of October, probably either the 5<sup>th</sup> or 6<sup>th</sup>. NMOCD will be notified 48 hours in advance of the event. All sampling and analysis will be conducted pursuant to NMOCD guidelines.

ROC is the service provider (operator) for the Justis Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Justis SWD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

If you have any questions or if I can be of any service, please don't hesitate to call.

RICE OPERATING COMPANY



Carolyn Doran Haynes  
Operations Engineer

Enclosure: Letter to SESI dated 9/24/98

Cc: file, Ms. Donna Williams,  
NMOCD, District I Office  
1625 N. French Drive  
Hobbs, NM 88240

**RICE** *Operating Company*

122 West Taylor

HOBBS, NEW MEXICO 88240

(505) 393-9174

September 24, 1998

Safety & Environmental Solutions, Inc.  
703 East Clinton, Suite 103  
Hobbs, New Mexico 88240

ATTN: Mr. Bob Allen, President

RE: Pit Closure  
NW/4, 25-T25S-R37E  
Lea County, New Mexico

Mr. Allen:

Rice Operating Company (ROC) has completed an initial assessment of the potential for Vent C-25 and the associated pipeline to be a source of groundwater contamination at the above-referenced site. This assessment was performed in response to the concerns expressed by Safety & Environmental Solutions, Inc. (SES) and Arco Permian during our meeting on August 24, 1998. The assessment included a review of ROC files for historical evidence of a release, a review of investigation results supplied by SES, and a visual inspection of the site.

The subject pipeline is a 4-inch PVC line that was buried approximately 2.5 feet below ground surface. Both the file review and the visual inspection of the pipeline by ROC personnel identified no evidence of an active leak or record of a historical release/spill having occurred at the site

Based on information obtained during the ground water monitoring event conducted by SES on August 25, 1998, the depth to groundwater beneath the site ranges from approximately 60 feet to 63 feet below ground surface and the apparent direction of groundwater flow is towards the southeast. A base map depicting the top of the water table and direction of groundwater flow is enclosed.

The analytical results from the monitoring event indicate that dissolved chloride (Cl) and total dissolved solid (TDS) concentrations in the groundwater progressively increase in a downgradient direction. The two upgradient monitor wells MW-1 and MW-5 contained the lowest levels of CL and TDS as compared to the five downgradient wells. Cl and TDS levels ranged from 1,839 mg/l CL and 4,380 mg/l TDS in MW-1 to 24,186 mg/l CL and 58,260 mg/l TDS in MW-6.

The analytical results indicate a significant increase in CL and TDS levels between the wells located upgradient relative to the former pit area (MW-1 and MW-5) and the wells located downgradient from the former pit (MW-2, MW-3, MW-4, MW-6, and MW-7).

As shown on the enclosed map, all seven monitor wells are located upgradient to Vent C-25. Therefore Vent C-25 is not a potential source of the groundwater contamination.

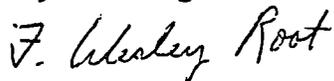
The portion of our pipeline that could be a potential source (located upgradient relative to the contamination identified in MW-6 and MW-7) is approximately 2.5 feet below ground surface. Any release from the line would have had to migrate downward through 60 feet of soil before impacting groundwater. The analytical results from soil samples collected when MW-2 was drilled recorded TPH (total petroleum hydrocarbon) and BTEX (benzene, toluene, ethylbenzene, and total xylenes) levels below method detection limits for all sampled intervals. While soil samples apparently were not collected when MW-6 and MW-7 were installed, no staining or other evidence of soil contamination was noted on the boring logs from these wells

Based on these findings, Vent C-25 and the associated pipeline are not a potential source of the groundwater contamination identified at this site.

If you have any questions, please feel free to call me at the phone number listed above.

Sincerely,

F. Wesley Root  
Projects Manager



Enclosure: Base Map

cc: KH  
JM  
File

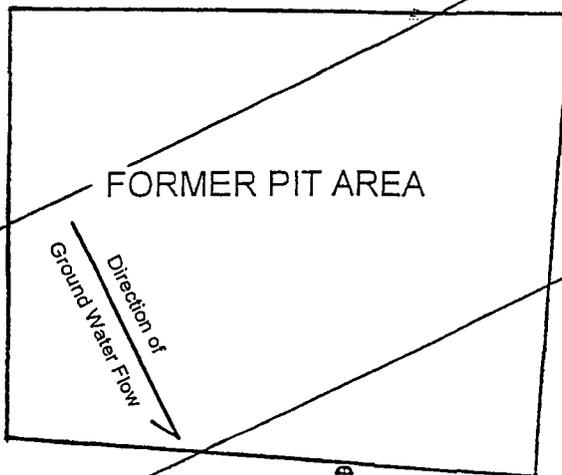
MW-5 ⊕ 3,002.85'  
 CL - 2,396  
 TDS - 5,430



MW-1 ⊕ 3,002.72'  
 CL - 1,839  
 TDS - 4,380

3,002.70'

3,002.60'



FORMER PIT AREA

Direction of  
Ground Water Flow

3,002.50'

3,002.45' ⊕ MW-4  
 CL - 6,910  
 TDS - 13,960

RICE OPERATING CO.  
4-INCH PVC PIPELINE

MW-3 ⊕ 3,002.47'

CL - 4,124  
 TDS - 8,840

MW-2 ⊕ 3,002.41'  
 CL - 2,731  
 TDS - 12,240

3,002.33' ⊕ MW-6  
 CL - 24,186  
 TDS - 58,260

3,002.31' ⊕ MW-7  
 CL - 3,288  
 TDS - 8,170

VENT C-25



CL = Chloride Concentration (mg/l)  
 TDS = Total Dissolved Solids Concentration (mg/l)  
 Contour Interval = 0.10 feet  
 Groundwater samples and gauging data obtained by SES on 8-25-98

Rice Operating Company  
 122 W. Taylor  
 Hobbs, NM 88240  
 Ph: (505) 393-9174 FAX 397-1471

Map Legend

- ⊕ - Monitor Well Location
  - - Junction Box
- Scale: 1 inch = 50 feet

BASE MAP

Vent C-25, Justis SWD System  
 Ltr C, Sec 25-T25S-R37E  
 Lea Co. NM



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**GARY E. JOHNSON**  
Governor  
**Jennifer A. Salisbury**  
Cabinet Secretary

**Lori Wrotenbery**  
Director  
Oil Conservation Division

August 9, 2000

**CERTIFIED MAIL**  
**RETURN RECEIPT NO: 5051-3426**

Ms. Carolyn Doran Haynes  
Rice Operating Company  
122 West Taylor  
Hobbs, New Mexico 88240

**RE: GROUND WATER CONTAMINATION  
ARCO SOUTH JUSTIS UNIT F-230**

Dear Ms. Haynes:

The New Mexico Oil Conservation Division (OCD) has recently reviewed reports from Arco Permian (Arco) on the results of ground water investigations related to a former unlined pit at the South Justis Unit F-230 site located in Unit C, Section 25, Township 25 South, Range 37, East, NMPM, Lea County, New Mexico. Copies of Arco's reports on the site are available for review at the OCD Santa Fe or Hobbs Office. The investigations have shown that, in addition to the petroleum contamination related to Arco's pit, the site contains an area of contaminated ground water in the direct vicinity of a Rice Operating Company (ROC) produced water pipeline. The ground water in this area is highly contaminated with total dissolved solids (TDS) and chlorides that do not appear to be related to Arco's operations. Therefore, OCD requires that ROC provide the OCD with a work plan to investigate the extent of contamination related to ROC's activities. The plan shall be submitted to the OCD Santa Fe Office by October 9, 2000 with a copy provided to the OCD Hobbs District Office.

If you have any questions, please contact me at (505) 827-7154 .

Sincerely,

A handwritten signature in cursive script that reads "William C. Olson".

William C. Olson  
Hydrologist  
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office  
Margaret Lowe, Arco Permian