

# **No Further Action Report SWMUs 7, 9, 10, 11, 12, 13**

**August 2001**

**Giant Refining Company  
Ciniza Refinery**

**Revision 0.0**

**Volume II**

**Submitted to: New Mexico Environment Department  
Hazardous and Radioactive Materials Bureau  
2905 Rodeo Park Road, Building E  
Santa Fe, New Mexico 87505**

**Prepared by: Ciniza Refinery  
Route 3, Box 7  
Gallup, New Mexico 87301**

**RECEIVED  
SEP 12 2001  
Environmental Bureau  
Oil Conservation Division**

## SWMU No. 7, *Fire Training Area*

The fire training area was identified as a solid waste management unit (SWMU) and designated as SWMU No. 7 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation included soil sampling and analysis, which indicated the presence of hydrocarbon contaminants above State of New Mexico corrective action levels. As a result of the investigation, Applied Earth Services (AES) recommended in-situ bioremediation for this SWMU. Results and recommendations were reported to the U.S. Environmental Protection Agency (EPA) in 1992. In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling and analysis demonstrated that hydrocarbon contaminants were confined to near-surface soils adjacent to a fire-training tank.

SWMU No. 7 was recommended for corrective action in the Phase III RFI and a voluntary corrective action plan (VCAP) was submitted in March 1993. The VCAP recommends removing the existing steel tank, aerating the soils beneath the tank to a depth of 5 feet, amending soils with fertilizer and water to increase biological degradation, and monitoring the area quarterly. When oil and grease are at or below cleanup levels, closure will be initiated. The EPA approved the VCAP January 5, 1994. After removal of contaminated soil, the fire training area was capped in 1999 in conjunction with the closure of SWMU No. 11; in 2000 a concrete pad was added.

### 7.1 Site Description and Operational History

SWMU No. 7, Fire Training Area, (Figures 7-1 through 7-7) consists of the fire training area located adjacent to the idle process equipment storage area, approximately 700 feet north of the tank farm. It is a rectangular flat site measuring approximately 50 feet wide by 80 feet long and contains a firewater header, a 4-foot-high by 16-foot-diameter tank, and an industrial pump on a cement pedestal. The fire training area is used two to three times a year to train Ciniza fire crews. Refinery employees are trained in the proper techniques for extinguishing fires that are created in the equipment using diesel fuel. Photographs of the fire training area, taken during the 1998 site inspection performed by Practical Environmental Services (PES), are provided in SWMU No.6 Summary Report. In 1999 the impacted soil from beneath and surrounding the tanks and other equipment was removed and transported to a holding area near SWMU No. 8, the Railroad Rack Lagoon.

### 7.2 Land Use

The contaminated soil from fire training area has been removed using methods and materials consistent with the New Mexico Environment Department (NMED) requirements and regulations as set forth in

20.4.1 New Mexico Administrative Code 9.1 Section 502. The contaminated soil was replaced with clean fill dirt. The fire training area continues to be used for its stated purpose. The land will continue under the ownership of the Ciniza refinery.

### 7.3 Investigation Activities

Applied Earth Sciences (AES) investigated the fire training area during the early 1990s. Soil samples from within the fire training area were collected and analyzed during the initial site investigation and subsequent resampling at greater depth.

#### 7.3.1 Investigation #1

During the initial site investigation in 1992, AES collected samples at four locations and three depths: surface, 3 feet, and 4.5 feet below ground surface. Diesel fuel, analyzed as oil and grease, was detected in 10 of 12 samples. Surface samples collected adjacent to the fire-training tank indicated the highest levels of detection at approximately 3 percent.

#### 7.3.2 Investigation #2

In 1994, AES conducted a second round of sampling and analysis at two locations and depths of 7 and 11 feet below ground surface. Oil and grease and total petroleum hydrocarbon (TPH) were not detected in any of the samples. Trace di-n-butyl phthalate, a diesel constituent, was detected in two samples.

The State of New Mexico corrective action level for diesel fuel in soil is 100 mg/kg, measured as TPH.

### 7.4 Site Conceptual Model

There is no impact on the environmental fate of the land.

### 7.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- The fire training area remains in active service at the refinery.
- No soil staining or distressed vegetation was present at or in the vicinity of the fire training equipment.
- Local soil in the vicinity of the fire training area is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

1 PES did not perform any sampling or analysis during this site inspection. The inspection was limited only  
2 to visual observations.

3 Based on this assessment, PES determined SWMU No. 7 has been characterized in accordance with  
4 current applicable state and federal regulations and that removal of impacted soil is the recommended  
5 corrective action for this site.

#### 6 7.6 NFA Proposal

7 Ciniza is proposing that no further action is required for SWMU No. 7 based on the following criterion: A  
8 release from the SWMU to the environment has occurred, but the SWMU has been characterized and  
9 remediated in accordance with current applicable state regulations, which adequately addressed RCRA  
10 corrective action. Documentation, such as a closure letter, is available. (NFA Criterion 4)

11 The following is the basis for this proposal:

- 12 • Although the fire training area remains in active service as a necessary component of the  
13 refinery's safety program, the fire training equipment is relocated to a concrete curbed pad  
14 that minimizes any future release.
- 15 • Contaminated soil has been removed from the site and replaced with clean fill dir
- 16 • Soil sampling and analysis has not detected spilled diesel fuel in surface soil adjacent to the  
17 firefighting demonstration tank.
- 18 • Firefighting demonstration equipment is no longer located on bare earth.



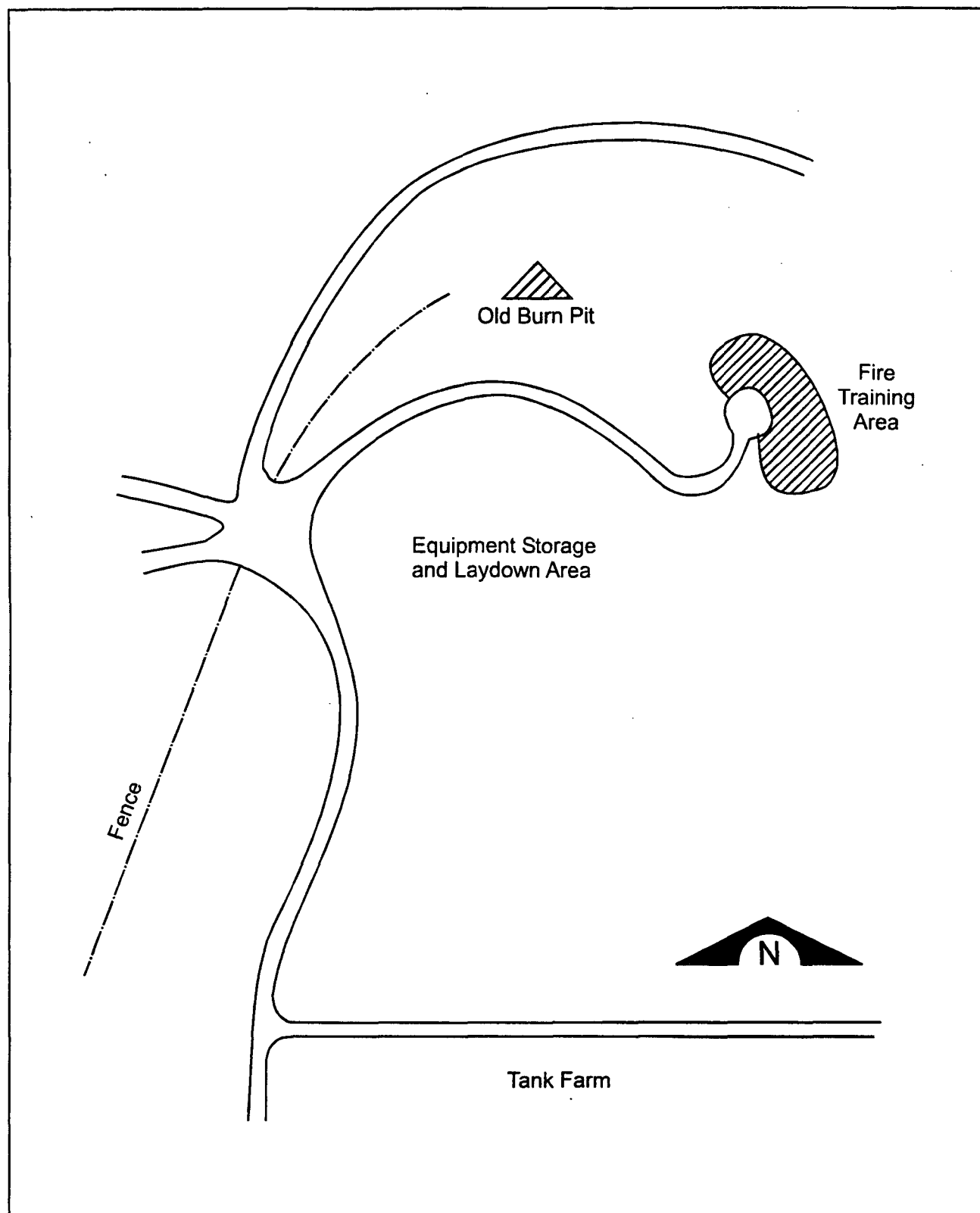


Figure 7-1. SWMU No. 7, Fire Training Area

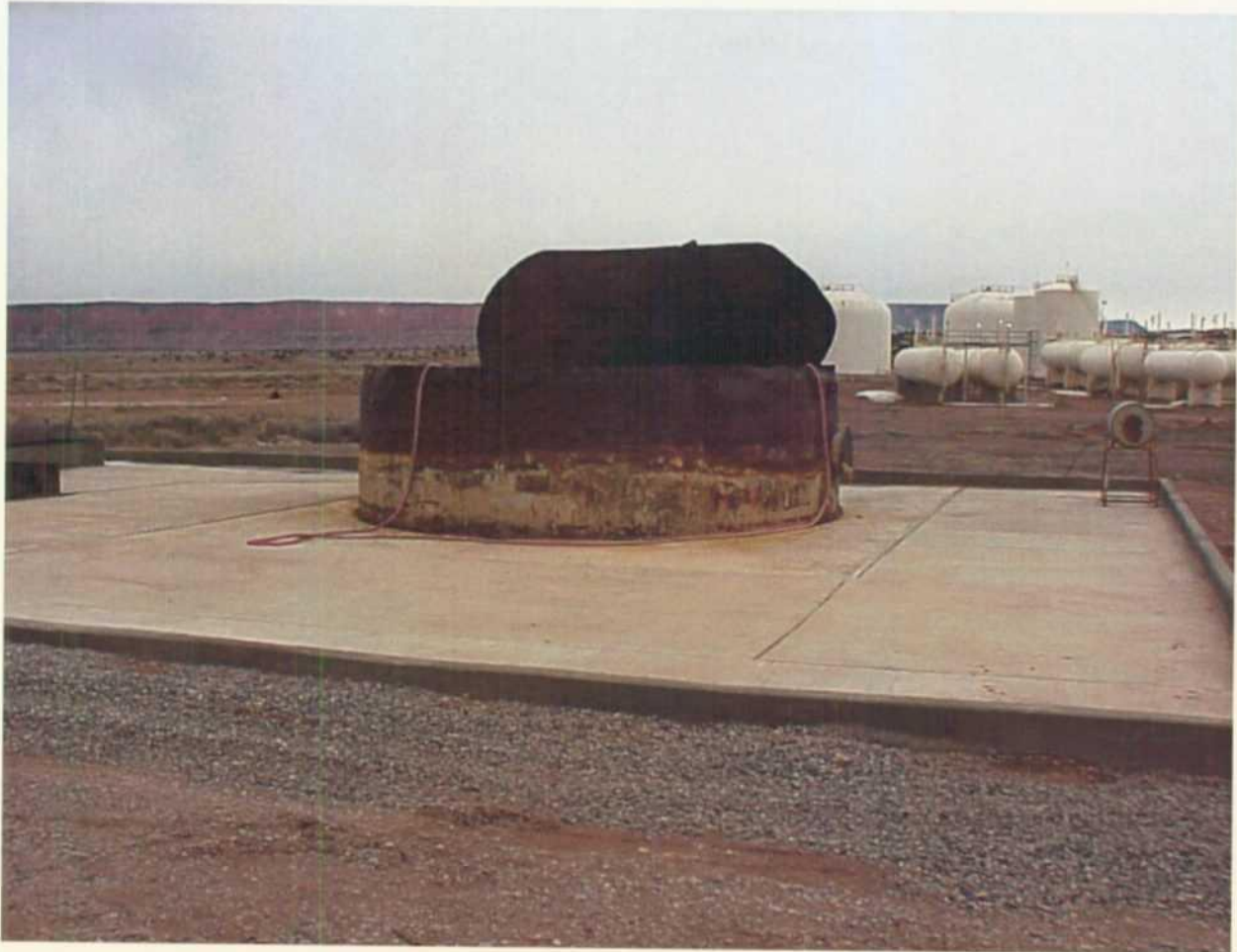


Figure 7-2. SWMU No. 7, Fire Training Area



Figure 7-3. SWMU No. 7, Fire Training Area



Figure 7-4. SWMU No. 7, Fire Training Area Sump





Figure 7-5. SWMU No. 7, Fire Training Area



Figure 7-6. SWMU No. 7, Fire Training Area



Figure 7-7. SWMU No. 7, Fire Training Area



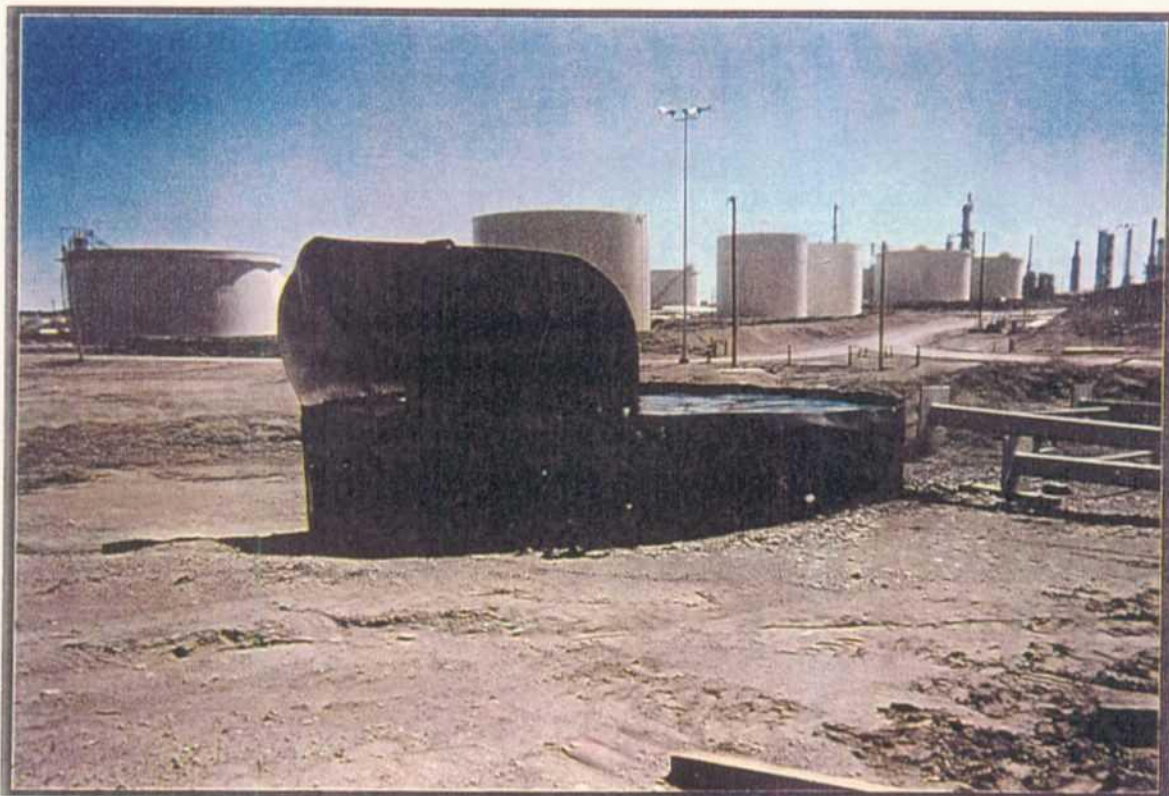
# SWMU #7 Summary Report

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## Fire Training Area

Ciniza Refinery

McKinley County, New Mexico



Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998



## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the fire training area located at the Ciniza Refinery, in McKinley County, New Mexico.

The fire training area was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #7, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, detected hydrocarbon contaminants, and recommended corrective action.

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested additional sampling at greater depth. These results demonstrated that hydrocarbon contaminants were confined to near-surface soils adjacent to a tank.

This summary report for SWMU #7 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #7 have been completed. This assessment is summarized as follows.

- ⇒ The fire training area remains in active service at the refinery and is used to train employees in safe firefighting techniques.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent re-investigation at greater depth. Diesel fuel was detected in surface soil at the site.
- ⇒ Contaminated soil should be removed from the site and replaced with clean fill dirt prior to closure.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the fire training area was identified as SWMU #7.

Applied Earth Sciences (AES) investigated the fire training area during the early 1990s. Soil samples were collected and analyzed. Hydrocarbon contaminants were detected above State of New Mexico corrective action levels.

As a result of the investigation, AES recommended in-situ bioremediation for this SWMU. Results and recommendations were reported to the EPA in 1992. In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling and analysis demonstrated that hydrocarbon contaminants were confined to near-surface soils adjacent to a firefighting training tank.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMU #7 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #7 is located approximately 700 feet north of the tank farm. See Figure No. 1 for location details.

The fire training area is a rectangular flat site measuring approximately 50 feet wide by 80 feet long. Within this area, several firefighting demonstration apparatus are located; including a tank, pump, column, and piping manifold. Approximately twice a year, diesel fuel is used to create fires within this equipment and refinery employees train in proper techniques for extinguishing the fires.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Photographs are included in the appendix to this report. Observations are noted as follows:

- The fire training area remains in active service at the refinery.
- At the time of the inspection, no soil staining or distressed vegetation was present at or in the vicinity of the fire training equipment.
- Local soil in the vicinity of the fire training area presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

### 5.0 DATA REVIEW

Soil samples from within the fire training area were collected and analyzed during the initial site investigation and subsequent re-sampling at greater depth.

In 1992, the initial site investigation collected samples at four locations and three depths; surface, 3 feet, and 4.5 feet below ground surface. Diesel fuel, analyzed as oil & grease, was detected in 10 of 12 samples. Surface samples collected adjacent to the tank indicated the highest levels of detection at approximately 3 percent.

In 1994, a second round of sampling and analysis was conducted at two locations and depths of 7 and 11 feet below ground surface. Oil & Grease and Total Petroleum Hydrocarbon (TPH) were not detected in any sample. Trace di-n-butyl phthalate, a diesel constituent, was detected in two samples.

The State of New Mexico corrective action level for diesel fuel in soil is 100 mg/kg; measured as TPH.

## 6.0 ASSESSMENT

Based on the site inspection and data review, the fire training area is assessed as follows.

- The fire training area remains in active service and is a necessary component of the refinery's safety program.
- Soil sampling and analysis has detected spilled diesel fuel in surface soil adjacent to the firefighting demonstration tank.
- Continuing releases of diesel fuel can be expected as long as firefighting demonstration equipment is located on bare earth. Relocation of this equipment to a concrete curbed pad will minimize future releases.
- Contaminated soil from beneath and surrounding the tank should be removed and replaced with clean fill dirt prior to site closure.

## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This summary report for SWMU #7 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

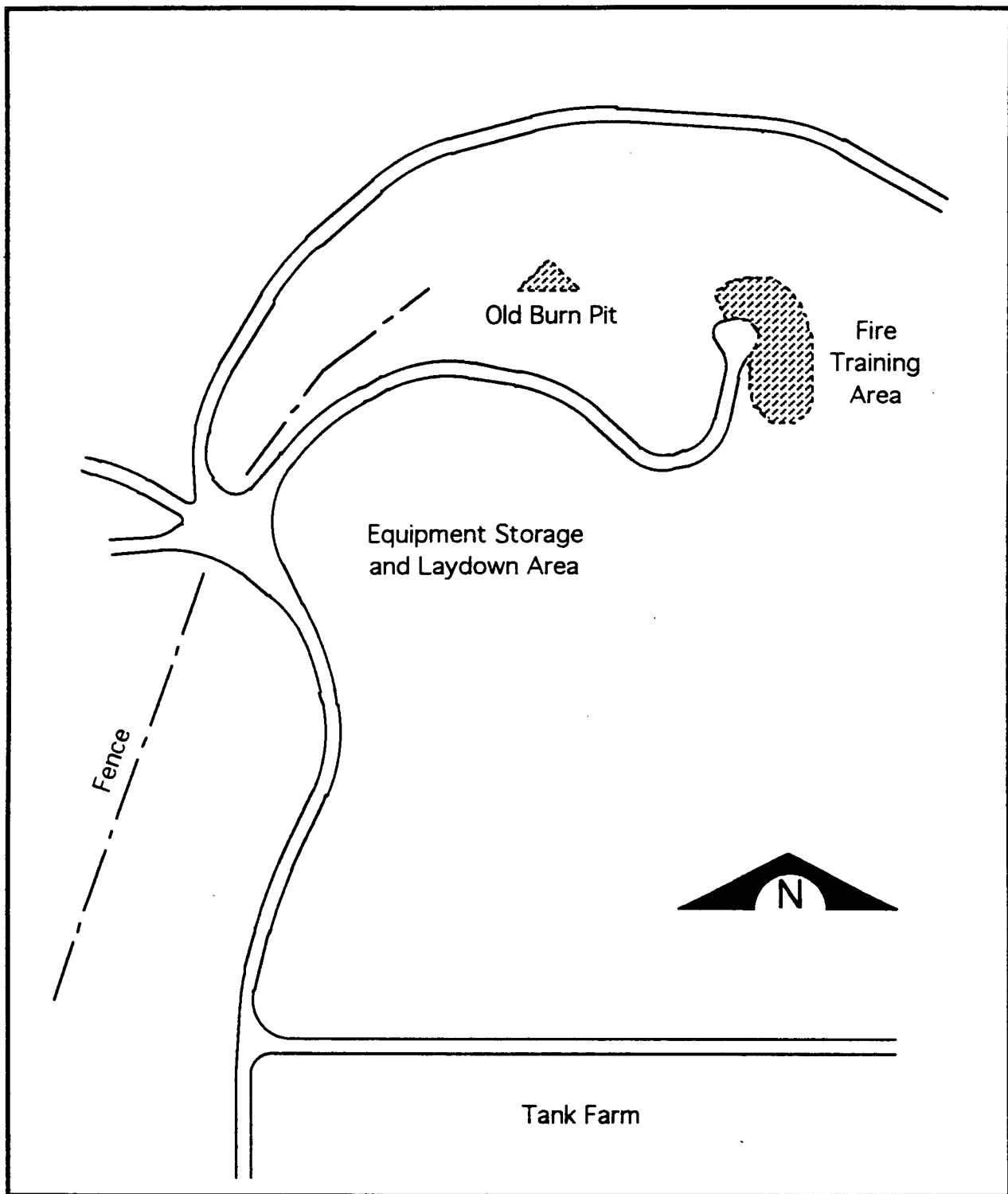
Date: April 23, 1998

Prepared and Certified by:



Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

Figure No. 1  
Fire Training Area



## Site Inspection Photographs

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Firefighting Demonstration Equipment – Piping Manifold

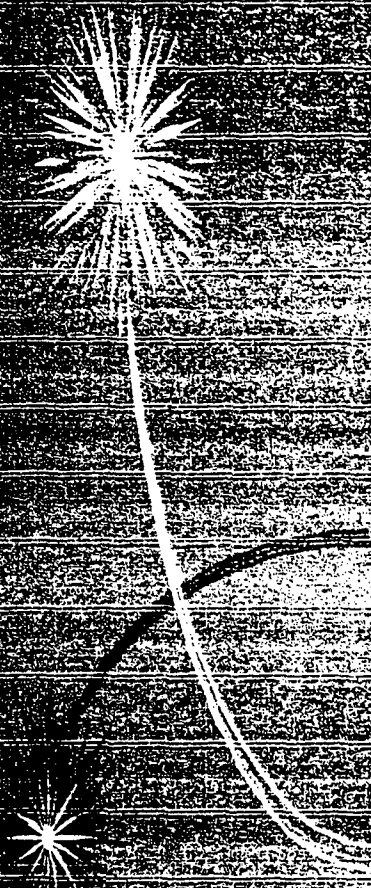


Firefighting Demonstration Equipment – Pump & Column

**GIANT**

**REFINING CO.**

# SWMU-7 FIRE TRAINING AREA



SWMU # 3 - EMPTY CONTAINER STORAGE AREA  
PARAMETERS - 8240 PRIORITY POLLUTANTS  
12 SAMPLES

SWMU # 4 - BURN PIT  
PARAMETERS - pH  
~~8240 PRIORITY~~ SKINNER LIST ORGANICS  
BACKGROUND METALS  
9 SAMPLES

SWMU # 5 - FOUR LAND FILLS  
PARAMETERS - 8240 PRIORITY POLLUTANTS  
BACKGROUND METALS  
pH

48 SAMPLES

SWMU # 7 - FIRE TRAINING AREA  
PARAMETERS - TPH  
OIL & GREASE  
12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER + ASSC. DITCH  
PARAMETERS - ~~8240 PRIORITY~~ SKINNER LIST (CONSTITUENTS)  
ORGANICS  
4 SAMPLES

85 INDIVIDUAL SAMPLES

## FACSIMILE TRANSMITTAL



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-3733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Cimarr

MACHINE NUMBER: 505.722.0210

VERIFICATION NUMBER: 505.722.0227

FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist

PHONE: (214) 665-8302

Mail Codes: GFD-N

OFFICE: New Mexico/Federal Facilities Section

PAGES, INCLUDING COVER SHEET

3

DATE: March 15, 1996

PLEASE NUMBER ALL PAGES

## INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT:

FACSIMILE NUMBER:

VERIFICATION NUMBER:

PANAFAX UF-766

(214) 665-8762

(214) 665-8760

## COMMENTS

Ed,

Here's what I have been using to track Giant, Cimarr's corrective action program. Please review and let's discuss it next week. Have a good one.

Thank,

JAMES









2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107

GIANT REFINING COMPANY  
ROUTE 3 BOX 7  
GALLUP, NM 87301

Project Name SWMU #7  
Project Number (none)

Attention: STEVE MORRIS

On 6/7/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **non-aq** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill  
Project Manager

H. Mitchell Rubenstein, Ph.D.  
General Manager

MR: mt

Enclosure



2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

CLIENT : GIANT REFINING COMPANY  
PROJECT # : (none)  
PROJECT NAME : SWMU #7

PINNACLE ID : 906034  
DATE RECEIVED : 6/7/99  
REPORT DATE : 6/30/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	SWMU-7-E-4FT-060399	NON-AQ	6/3/99
02	SWMU-7-S-4FT-060399	NON-AQ	6/3/99
03	SWMU-7-N-4FT-060399	NON-AQ	6/3/99
04	TRIP BLANK	AQUEOUS	4/29/99



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Fax (505) 344-4413

# GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 906034  
PROJECT # : NONE DATE RECEIVED : 6/7/99  
PROJECT NAME : SWMU #7

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
906034-01	SWMU-7-E-4FT 060399	SOIL	6/3/99	6/11/99	06/11/99	1
PARAMETER	DET. LIMIT	UNITS				

Chloromethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Acetone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
1,1-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Methylene Chloride	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,4-Dioxane	5.0	< 5.2	MG/KG	(DRY WEIGHT)
1,1-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
trans-1,2-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroform	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,1-Trichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Trichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Tetrachloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,2,2-Tetrachloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)

## SURROGATE % RECOVERY

1,2-Dichloroethane-d4	97 ( 80 - 120 )
Toluene-d8	106 ( 81 - 117 )
Bromofluorobenzene	100 ( 74 - 121 )

% Dry Weight 96%



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### GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 906034  
PROJECT # : NONE DATE RECEIVED : 6/7/99  
PROJECT NAME : SWMU #7

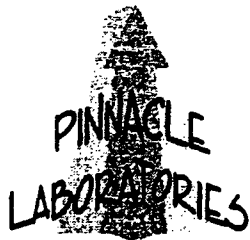
SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
906034-02	SWMU-7-S-4FT 060399	SOIL	6/3/99	6/11/99	06/11/99	1
PARAMETER	DET. LIMIT	UNITS				

Chloromethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Acetone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
1,1-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Methylene Chloride	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,4-Dioxane	5.0	< 5.3	MG/KG	(DRY WEIGHT)
1,1-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
trans-1,2-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroform	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,1-Trichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Trichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Tetrachloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,2,2-Tetrachloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)

### SURROGATE % RECOVERY

1,2-Dichloroethane-d4	97 ( 80 - 120 )
Toluene-d8	100 ( 81 - 117 )
Bromofluorobenzene	94 ( 74 - 121 )

% Dry Weight 95%



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### GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 906034  
PROJECT # : NONE DATE RECEIVED : 6/7/99  
PROJECT NAME : SWMU #7

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
906034-03	SWMU-7-N-4FT 060399	SOIL	6/3/99	6/11/99	06/11/99	1
PARAMETER	DET. LIMIT	UNITS				

Chloromethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Acetone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
1,1-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Methylene Chloride	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,4-Dioxane	5.0	< 5.4	MG/KG	(DRY WEIGHT)
1,1-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
trans-1,2-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroform	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,1-Trichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Trichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Tetrachloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,2,2-Tetrachloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)

### SURROGATE % RECOVERY

1,2-Dichloroethane-d4	102 ( 80 - 120 )
Toluene-d8	103 ( 81 - 117 )
Bromofluorobenzene	98 ( 74 - 121 )
% Dry Weight	92%



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# GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 906034  
PROJECT # : NONE DATE RECEIVED : 6/7/99  
PROJECT NAME : SWMU #7

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
906034-04	TRIP BLANK	AQUEOUS	4/29/99	N/A	06/11/99	1
PARAMETER	DET. LIMIT	UNITS				

Chloromethane	1.00	< 1.00	ug/L
Acetone	0.5	< 10.0	ug/L
1,1-Dichloroethene	1.00	< 1.00	ug/L
Methylene Chloride	1.00	< 1.00	ug/L
1,4-Dioxane	100	< 100	ug/L
1,1-Dichloroethane	1.00	< 1.00	ug/L
trans-1,2-Dichloroethene	1.00	< 1.00	ug/L
2-Butanone	0.5	< 10.0	ug/L
Carbon Disulfide	1.00	< 1.00	ug/L
Chloroform	1.00	< 1.00	ug/L
1,2-Dichloroethane	1.00	< 1.00	ug/L
1,1,1-Trichloroethane	1.00	< 1.00	ug/L
Benzene	1.00	< 1.00	ug/L
Trichloroethene	1.00	< 1.00	ug/L
Toluene	1.00	< 1.00	ug/L
1,2-Dibromoethane	1.00	< 1.00	ug/L
Tetrachloroethene	1.00	< 1.00	ug/L
Chlorobenzene	1.00	< 1.00	ug/L
Ethylbenzene	1.00	< 1.00	ug/L
o-Xylene	1.00	< 1.00	ug/L
m&p Xylenes	1.00	< 1.00	ug/L
Styrene	1.00	< 1.00	ug/L
1,1,2,2-Tetrachloroethane	1.00	< 1.00	ug/L

## SURROGATE % RECOVERY

1,2-Dichloroethane-d4	104 ( 80 - 120 )
Toluene-d8	102 ( 88 - 110 )
Bromofluorobenzene	96 ( 86 - 115 )





2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

### GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 906034  
PROJECT # : NONE  
PROJECT NAME : SWMU #7

SAMPLE ID #	BATCH	MATRIX	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
EXTRACTION BLANK	061199	SOIL	6/11/99	06/11/99	1
PARAMETER	DET. LIMIT	UNITS			

Chloromethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Acetone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
1,1-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Methylene Chloride	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,4-Dioxane	0.05	< 5.0	MG/KG	(DRY WEIGHT)
1,1-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
trans-1,2-Dichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroform	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,1-Trichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Trichloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Tetrachloroethene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,1,2,2-Tetrachloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)

### SURROGATE % RECOVERY

1,2-Dichloroethane-d4	78*
	( 80 - 120 )
Toluene-d8	80*
	( 81 - 117 )
Bromofluorobenzene	75
	( 74 - 121 )

\*SURROGATES SLIGHTLY LOW, SEE OOC FORM.

# *Environmental Services Laboratory, Inc.*



17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

June 28, 1999

Kim McNeill  
Pinnacle Laboratories  
2709-D Pan American Fwy NE  
Albuquerque, NM 87107

TEL: 505-344-3777

FAX (505) 344-4413

RE: 906034/GRC/SWMU #7

Order No.: 9906062

Dear Kim McNeill,

Environmental Services Laboratory received 3 samples on 06/09/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:

PERCENT MOISTURE (D2216)

SKINNER LIST-SEMI VOL MASS SPEC (SW8270B)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Kimberly Hill  
Project Manager

Technical Review

# Environmental Services Laboratory

Date: 28-Jun-99

CLIENT: Pinnacle Laboratories  
Lab Order: 9906062  
Project: 906034/GRC/SWMU #7  
Lab ID: 9906062-01A

Client Sample ID: SWMU-7-E-4FT-060399  
Tag Number:  
Collection Date: 06/03/99  
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SKINNER LIST-SEMI VOL MASS SPEC						Analyst: keh
1,2-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	06/16/99
1,3-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	06/16/99
1,4-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	06/16/99
1-Methylnaphthalene	ND	0.192		mg/Kg-dry	1	06/16/99
2,4,6-Trichlorophenol	ND	0.192		mg/Kg-dry	1	06/16/99
2,4-Dimethylphenol	ND	0.192		mg/Kg-dry	1	06/16/99
2,4-Dinitrophenol	ND	0.384		mg/Kg-dry	1	06/16/99
2-Chlorophenol	ND	0.192		mg/Kg-dry	1	06/16/99
2-Methylnaphthalene	ND	0.192		mg/Kg-dry	1	06/16/99
2-Methylphenol	ND	0.192		mg/Kg-dry	1	06/16/99
3&4-Methylphenol	ND	0.192		mg/Kg-dry	1	06/16/99
3-Methylcholanthrene	ND	0.192		mg/Kg-dry	1	06/16/99
4-Nitrophenol	ND	0.384		mg/Kg-dry	1	06/16/99
6-Methyl Chrysene	ND	0.192		mg/Kg-dry	1	06/16/99
7,12-Dimethylbenz(a)anthracene	ND	0.192		mg/Kg-dry	1	06/16/99
Anthracene	ND	0.192		mg/Kg-dry	1	06/16/99
Benz(a)anthracene	ND	0.192		mg/Kg-dry	1	06/16/99
Benzo(a)pyrene	ND	0.192		mg/Kg-dry	1	06/16/99
Benzo(b)&(j)fluoranthene	ND	0.192		mg/Kg-dry	1	06/16/99
Benzo(k)fluoranthene	ND	0.192		mg/Kg-dry	1	06/16/99
Benzyl alcohol	ND	0.384		mg/Kg-dry	1	06/16/99
Bis(2-ethylhexyl)phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Butyl benzyl phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Chrysene	ND	0.192		mg/Kg-dry	1	06/16/99
Di-n-butyl phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Di-n-octyl phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Dibenz(a,h)acridine	ND	0.192		mg/Kg-dry	1	06/16/99
Dibenz(a,h)anthracene	ND	0.192		mg/Kg-dry	1	06/16/99
Dibenz(a,j)acridine	ND	0.192		mg/Kg-dry	1	06/16/99
Diethyl phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Dimethyl phthalate	ND	0.192		mg/Kg-dry	1	06/16/99
Fluoranthene	ND	0.192		mg/Kg-dry	1	06/16/99
Indene	ND	0.192		mg/Kg-dry	1	06/16/99
Indeno(1,2,3-cd)pyrene	ND	0.192		mg/Kg-dry	1	06/16/99
Naphthalene	ND	0.192		mg/Kg-dry	1	06/16/99
Phenanthrene	ND	0.192		mg/Kg-dry	1	06/16/99
Phenol	ND	0.192		mg/Kg-dry	1	06/16/99
Pyrene	ND	0.192		mg/Kg-dry	1	06/16/99
Pyridine	ND	0.192		mg/Kg-dry	1	06/16/99
Quinoline	ND	0.192		mg/Kg-dry	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

**Environmental Services Laboratory**

Date: 28-Jun-99

**CLIENT:** Pinnacle Laboratories  
**Lab Order:** 9906062  
**Project:** 906034/GRC/SWMU #7  
**Lab ID:** 9906062-01A

**Client Sample ID:** SWMU-7-E-4FT-060399  
**Tag Number:**  
**Collection Date:** 06/03/99  
**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Thiophenol	ND	0.192		mg/Kg-dry	1	06/16/99
Surr: 2,4,6-Tribromophenol	74.6	19-122		%REC	1	06/16/99
Surr: 2-Fluorobiphenyl	73.7	30-115		%REC	1	06/16/99
Surr: 2-Fluorophenol	71.1	25-121		%REC	1	06/16/99
Surr: 4-Terphenyl-d14	82.2	18-137		%REC	1	06/16/99
Surr: Nitrobenzene-d5	72.7	23-120		%REC	1	06/16/99
Surr: Phenol-d5	73.9	24-113		%REC	1	06/16/99
<b>PERCENT MOISTURE</b>		<b>ASTM</b>				Analyst: kfl
% Moisture	13	0.		wt%	1	06/15/99

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

# Environmental Services Laboratory

Date: 28-Jun-99

CLIENT: Pinnacle Laboratories  
Lab Order: 9906062  
Project: 906034/GRC/SWMU #7  
Lab ID: 9906062-02A

Client Sample ID: SWMU-7-S-4FT-060399  
Tag Number:  
Collection Date: 06/03/99  
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SKINNER LIST-SEMI VOL MASS SPEC						Analyst: keh
1,2-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	06/16/99
1,3-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	06/16/99
1,4-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	06/16/99
1-Methylnaphthalene	ND	0.196		mg/Kg-dry	1	06/16/99
2,4,6-Trichlorophenol	ND	0.196		mg/Kg-dry	1	06/16/99
2,4-Dimethylphenol	ND	0.196		mg/Kg-dry	1	06/16/99
2,4-Dinitrophenol	ND	0.393		mg/Kg-dry	1	06/16/99
2-Chlorophenol	ND	0.196		mg/Kg-dry	1	06/16/99
2-Methylnaphthalene	ND	0.196		mg/Kg-dry	1	06/16/99
2-Methylphenol	ND	0.196		mg/Kg-dry	1	06/16/99
3&4-Methylphenol	ND	0.196		mg/Kg-dry	1	06/16/99
3-Methylcholanthrene	ND	0.196		mg/Kg-dry	1	06/16/99
4-Nitrophenol	ND	0.393		mg/Kg-dry	1	06/16/99
6-Methyl Chrysene	ND	0.196		mg/Kg-dry	1	06/16/99
7,12-Dimethylbenz(a)anthracene	ND	0.196		mg/Kg-dry	1	06/16/99
Anthracene	ND	0.196		mg/Kg-dry	1	06/16/99
Benz(a)anthracene	ND	0.196		mg/Kg-dry	1	06/16/99
Benzo(a)pyrene	ND	0.196		mg/Kg-dry	1	06/16/99
Benzo(b)&(j)fluoranthene	ND	0.196		mg/Kg-dry	1	06/16/99
Benzo(k)fluoranthene	ND	0.196		mg/Kg-dry	1	06/16/99
Benzyl alcohol	ND	0.393		mg/Kg-dry	1	06/16/99
Bis(2-ethylhexyl)phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Butyl benzyl phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Chrysene	ND	0.196		mg/Kg-dry	1	06/16/99
Di-n-butyl phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Di-n-octyl phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Dibenz(a,h)acridine	ND	0.196		mg/Kg-dry	1	06/16/99
Dibenz(a,h)anthracene	ND	0.196		mg/Kg-dry	1	06/16/99
Dibenz(a,j)acridine	ND	0.196		mg/Kg-dry	1	06/16/99
Diethyl phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Dimethyl phthalate	ND	0.196		mg/Kg-dry	1	06/16/99
Fluoranthene	ND	0.196		mg/Kg-dry	1	06/16/99
Indene	ND	0.196		mg/Kg-dry	1	06/16/99
Indeno(1,2,3-cd)pyrene	ND	0.196		mg/Kg-dry	1	06/16/99
Naphthalene	ND	0.196		mg/Kg-dry	1	06/16/99
Phenanthrene	ND	0.196		mg/Kg-dry	1	06/16/99
Phenol	ND	0.196		mg/Kg-dry	1	06/16/99
Pyrene	ND	0.196		mg/Kg-dry	1	06/16/99
Pyridine	ND	0.196		mg/Kg-dry	1	06/16/99
Quinoline	ND	0.196		mg/Kg-dry	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

**Environmental Services Laboratory**

Date: 28-Jun-99

**CLIENT:** Pinnacle Laboratories**Client Sample ID:** SWMU-7-S-4FT-060399**Lab Order:** 9906062**Tag Number:****Project:** 906034/GRC/SWMU #7**Collection Date:** 06/03/99**Lab ID:** 9906062-02A**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Thiophenol	ND	0.196		mg/Kg-dry	1	06/16/99
Surr: 2,4,6-Tribromophenol	66.1	19-122		%REC	1	06/16/99
Surr: 2-Fluorobiphenyl	61.5	30-115		%REC	1	06/16/99
Surr: 2-Fluorophenol	61.6	25-121		%REC	1	06/16/99
Surr: 4-Terphenyl-d14	72.9	18-137		%REC	1	06/16/99
Surr: Nitrobenzene-d5	64.7	23-120		%REC	1	06/16/99
Surr: Phenol-d5	63.2	24-113		%REC	1	06/16/99
<b>PERCENT MOISTURE</b>		<b>ASTM</b>				<b>Analyst: kfl</b>
% Moisture	15	0.		wt%	1	06/15/99

**Qualifiers:** ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level

# Environmental Services Laboratory

Date: 28-Jun-99

CLIENT: Pinnacle Laboratories

Client Sample ID: SWMU-7-N-4FT-060399

Lab Order: 9906062

Tag Number:

Project: 906034/GRC/SWMU #7

Collection Date: 06/03/99

Lab ID: 9906062-03A

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SKINNER LIST-SEMI VOL MASS SPEC						Analyst: keh
1,2-Dichlorobenzene	ND	0.201		mg/Kg-dry	1	06/16/99
1,3-Dichlorobenzene	ND	0.201		mg/Kg-dry	1	06/16/99
1,4-Dichlorobenzene	ND	0.201		mg/Kg-dry	1	06/16/99
1-Methylnaphthalene	ND	0.201		mg/Kg-dry	1	06/16/99
2,4,6-Trichlorophenol	ND	0.201		mg/Kg-dry	1	06/16/99
2,4-Dimethylphenol	ND	0.201		mg/Kg-dry	1	06/16/99
2,4-Dinitrophenol	ND	0.402		mg/Kg-dry	1	06/16/99
2-Chlorophenol	ND	0.201		mg/Kg-dry	1	06/16/99
2-Methylnaphthalene	ND	0.201		mg/Kg-dry	1	06/16/99
2-Methylphenol	ND	0.201		mg/Kg-dry	1	06/16/99
3&4-Methylphenol	ND	0.201		mg/Kg-dry	1	06/16/99
3-Methylcholanthrene	ND	0.201		mg/Kg-dry	1	06/16/99
4-Nitrophenol	ND	0.402		mg/Kg-dry	1	06/16/99
6-Methyl Chrysene	ND	0.201		mg/Kg-dry	1	06/16/99
7,12-Dimethylbenz(a)anthracene	ND	0.201		mg/Kg-dry	1	06/16/99
Anthracene	ND	0.201		mg/Kg-dry	1	06/16/99
Benz(a)anthracene	ND	0.201		mg/Kg-dry	1	06/16/99
Benzo(a)pyrene	ND	0.201		mg/Kg-dry	1	06/16/99
Benzo(b)&(j)fluoranthene	ND	0.201		mg/Kg-dry	1	06/16/99
Benzo(k)fluoranthene	ND	0.201		mg/Kg-dry	1	06/16/99
Benzyl alcohol	ND	0.402		mg/Kg-dry	1	06/16/99
Bis(2-ethylhexyl)phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Butyl benzyl phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Chrysene	ND	0.201		mg/Kg-dry	1	06/16/99
Di-n-butyl phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Di-n-octyl phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Dibenz(a,h)acridine	ND	0.201		mg/Kg-dry	1	06/16/99
Dibenz(a,h)anthracene	ND	0.201		mg/Kg-dry	1	06/16/99
Dibenz(a,j)acridine	ND	0.201		mg/Kg-dry	1	06/16/99
Diethyl phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Dimethyl phthalate	ND	0.201		mg/Kg-dry	1	06/16/99
Fluoranthene	ND	0.201		mg/Kg-dry	1	06/16/99
Indene	ND	0.201		mg/Kg-dry	1	06/16/99
Indeno(1,2,3-cd)pyrene	ND	0.201		mg/Kg-dry	1	06/16/99
Naphthalene	ND	0.201		mg/Kg-dry	1	06/16/99
Phenanthrene	ND	0.201		mg/Kg-dry	1	06/16/99
Phenol	ND	0.201		mg/Kg-dry	1	06/16/99
Pyrene	ND	0.201		mg/Kg-dry	1	06/16/99
Pyridine	ND	0.201		mg/Kg-dry	1	06/16/99
Quinoline	ND	0.201		mg/Kg-dry	1	06/16/99

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level



**Environmental Services Laboratory**

Date: 28-Jun-99

**CLIENT:** Pinnacle Laboratories  
**Lab Order:** 9906062  
**Project:** 906034/GRC/SWMU #7  
**Lab ID:** 9906062-03A

**Client Sample ID:** SWMU-7-N-4FT-060399  
**Tag Number:**  
**Collection Date:** 06/03/99  
**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Thiophenol	ND	0.201		mg/Kg-dry	1	06/16/99
Surr: 2,4,6-Tribromophenol	71.5	19-122		%REC	1	06/16/99
Surr: 2-Fluorobiphenyl	66.3	30-115		%REC	1	06/16/99
Surr: 2-Fluorophenol	65.5	25-121		%REC	1	06/16/99
Surr: 4-Terphenyl-d14	72.9	18-137		%REC	1	06/16/99
Surr: Nitrobenzene-d5	68.1	23-120		%REC	1	06/16/99
Surr: Phenol-d5	68.5	24-113		%REC	1	06/16/99
<b>PERCENT MOISTURE</b>		<b>ASTM</b>				Analyst: kfl
% Moisture	17	0.		wt%	1	06/15/99

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

**Network Project Manager:** Kimberly D. McNeill

**Pinnacle Laboratories, Inc.**  
2709-D Pan American Freeway, NE  
Albuquerque, New Mexico 87107  
(505) 344-3777 Fax (505) 344-4413

## ANALYSIS REQUEST

[illegible]

PROJECT INFORMATION		SAMPLE RECEIPT		SAMPLES SENT TO:	RELINQUISHED BY:	1.	RELINQUISHED BY:	2.
PROJECT #:	906034	Total Number of Containers		PENSACOLA - STL-FL	Signature:	<i>[Signature]</i>	Time:	
PROJ. NAME:	GRC	Chain of Custody Seals		PORTLAND - ESL-OR	Printed Name:		Date:	
QC LEVEL:	(STD) IV	Received Intact?		STL - CT	Signature:	<i>[Signature]</i>	Time:	
REQUIRED:	MS MSD BLANK	Received Good Cond./Cold		STL - NEW JERSEY	Printed Name:		Date:	
TAT:	(STANDARD) RUSH!!	LAB NUMBER:		N. CREEK	Company			
				BARRINGER	RECEIVED BY:	1.	RECEIVED BY:	2.
				SEQUOIA	Signature:	<i>[Signature]</i>	Time:	
					Printed Name:		Date:	
					Printed Name:		Date:	

COMMENTS:  
See attached sheet for Parameters!

DUE DATE: 6/22  
RUSH SURCHARGE: -  
CLIENT DISCO: -  
SPECIAL CERTIFICATION

**PLEASE FILL THIS FORM IN COMPLETELY.**

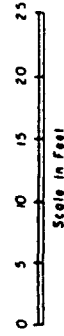
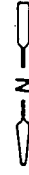
15198 **Inc.: American Environmental Network (NEM), Inc.** • 2709-D Pan American Freeway, NE • Albuquerque, N. Mex. • New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413  
DISTRIBUTION: White



SWMU #7

LEGEND

- Proposed Soil Boring Locations



— 4200 N

ANGLED

0701V

ANGLED

0702V

0704V

0703V

1000 #

Applied Earth Sciences		NAME	Fire Training Area	Project
FILE NO. 5202	MADE BY: P.G. CHECKED BY:	DATE: 11-5-87 DATE:	GIANT REFINERY Gallup, New Mexico	



December 16, 1994

Route 3, Box 7  
Gallup, New Mexico  
87301

Nancy Morlock  
Hazardous Waste Management Division  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-3733

Re: Quarterly Progress Report

Dear Ms. Morlock:

Pursuant to the requirements of the HSWA permit, condition C.4., Page 11 and the May 31, 1990 RFI Workplan Approval, Giant Refining Company-Ciniza (Giant) submits the **Quarterly Progress Report** for the fourth quarter of 1994.

Giant has performed additional drilling at two locations around Tank 569. Sample point RFI 0639 was drilled to a depth of fifty five feet and sample point RFI 0640 was drilled to a depth of forty feet. BTEX (method 8020) analysis indicated that sample point RFI 0640 was drilled deep enough to yield two clean samples, while sample point RFI 0639, although clean at the 40, 45 and 50 foot intervals showed BTEX at the fifty five foot sample interval.

During grouting operations, the displaced water had some hydrocarbon in it, indicating the need for additional characterization activities.

Giant believes that additional characterization work at Tank 569 is necessary and is preparing a sampling program to characterize the extent of contamination and to develop remediation options. The extent of additional drilling and sampling has not been fully determined at this time. Giant will develop the program and complete the drilling during the first quarter of 1995.

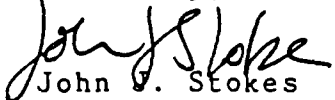
A pneumatic rig for sampling was to be employed to sample Tank 451, but the drilling contractor was unable to make the rig operable. Giant has been assured that the pneumatic rig will be ready in early 1995 and sampling will occur at the earliest date possible. A report on that sampling and analysis will be provided to your office by March 31, 1995.

Giant plans to implement the corrective action plans for SWMU #5 "The Landfill Areas"; SWMU #7 "The Fire Training Area"; and to continue with the corrective action plan for SWMU #8 "The Railroad Rack Lagoon" during the first quarter of 1995.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,



John V. Stokes  
Refinery Manager

JJS:tls

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.  
David Pavlich, HSE Manager  
Giant Refining Co.



#### 4.0 SUMMARY AND DISCUSSION OF SWMUs

This section summarizes the methods used to investigate each of the SWMUs and presents a summary of the field observations and analytical results. Recommendations are also made for future corrective actions.

##### 4.1 SWMU No. 4 - Old Burn Pit

SWMU No. 4 consists of the old burn pit located just north and slightly west of the tank farm (Figure 4). The old burn pit was used to burn acid-soluble oils (ASO) which are a high molecular weight, asphalt-type cross polymerized hydrocarbon. The pit has been inactive since the early 1980s.

##### 4.1.1 Methods

Three soil borings were drilled within the perimeter of the old burn pit using a CME drilling rig with a 2½" hollow-stem carbon steel auger to a depth of 10.0 feet. Samples were collected at the 6.0 and 10.0 foot intervals. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Attempts were made to take field headspace measurements with the photo ionization detector (PID), but, part way through the sampling schedule, the PID pump ceased functioning.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to Westech Laboratories in El Paso, Texas under chain of custody (COC). Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); semi-volatile organic compounds (SVOCs) using EPA Method 8270 (Skinner

List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.1.2 Results

Only one VOC (Methyl Ethyl Ketone [MEK]) and no SVOCs were observed in the analytical data. MEK was observed in RFI 0406V6.0 at a concentration of 1.2 mg/kg.

Chromium and nickel were observed in concentrations that exceeded background levels for soil at the Ciniza refinery area. Chromium exceedances were observed in 4 of 7 samples, ranging from 23 to 49% above background levels. Nickel exceedances were observed in 3 of 7 samples, ranging from 35 to 53% above background levels. Cadmium, lead, mercury, arsenic, barium, beryllium, and vanadium concentrations were within background levels in all of the samples examined.

#### 4.1.3 Recommendations

Soil analyzed from the old burn pit contained only one elevated concentration of VOCs and some elevated levels of nickel and chromium. The VOC, methyl ethyl ketone, was detected at 1.2 mg/kg.

Remediation of this site should be limited to tilling the soil to a depth of 4.5 feet to aerate the deeper soil to promote natural attenuation. The metals can be isolated from human contact and surface receptors by applying a cap of native soil. This would also prevent infiltration of surface water and thereby limit downward migration of constituents.

A corrective action plan will be prepared for SWMU No. 4 and submitted for EPA approval.

#### 4.2 SWMU No. 5 - Landfill Areas

SWMU No. 5 consists of landfill areas midway between the tank farm and the air strip (Figure 6). The landfills were used to dispose of non-regulated, non-hazardous materials from the refinery. The landfills have been inactive since the early 1980s.

#### 4.2.1

##### Methods

Seven soil borings were drilled, as extensions of previous RFI borings, with a CME drilling rig using a 2½" hollow stem carbon steel auger to a depth of 20 feet (Figure 7). Samples were collected at 11.0, 16.0, and 20.0 feet. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Field headspace measurements of volatile organic concentrations in each soil sample were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed in a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOC using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.2.2

##### Results

VOCs were not detected in any of the soil samples collected. Field headspace measurements of volatile organic compounds made with a PID were all non-detect.

One SVOC was detected in three samples from three bore holes. Di-n-Butyl phthalate was detected in RFI 0515V20.0 at 13 mg/kg; in RFI 0516V16.0 at 7.5 mg/kg; and in RFI 0516V20.0 at 13.0 mg/kg.

Barium, chromium, lead, and nickel were detected concentrations exceeding background levels in the refinery area. Chromium was detected in 12 of 22 samples in concentrations from 7 to 120% above background levels. Barium was detected in 2 of 22 samples in concentrations from 25 to 31% above background levels. Lead was detected in 3 of 22

samples in concentrations from 2 to 15% above background levels; and nickel was detected in 12 of 22 samples in concentrations of 33 to 34% above background levels.

#### 4.2.3 Recommendations

Elevated concentrations of chromium, barium, lead, and nickel were detected in the landfill area. Capping with a native soil cap, sloped to allow drainage away from the SWMU, will isolate the metals from surface receptors and will limit infiltration of surface water and downward migration of contaminants. Giant proposes to proceed with the corrective action plan submitted in February, 1993 to USEPA Region VI.

#### 4.3 SWMU No. 6 - Tank Farm

SWMU No. 6 consists of seven hydrocarbon storage tanks, (ranging in size from 1,000 to 24,800 barrels) that have contained leaded gasoline (that is, gasoline blended with the compound tetraethyl lead). The tank farm is located immediately north of the operating units (Figure 2).

##### 4.3.1 Methods

Seven borings were made, as extension of previous RFI borings, with a CME drilling rig using a 2½" hollow stem carbon steel auger. Samples were collected at 16.0 feet in all borings except RFI 0642V20.0 which was collected at 20.0 feet per USEPA request. Additional depths were sampled as necessary. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted with a PID, but the meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Section 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam

cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: 8020 BTEX with the exception of samples RFI 0610V16.0 and RFI 0641V19.0 which were accidentally marked on the COC for VOCs by 8240/8260 Skinner List. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.3.2 Results

Elevated levels of VOCs were detected in most samples. Two tanks in particular showed high concentrations of BTEX, with results for total BTEX of 601,000 ug/kg in sample RFI 0639V16.0 (Tank 569) and 318,600 ug/kg in sample RFI 0640V16.0 (Tank 570). Concentrations in both of these borings showed marked reductions from the 16.0 foot to the 20.0 foot levels: 82% and 41% respectively. Other samples ranged from 52 ug/kg to 190,300 ug/kg for total BTEX. It is important to note that the highest benzene concentration in any sample was 4,600 ug/kg. It is also important to note that none of the deeper samples exceeded the New Mexico Environment Improvement Board water quality control regulatory action limits, which are:

Benzene	-	10,000 ug/kg
BTEX	-	500,000 ug/kg

In the event that obvious contamination is observed in a boring, standard practice is to continue drilling until two "clean" samples are obtained. As previously mentioned, the PID meter malfunctioned part way through the sampling program and, due to the fact that the Ciniza refinery is so isolated, a replacement PID meter could not be found in a timely manner. Sampling and drilling personnel were thus forced to rely on their olfactory senses in determining whether or not the samples collected appeared to be "clean".

#### 4.3.3 Recommendations

Although the deepest samples contained BTEX in concentrations lower than WQCC standards, Giant has contracted to drill additional corings at Tank 569 and 570 to more adequately characterize BTEX concentrations. This drilling will occur on

October 24, 1994.

Giant was unable to drill a coring at tank 451 due to limited operating space. A hand auger was used, but sampling personnel were unable to penetrate a gravel interval at approximately 14.0 feet. A portable pneumatic sampling spoon will be used on October 24 or 25 to obtain the samples at RFI 0635V16.0 (Tank 451). Results of both additional sampling activities will be submitted by December 1, 1994.

Elevated BTEX levels at the leaded tanks will need to be addressed. Giant will submit a corrective action plan to EPA to address those problems.

#### 4.4 SWMU No. 7 - Fire Training Area

SWMU No. 7 consists of an open top tank, approximately 1,000 bbl, cut to one-third of its original height. This tank has been used once or twice per year for fire training for the Ciniza fire fighting team.

##### 4.4.1 Methods

Two borings were made, at two points that had been previously sampled, at an angle under the tank. Samples were collected at 7.0 and 11.0 feet in both borings. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted, but the PID meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method

8270 (Skinner List); Total Petroleum Hydrocarbon and Oil & Grease. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.4.2 Results

No VOCs were detected in SWMU No. 7. An SVOC (di-n-butyl phthalate) was detected in two samples (RFI 0705A11.0D and RFI 0706A7.0). No concentrations of Total Petroleum Hydrocarbon or Oil & Grease were detected in this SWMU.

#### 4.4.3 Recommendations

Additional sampling has demonstrated that Oil & Grease and TPH contamination is limited to a total depth of approximately 4.5 feet. Tilling and additions of nutrients will reduce the Oil & Grease concentrations. Upon approval by EPA, Giant will implement the corrective action plan submitted in February, 1993.

### 4.5 SWMU No. 10 - Sludge Pits

SWMU No. 10 consists of two connected pits that received API separator sludge (K051) and slop oil emulsion solids (K049) in the past. Contents of the pits were vacuumed out in 1980 and clean, dry soil was used to backfill the pits. The sludge pits were sampled in 1990 and again in 1991. A corrective action plan was submitted in 1993 and Giant has been given the authorization to proceed with bioremediation activities, with requirements (see EPA letter of January 7, 1994, in the Correspondence Section).

#### 4.5.1 Methods

Eight borings were made to a depth of 25.0 feet, two being required by EPA to fully characterize the extent of potentially hazardous constituents, and the other six to satisfy requirements of closure of SWMU #10. All borings were made with a CME drilling rig using a 2½" hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic log (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample were made with a PID meter and



these data were recorded on the data management forms.

The soil samples were collected into a stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each use by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.5.2

##### Results

No VOCs were detected in SWMU No. 10. An SVOC (di-n-butyl phthalate) was detected in four samples: RFI 1018V19.0 at 13 mg/kg; RFI 1019V25.0 at 11 mg/kg; RFI 1021V19.0 at 11 mg/kg; and RFI 1021V25.0 at 11 mg/kg. Giant believes these results may be due to outside contamination. Barium, chromium, lead, and nickel showed significant statistical exceedances above background soil samples from the refinery area. Barium exceedances were observed in 10 of 17 samples, ranging from 2 to 182 % above background. Chromium exceedances were observed in 13 of 17 samples, ranging from 2 to 95%. Lead was observed in 11 of 17 samples, ranging from 2 to 28%. Nickel was observed in 17 of 17 samples, ranging from 9 to 67% above background. The detection of metals showed even distribution throughout the SWMU.

#### 4.5.3

##### Recommendations

Due to the absence of hazardous hydrocarbon constituents at the deeper levels, Giant proposes to implement the corrective action plan submitted to EPA in February, 1993.

#### 4.6 SWMU No. 11 - Secondary Skimmer

SWMU No. 11 consists of the area where the old secondary skimmer was situated, in a drainage ditch south of evaporation Lagoon #4. The secondary skimmer has not been used since the late 1970s and was removed in 1991 to expedite sampling.

##### 4.6.1 Methods

Two borings were made , to a depth of 10.0 feet, within the area occupied by the secondary skimmer with a CME drilling rig using a 2½" hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a stainless steel pan and were then place in laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each used by steam cleaning and/or washing as outlined by Section 5.0 to the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List) and SVOCs using EPA Method 8270 (Skinner List). Analytical results are summarized below and are also presented in tabulated form in the appendices.

##### 4.6.2 Results

Two VOCs (ethylbenzene and xylenes) were detected in two borings: RFI 1104V6.0 and RFI 1104V10.0. No SVOCs were detected.

##### 4.6.3 Recommendations

The extremely low levels of volatile organic compounds present no threat to human health or the environment. Giant believes that natural attenuation will remove the remaining trace VOCs.

RFI COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

ANALYTICAL DATA

REPORTING LEVELS

8240/8260 SKINNER LIST	mg/Kg
8270 SKINNER LIST	mg/Kg
TOTAL METALS	mg/Kg
8020 BTEX	ug/Kg
OIL & GREASE	mg/Kg
TOTAL PETROLEUM HYDROCARBONS	mg/Kg

4200 N

0701V

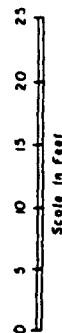
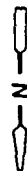
0704V

0702V

0703V

LEGEND

- Proposed Soil Boring Locations



1000 W

Applied Earth Sciences

FILE NO. 5202

DATE BY: P.G. DATE: 12-5-87

CHECKED BY: DATE:

NAME

GIANT REFINERY  
Gallup, New Mexico

Fire Training Area

FIGURE

INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton *LS*

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
3	6.0', 10.0'	\$475		\$7,026

II. SWMU #5 Landfill Areas

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
9	11.0', 16.0', 20.0'	\$2,848		\$21,525

III. SWMU #6 Tank Farm

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
8	16.0', 20.0'	\$2,531		\$1,000

IV. SWMU #7 Fire Training Area

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
2	7.0', 11.0'	\$348		\$400

V. SWMU #10 Sludge Pits

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
18	19.0', 25.0'	\$7,119		\$18,450

VI. SWMU #11 Secondary Oil Skimmer

			Costs	
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>		<u>Analysis</u>
2	6.0', 10.0'	\$316		\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *JS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.



**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

### III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- Tank Farm
- \*\* Empty Container Storage
- Old Burn Pit
- Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

Table 3  
1994 Analytical Costs

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

**TABLE 4**  
**BIENNIAL ANALYTICAL COST**

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING  
(ESTIMATE)

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR</u> *	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

\* Including Drilling Rig



#### IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

June 28, 1994

Rich Mayer  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the Quarterly Progress Report for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

  
John Stokes  
Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.

David Pavlich, Health/Safety and Environmental Manger  
Giant Refining Company

INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *JS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- \* Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- \*\* Tank Farm
- \*\* Empty Container Storage
- \*\* Old Burn Pit
- \*\* Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.



It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

**Table 3**  
**1994 Analytical Costs**

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

**TABLE 4**  
**BIENNIAL ANALYTICAL COST**

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>

**TABLE 5**  
**TOTAL COST OF 1994 SAMPLING**  
**(ESTIMATE)**

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR</u> <sup>*</sup>	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

<sup>\*</sup> Including Drilling Rig

#### IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

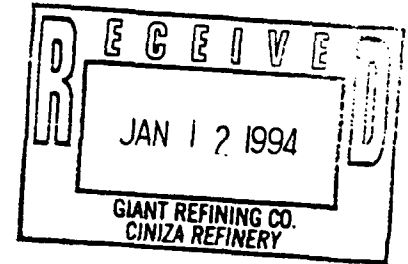
It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 7 1994



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

*Jack Davis*

for Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED



**APPROVAL WITH MODIFICATIONS  
GIANT REFINING COMPANY  
RCRA FACILITY INVESTIGATION PHASE III REPORT  
AND THE  
CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS**

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 5, The Empty Container Storage Area**

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

**SWMU 8, The Old Burn Pit**

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 11, The Secondary Oil Skimmer**

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 4, The Fire Training Area**

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 7, The Landfill Areas**

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

**MODIFICATIONS**

Note: All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

**SWMU #8, The Old Burn Pit**

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

**SWMU #11, The Secondary Oil Skimmer**

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.



**SWMU #4, The Fire Training Area**

Giant shall complete angled soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

**SWMU #7, The Landfill Areas**

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.

# BORING LOG

PROJECT: 622092005-254 (TBL-A1)  
 CLIENT:  
 BORING NUMBER: TBL-A1  
 EXCAVATED POND: N/A  
 FIRST ENCOUNTERED WATER: N/A  
 DATE COMPLETED: 01/28/93

SHEET: 1 of 1  
 DRILLED BY: Precision Eng.  
 LOGGED BY: PWC  
 SURF. ELEV: N/A  
 TOTAL DEPTH: 6.0'

DESCRIPTION	DEPTH (ft.)	SYMBOL	SAMPLE	WELL DESIGN
0-3.0' SANDY CLAY mixed with OILY SLUDGE, stained black by hydrocarbon products, moist, sticky, strong hydrocarbon odor decreasing slightly with depth. PID 25 ppm.	1			
	2			
3.0-5.0' SANDY CLAY, brown, dry, crumbly, slight hydrocarbon odor decreasing with depth. No visual contamination, PID 35 ppm.	3			
	4			
5.0-6.0' CLAYEY SAND, tan to white, dry, crumbly, faint hydrocarbon odor. No visual contamination, PID 2.0 ppm.	5			
TD = 6.0'	6			
NOTE: Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barrel from 1.0-6.0'.  Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.				

**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and  
Voluntary Corrective Action Plan - Giant Refining Co. -  
NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase III RFI Report dated November 3, 1992, with the enclosed modifications. The voluntary Corrective Action Plan (CAP) for the Landfill Areas (submitted in March of 1993) is also approved.

The Phase III Supplementary Report (additional soil sampling for the Landfill Areas, the Old Burn Pit, the Secondary Skimmer and the Fire Training Area) is due to the Environmental Protection Agency (EPA) by December 31, 1994. If you have any further questions pertaining to the above mentioned items, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

6h-pn:RM:7442:12/3/93:promo disk:A:rflIIIIG:file in technical  
NMD.....211

6h-pn      6h-p      6h  
Neleigh    Honker    Morisato

**APPROVAL OF THE RFI PHASE III REPORT, WITH MODIFICATIONS, AND APPROVAL OF THE VOLUNTARY CORRECTIVE ACTION PLAN (CAP) FOR THE LANDFILL AREAS FOR GIANT REFINING COMPANY**

Below are EPA's general comments and modifications pertaining to Giant's RFI Report and the voluntary CAP for the Landfill Areas. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

**General Comment:** EPA agrees with the finding of no further action for the SWMU #3, the Empty Container Storage Area. Even though EPA is tentatively agreeing with the no further action determination, EPA will require one administrative control for the Empty Container Storage Area. The administrative control shall consist of: a survey plat of the SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control, Giant may submit a Class III permit modification to terminate the RFI/CMS process for the Empty Container Storage Area.

On SWMU #4, the Old Burn Pit, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, all 3 samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. One of the three samples at the 4.5 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #11, the Secondary Oil Skimmer, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, one of the two samples taken at the 3 foot interval (the deepest interval sampled) contained volatiles and semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #7, the Fire Training Area, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 2 of the 4 samples taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2000 ppm (detection limit is <10 ppm). Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #5, the Landfill Areas, EPA believes that additional deeper borings are needed to: 1) verify that saturated zones found in 3 of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater; 2) ensure that the vertical delineation of waste emplacement has been identified (soil boring logs indicate waste at the 8-9' zone, the deepest samples were taken at 9.5'); and, 3) ensure that the vertical extent of metal contamination has been identified (some of 9.5' samples had

elevated metal levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

After Giant has completed the additional sampling requirements for the Landfill Areas, they then may proceed with the capping of the landfills under the voluntary Corrective Action Plan.

#### Modifications

**SWMU #4, the Old Burn Pit:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #11, the Secondary Oil Skimmer:** Giant shall take 2 soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #7, the Fire Training Area:** Giant shall take soil borings as close as possible to sample points number 1 and 2 (numbers are from previous RFI sampling points, done in May of 1992). Sampling intervals shall be at 7' and at 11'. Sampling procedures shall be identical to those required in the previous RFI, except, that all soil borings shall be angled. Constituents to be analyzed shall include the Skinner constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

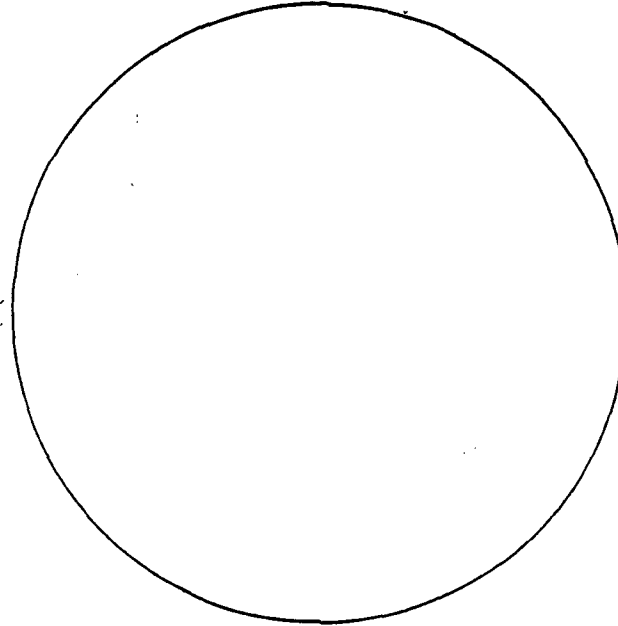
**SWMU #5, the Landfill Areas:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done in May of 1992): number's 2, 3, 4, 5, 6, 7, and 9. Sampling intervals shall be at 11', 16' and 20'. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyzed the samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

**Soil Boring Logs:** EPA has included an example of a soil boring log which they would like Giant to use in all future borings.



— 4200 N

0701V



0704V



0702V

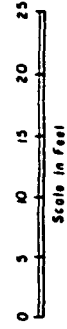
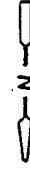


0703V



LEGEND

- Proposed Soil Boring Locations



1000 W —

Applied Earth Sciences		NAME	GIANT REFINERY Gallup, New Mexico	Fire Training Area	FIGURE
FILE NO. 5202	MADE BY: J.C.G. CHECKED BY:	DATE: 12-5-87 DATE:			

PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #7- "Fire Training Area"

Oil & Grease

SAMPLE POINT		01	01	01	02	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'	D4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Oil & Grease	mg/kg	1700	150	<10	<10	2700	2300	2000

Oil & Grease

SAMPLE POINT		03	03	03	04	04	04
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
Oil & Grease	mg/kg	27000	44	<10	29000	8000	2800



PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #7- "Fire Training Area"

Total Petroleum Fuel Hydrocarbons

SAMPLE POINT		01	01	01	02	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'	D4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
TPH	mg/kg	75	<10	<10	<10	<10	<10	<10

Total Petroleum Fuel Hydrocarbons

SAMPLE POINT		03	03	03	04	04	04
SAMPLE DEPTH (feet)		V0.0'	V3.0'	V4.5'	V0.0'	V3.0'	V4.5'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
TPH	mg/kg	<10	<10	<10	<10	<10	<10





## CHAIN OF CUSTODY RECORD



CLIENT	GALUP & ASSOCIATES, CO		
ADDRESS	CITIZEN BOX 7		
PROJECT	GALUP, NMI # 7301		
TELEPHONE	(305) 722-6227		JOB/P.O. NO.
	VILLAGE III REI		

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

[illegible]



**Westech  
Laboratories  
Inc.**

1999

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706  
Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469  
El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

# CHAIN OF CUSTODY RECORD



CLIENT		ADDRESS	
CALANT REFINING CO		RT3 BOX 7	
TELEPHONE (505) 722 0227		PROJECT GALLUP, NM 87301	
REF		JOB/P.O. NO.	

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE)	SAMPLER (PLEASE PRINT)	DATE	TIME	SAMPLER LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES			SAMPLE TYPE CODES	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
										OIL & GREASE	TOTAL PETROLEUM HYDROCARBONS (TPH)	COOLING OIL			
RFI0701V0.0	LYNN SHELTON	5-7-92	10:30	FIELD		X		S	X	X					2206741
RFI0701V3.0		5-7-92	10:45	TRAINING AREA		X		S	X	X					67442
RFI0701V4.5		5-7-92	11:00			X		S	X	X					67443
RFI0702V0.0		5-7-92	11:10			X		S	X	X					67444
RFI0702V3.0		5-7-92	11:20			X		S	X	X					67445
RFI0702V4.5		5-7-92	11:30			X		S	X	X					67446
RFI0702D4.5		5-7-92	11:30			X		S	X	X					67447
RFI0703V0.0		5-7-92	11:40			X		S	X	X					67448
RFI0703V3.0		5-7-92	11:50			X		S	X	X					67449
RFI0703V4.5		5-7-92	11:55			X		S	X	X					67450
RFI0704V0.0		5-7-92	12:50			X		S	X	X					6751
RFI0704V3.0		5-7-92	1:05			X		S	X	X					6752
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6753
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6754
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6755
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6756
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6757
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6758
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6759
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6760
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6761
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6762
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6763
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6764
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6765
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6766
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6767
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6768
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6769
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6770
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6771
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6772
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6773
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6774
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6775
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6776
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6777
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6778
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6779
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6780
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6781
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6782
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6783
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6784
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6785
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6786
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6787
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6788
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6789
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6790
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6791
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6792
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6793
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6794
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6795
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6796
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6797
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6798
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6799
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6800
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6801
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6802
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6803
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6804
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6805
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6806
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6807
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6808
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6809
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6810
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6811
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6812
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6813
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6814
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6815
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6816
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6817
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6818
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6819
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6820
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6821
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6822
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6823
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6824
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6825
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6826
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6827
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6828
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6829
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6830
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6831
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6832
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6833
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6834
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6835
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6836
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6837
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6838
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6839
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6840
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6841
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6842
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6843
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6844
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6845
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6846
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6847
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6848
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6849
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6850
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6851
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6852
RFI0704V0.0		5-7-92	1:10			X		S	X	X					6853
RFI0704V3.0		5-7-92	1:10			X		S	X	X					6854
RFI0704V4.5		5-7-92	1:10			X		S	X	X					6855
RFI0704V0															



## CHAIN OF CUSTODY RECORD



• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

CLIENT	ADDRESS	
GIANT REFINING CO	RT 3 BOX 1	
TELEPHONE	PROJECT	JOB P/O NO
(505) 722 0227	GALLUP, NM 87301	
	PHASE III REFI	

[illegible]

RFI 07

RFI 0704 V0.0  
RFI 0704 V3.0  
RFI 0704 V4.5

RFI 0701 V0.0  
RFI 0701 V3.0  
RFI 0701 V4.5

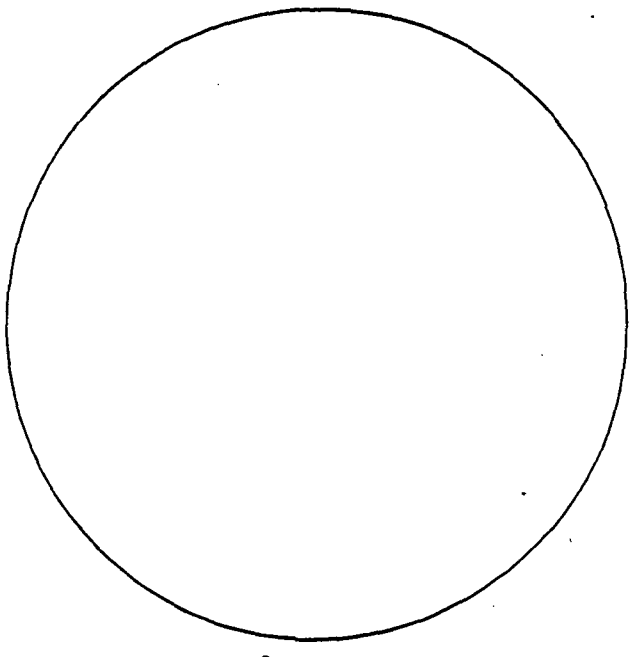
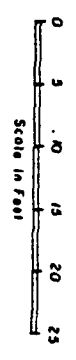
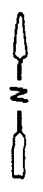
4200 N

RFI 0702 V0.0  
RFI 0702 V3.0  
RFI 0702 V4.5

RFI 0703 V0.0  
RFI 0703 V3.0  
RFI 0703 V4.5

• Proposed Soil Boring Locations

LEGEND



0000 W

Applied Earth Sciences		NAME			PROJECT
FILE NO.	MADE BY: R.S.	GIANT REFINERY Gallup, New Mexico			
5202	CHECKED BY: DATE: 12-5-87				
		Fire Training Area			



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

August 11, 1992

Barbara Driscoll  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

Giant Refining Company - Ciniza (GRC) is submitting this quarterly progress report as required by the May 31, 1990 RFI Workplan approval letter and HSWA Permit Condition C.4., Page 11.

GRC finished soil sampling of SWMU's #3, 4, 5, 7, and 11 on May 15, 1992. All samples were sent to Westech Laboratories for analysis. Hard copy of analytical results has been received and tabulated and is currently having statistical analysis done by Mr. Mark Wilson of the University of New Mexico.

The inspection of the remaining process wastewater system (that part not inspected in 1990) is being organized. Please refer to the attached drawings for lines that may be inspected. The lines were identified using the drawings included in the approved RFI Workplan and by using a corrected drawing from a hydroblasting project completed in 1988. Only lines marked in blue may be inspected and will represent what GRC believes will reasonably demonstrate the integrity of the process wastewater system. Some lines may not be inspected due to safety or process considerations.

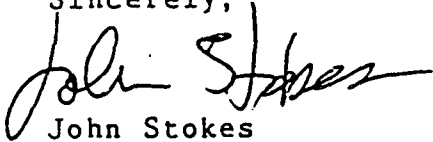
This inspection is tentatively scheduled to take place in late August, 1992.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering

the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

A handwritten signature in dark ink, appearing to read "John Stokes". The signature is fluid and cursive, with the first name "John" and last name "Stokes" clearly distinguishable.

John Stokes  
Refinery Manager  
Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel  
Giant Industries Arizona, Inc.



RFI WORKPLAN      PHASE III      1992

May 4, 1992

Training  
Load Equipment  
SWMU Site Tour

8:00      -      4:15

May 5, 1992

SWMU #4	Burn Pit	9 Samples
---------	----------	-----------

May 6, 1992

SWMU #3	Empty Container Storage	12 Samples
---------	-------------------------	------------

May 7, 1992

SWMU #7	Fire Training Area	12 Samples
SWMU #11	Secondary Oil Skimmer	4 Samples

May 8, 1992

SWMU #5	Land Fill Area	48 Samples
---------	----------------	------------

May 11, 1992

Continue SWMU #5		48 Samples
------------------	--	------------

May 12, 1992

Continue SWMU #5		48 Samples
------------------	--	------------

May 13, 1992

Begin set-up for sewer line inspection  
Expect one week to complete



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

June 9, 1992

Barbara Rutten  
Marketing Director  
Westech Laboratories  
3737 East Broadway Road  
Phoenix, Arizona 85040

Re: RFI Phase III Background Metals

Dear Barbara:

With our submittals of soils for analysis, Giant requested analysis of only four of the listed metals for SWMU's #4 and #5 pending approval from the U.S. EPA Region VI.

Giant has received permission to analyze for an abbreviated list of background metals to include:

- Arsenic
- Barium
- Beryllium
- \* Cadmium
- \* Chromium
- \* Lead
- Nickel
- Vanadium
- \* Mercury

\* Indicates metals already analyzed

Giant requests that Westech Laboratories analyze the soil samples you are holding in cold storage (SWMU #4 and #5) for the balance of the metals on this abbreviated list.

Specific sample numbers to be analyzed are:

RFI0401V0.0	RFI0503D9.5	RFI0590V0.0
RFI0401V3.0	RFI0504V0.0	RFI0509V3.0
RFI0401V4.5	RFI0504V3.0	RFI0509V7.0
RFI0402V0.0	RFI0504V7.0	RFI0509V9.5
RFI0402V3.0	RFI0504V9.5	RFI0510V0.0
RFI0402V4.5	RFI0505V0.0	RFI0510V3.0

RFI0403V0.0	RFI0505V3.0	RFI0510V7.0
RFI0403V3.0	RFI0505V7.0	RFI0510V9.5
RFI0403V4.5	RFI0505V9.5	RFI0511V0.0
RFI0501V0.0	RFI0506V0.0	RFI0511V3.0
RFI0501V3.0	RFI0506V3.0	RFI0511V7.0
RFI0501V7.0	RFI0506V7.0	RFI0511V9.5
RFI0501V9.5	RFI0506V9.5	RFI0512V0.0
RFI0501D9.5	RFI0507V0.0	RFI0512V3.0
RFI0502V0.0	RFI0507V3.0	RFI0512V7.0
RFI0502V3.0	RFI0507V7.0	RFI0512V9.5
RFI0502V7.0	RFI0507V9.5	RFI0512D9.5
RFI0502V9.5	RFI0507D9.5	
RFI0503V0.0	RFI0508V0.0	
RFI0503V3.0	RFI0508V3.0	
RFI0503V7.0	RFI0508V7.0	
RFI0503V9.5	RFI0508V9.5	
	RFI0508D9.5	

If you require additional information about this analysis, please contact mat at (505) 722-0227.

Sincerely,



Lynn Shelton  
Environmental Assistant  
Ciniza Refinery

TLS:sp

DATA MANAGEMENT

Sample Location: SWMU # 7 Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0701V0.0 Sample Time/Description: 10:30 AM MOIST SOIL  
PID - 11

Sample No. RFI0701V3.0 Sample Time/Description: 10:45 AM MOIST SOIL  
PID - 4.2

Sample No. RFI0701V4.5 Sample Time/Description: 11:00 AM MOIST SOIL  
PID - .2

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: SLIGHT SLOPE GRAVEL & SOIL SURFACE,  
MINUTE PLANT GROWTH

Weather Conditions: MOSTLY SUNNY, 65°F, LIGHT E WIND  
@ 1-5 MPH.

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-1' - MIXED CLAY/SAND/ GRAVEL. 1-27"  
DARK, MOSTLY CLAY. 27"-3.0' - RED CLAY 4'-5' - RED/  
GRAY CLAY MIX

DATA MANAGEMENT

Sample Location: SWMU #7

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: MR. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0702V0.0 Sample Time/Description: 11:00 AM MOIST SOIL  
PID - .4

Sample No. RFI0702V3.0 Sample Time/Description: 11:20 AM MOIST SOIL  
PID - 1.4

Sample No. RFI0702V4.5 Sample Time/Description: 11:30 AM MOIST CLAY  
PID - .3

Sample No. RFI0702V4.5 Sample Time/Description: 11:30 AM MOIST CLAY

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: SLOPE, SOIL & GRAVEL SURFACE

Weather Conditions: SEE 1ST PAGE WIND SWITCHING  
FROM E TO W

General Field Observations: OLD SMOKE CARTRIDGE FROM  
FIRE TRAINING, 5-5-92, STARTED SMOKING AGAIN  
AND COVERED AREA WITH SMOKE FOR ~ 3 MINUTES.  
DO NOT BELIEVE IT AFFECTED SAMPLES.

Boring Lithology: A-1.5' DARK CLAY W/25% SAND AND SOME  
GRAVEL. 1.5 TO 3.0' VERIGATED CLAYS. 3.0-5' RED/GRAY CLAY.

DATA MANAGEMENT

Sample Location: SWMU # 7

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0703V0.0 Sample Time/Description: 11:40 AM MOIST SOIL  
PID - 4

Sample No. RFI0703V3.0 Sample Time/Description: 11:50 AM MOIST SOIL  
PID - 0

Sample No. RFI0703V4.5 Sample Time/Description: 11:55 AM MOIST SOIL  
PID - 0

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: SLIGHT SLOPE, SOIL + GRAVEL SURFACE

Weather Conditions: PARTLY SUNNY, SSW WIND @ 3-5 MPH.  
60°F.

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-21" DARK DISCOLORED SOIL WITH SOME  
GRAVEL. 21" TO 5' RED / GRAY CLAY.

DATA MANAGEMENT

Sample Location: SWMU #7

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: M. BARNEY, T. ROGERS

Sampling Method: AUGER

Sample No. RFI0704V0.0 Sample Time/Description: 12:50 PM MOIST SOIL  
PID 1.4

Sample No. RFI0704V3.0 Sample Time/Description: 1:05 PM MOIST SOIL  
PID 8

Sample No. RFI0704V4.5 Sample Time/Description: 1:20 PM MOIST SOIL  
PID 9

Sample No. RFI0704E4.5 Sample Time/Description: 1:25 PM WATER

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: SLOPE, SOIL & GRAVEL SURFACE

Weather Conditions: CLOUDY, 55°F, WSW @ 5 MPH

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-1' DISCOLORED SOIL / SAND W/ GRAVEL,  
1-1" TO 22" SLIGHTLY DISCOLORED SOIL. 22" TO 5' RED  
CLAY W/ SOME WHITE SPECKING AT 4'-5'. 2" LAYER  
OF DARKER SOIL @ 4.0' LEVEL.

THIS COPY OF MY LETTER TO  
KAREN LISTS THE SPECIFIC  
ANALYSIS BY SWMU.

January 15, 1992

*Lpm*

Karen Lofquist  
Westech Laboratories  
3737 East Broadway R  
Phoenix, Arizona 8

Dear Karen:

In anticipation of the May, 1992 RCRA Facility Investigation (RFI) at Giant's Ciniza Refinery, I am requesting a cost proposal for the following analytical work:

**SWMU #3**

8240 Priority Pollutants

12 Samples  
1 Duplicate  
1 Trip Blank

**SWMU #4**

pH  
Skinner List Organics  
Background Metals

9 Samples  
1 Duplicate  
1 Trip Blank  
1 Equipment Wash

**SWMU #5**

pH  
8240 Priority Pollutants  
Background Metals

48 Samples  
3 Duplicates  
2 Trip Blanks  
2 Equipment Washes

**SWMU #7**

Total Petroleum Hydrocarbon (TPH)  
Oil and Grease

12 Samples  
1 Duplicate  
1 Trip Blank

**SWMU #11**

Skinner List Organics

4 Samples  
1 Duplicate  
1 Equipment Wash



Giant will require ice chests, bottles, labels and seals, chain of custody and a copy of your quality assurance/quality control documentation.

Please submit your proposals to my office no later than February 29, 1992. If you have any questions, please contact me at (505) 722-0227.

Sincerely,

*Lynn Shelton*

Lynn Shelton  
Environmental Assistant  
Ciniza Refinery

TLS:sp

KAREN-

I'VE ATTACHED LISTS OF SPECIFIC CONSTITUENTS FOR  
THE SKINNER LIST, PRIORITY POLLUTANTS, AND  
BACK GROUND METALS.

THANKS-

*Lynn*



14

4200 N

RFI0701V0.0  
RFI0701V3.0  
RFI0701V4.5

RFI 07

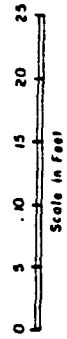
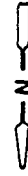
LEGEND

- Proposed Soil Boring Locations

RFI0704V0.0  
RFI0704V3.0  
RFI0704V4.5

RFI0702V0.0  
RFI0702V3.0  
RFI0702V4.5

RFI0703V0.0  
RFI0703V3.0  
RFI0703V4.5



1000 W

<b>Applied Earth Sciences</b> FILE NO. 5202		NAME GIANT REFINERY Gallup, New Mexico	PROJECT Fire Training Area	DRAWING 14
DRAWN BY: R.G. CHECKED BY:		DATE: 12-5-87		

Sept. 14, 1989

APPLIED EARTH SCIENCES

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Fire Training Area

LOCATION OF UNIT: Figure 1, No. 42

DESIGN FEATURES:

Steel cylinder with an open top and steel bottom.

OPERATING PRACTICES (PAST AND PRESENT):

Fuel was placed inside the cylinder, ignited and used to train fire fighters. During the training some of the fuel may leak out of the cylinders onto the adjacent soil. Training is conducted twice a year.

PERIOD OF OPERATION:

1962 to Present

AGE OF UNIT:

> 27 years

GENERAL PHYSICAL CONDITIONS:

Good condition

METHOD USED TO CLOSE THE UNIT:

N/A

WASTE CHARACTERIZATION

TYPE OF UNIT: Fire Training Area

LOCATION OF UNIT: Figure 1, No. 42

TYPE OF WASTE PLACED IN UNIT:

Water and oil

APPROXIMATE QUANTITY MANAGED:

Residual after burning.

PHYSICAL AND CHEMICAL CHARACTERISTICS

oil

MIGRATION AND DISPERSAL CHARACTERISTICS:

Potential for soil contamination exists near the tank.

RELEASE VERIFICATION

SWMU: Fire Training Area

LOCATION: Figure 1, No. 42

A hydrocarbon sheen was visible on the surface of the water in the tank. Soil around the tank was discolored. There is no record of a release in the Giant Industries files.

## **SWMU No. 9, *Drainage Ditch Near the Inactive Land Farm***

The inactive land treatment area and the drainage ditch were identified as solid waste management units (SWMUs) and designated as SWMU No. 9 and SWMU No. 14, respectively, during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company—Ciniza Refinery (Ciniza) in the early 1990s. Later, these SWMUs were combined to become SWMU No. 9, Drainage Ditch Near the Inactive Land Farm. The RFI included soil sampling and analysis, which indicated the presence of trace organics and trace metals. Ciniza determined that no significant impact had occurred and recommended no further action (NFA) for SWMU No. 9 and submitted a survey plat to the U.S. Environmental Protection Agency (EPA) in July 1995. EPA approved the NFA recommendation but required repeat sampling beginning in 1995.

### **9.1 Site Description and Operational History**

SWMU No. 9, Drainage Ditch Near the Inactive Land Farm, (Figures 9-1, 9-2, 9-3) consists of an inactive treatment area and associated drainage ditch and is located approximately 200 feet north of the tank farm and 300 feet west of the railcar loading spur. The inactive land treatment farm is a rectangular flat site measuring approximately 80 feet wide by 130 feet long. The associated drainage ditch is a man-made shallow channel cut into the earth along the western boundary of the inactive land treatment farm. The ditch is approximately 3 feet wide by 2 feet deep by 150 feet long. Photographs of the drainage ditch near the inactive land farm, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), are provided in SWMU No. 9 Summary Report.

The inactive land treatment farm and associated drainage ditch were placed in service in 1958. Land treatment area operations were discontinued in the early 1980s. Oily wastes were formerly biodegraded on this site.

### **9.2 Land Use**

The inactive land farm and associated drainage ditch are no longer being used. The area is vacant of operations and is naturally revegetating. The area, which has not been designated for a new purpose, will remain under the ownership of Ciniza.

### **9.3 Investigation Activities**

Applied Earth Sciences (AES) investigated the inactive land treatment area and associated drainage ditch during the early 1990s. Soil samples were collected and analyzed. Trace volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals were detected in several of the samples.

1 During the initial site investigation in 1990, AES collected samples from seven locations and four depths:  
2 surface, 3, 5, and 7 feet below ground surface. Four of these locations were within the inactive land  
3 treatment area and three were along the drainage ditch.

4 Trace VOCs (ethanol) were detected in six subsurface samples and trace SVOCs in one surface sample.  
5 The highest detection of VOC was 24 mg/kg and the highest detection of SVOC was 26 mg/kg. The  
6 remaining 21 samples indicated no detection of either VOCs or SVOCs.

7 State of New Mexico corrective action levels for total hydrocarbons and benzene, toluene, ethylbenzene,  
8 and xylenes (BTEX) in soil are 100 mg/kg and 50 mg/kg, respectively. All samples were below these  
9 action levels.

10 Trace metals were detected in all of the samples. The concentration levels were within the range of  
11 ambient background concentration.

#### 12 9.4 Site Conceptual Model

13 There is no impact on the environmental fate of the land.

#### 14 9.5 Site Assessments

15 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- 16 • The inactive land treatment area and associated drainage ditch were observed vacant and  
17 inactive. No sign of soil staining or residual waste was evident in either location.
- 18 • Native shrubs and grasses were observed growing throughout the general vicinity and thickly  
19 within the drainage ditch. No signs of distress were evident.
- 20 • Local soil in the vicinity of these SWMUs is bentonitic clays and silts. Similar soil strata  
21 from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

22 PES did not perform any sampling or analysis during this site inspection. The inspection was limited only  
23 to visual observations.

24 Based on this site assessment, PES determined that the inactive land treatment area and associated  
25 drainage ditch remain inactive and vacant. There is no indication of current waste treatment operations,  
26 soil staining, or residual waste material in the area. The site is naturally revegetating; no distressed  
27 vegetation was evident.



1 9.6 NFA Proposal

2 Ciniza is proposing that no further action is required for SWMU No. 9 based on the following criterion:  
3 SWMU No. 9 has been characterized in accordance with current applicable state regulations, and the  
4 available data indicate that no significant environmental impact or migration has occurred. (NFA  
5 Criterion 5)

6 The inactive land treatment area and associated drainage ditch are inactive, vacant, and naturally  
7 revegetating. The inactive land treatment area and associated drainage ditch are located in a geologic  
8 setting in which the underlying bentonitic soil has a very low hydraulic conductivity, which effectively  
9 serves as an aquiclude. Trace detection of VOC (ethanol) is below action levels. Also, ethanol is readily  
10 biodegradable and will naturally attenuate. Trace detection of SVOC is also below action levels. This  
11 detection is from a single surface sample and may represent an anomalous data point. The low level of  
12 detection for these contaminants is indicative of no significant impact.

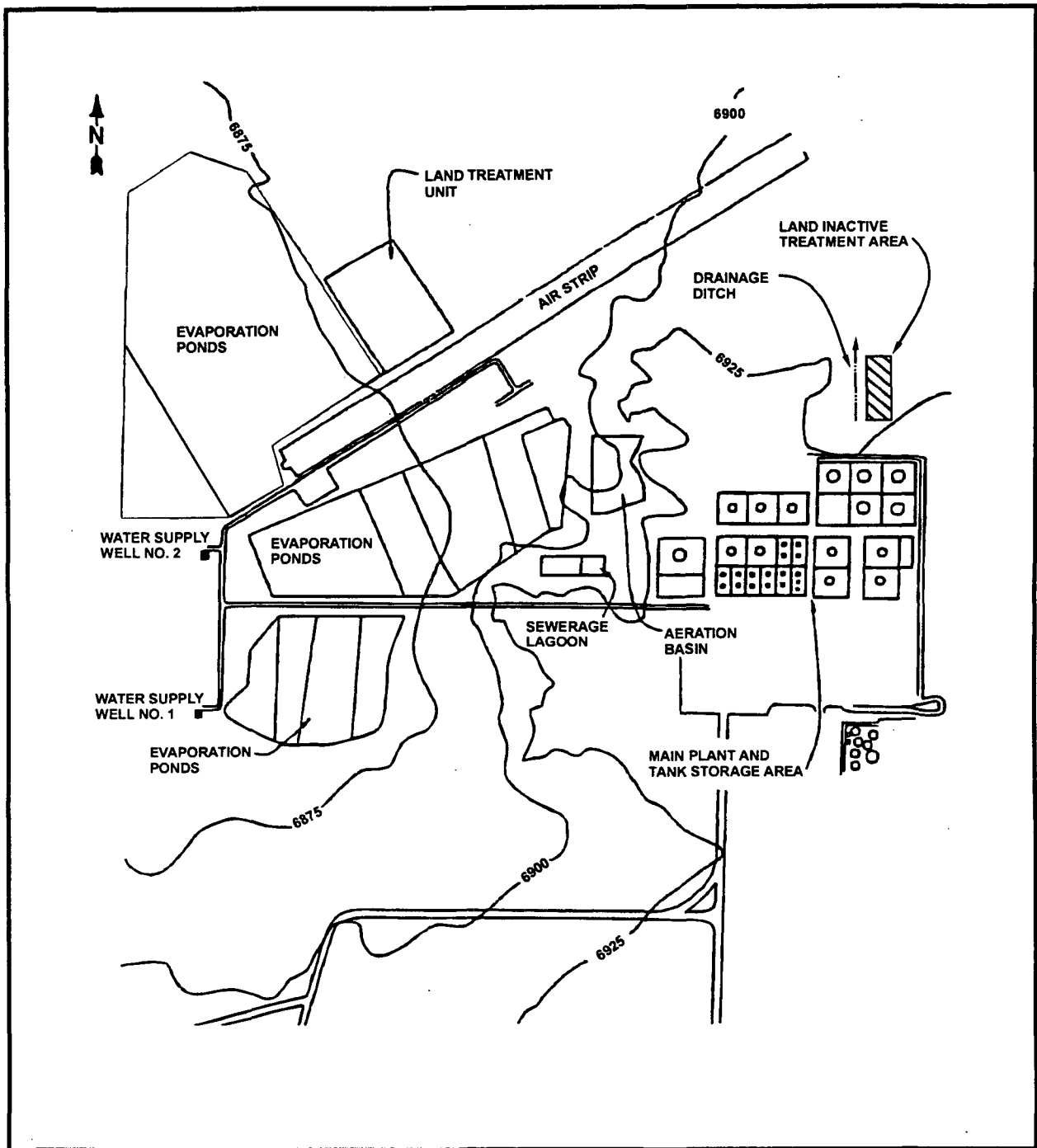


Figure 9-1. SWMU No. 9, Inactive Land Treatment Area and Draining Ditch Site



Figure 9-2. SWMU No. 9, Drainage Ditch Revegetated



Figure 9-3. SWMU No. 9, Drainage Ditch Revegetated



# SWMUs # 9 & #14 Summary Report

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## Inactive Land Treatment Area & Drainage Ditch

Ciniza Refinery  
McKinley County, New Mexico



Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the inactive land treatment area and associated drainage ditch located within the Ciniza Refinery, in McKinley County, New Mexico.

The inactive land treatment area and drainage ditch sites were identified as a Solid Waste Management Units (SWMU), and designated as SWMU #9 and #14 respectively, during a RCRA Facility Investigation conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, determined that no significant impact had occurred, and recommended no further action (NFA).

Findings and recommendations were reported to the Environmental Protection Agency Region VI Office (EPA) in 1991 and 1992.

This summary report for SWMUs #9 and #14 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMUs #9 and #14 have been completed. This assessment is summarized as follows.

- ⇒ The inactive land treatment area and associated drainage ditch remain inactive and vacant. No indication of current waste treatment was evident. No soil staining or residual waste material was observed.
- ⇒ The site is naturally revegetating. No distressed vegetation was evident.
- ⇒ Local soil underlying the site predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation. Trace organic contaminants were detected below corrective action levels. The site was recommended for NFA.
- ⇒ SWMUs #9 and #14 have been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "solid waste management units" and recommended further evaluation. A RCRA Facility Investigation (RFI) was subsequently conducted and the inactive land treatment area and associated drainage ditch were identified as SWMU #9 and SWMU #14, respectively.

Applied Earth Sciences (AES) investigated the inactive land treatment area and drainage ditch sites during the early 1990s. Soil samples were collected and analyzed. Trace organic contaminants were detected in a few samples. Trace metals were detected in all samples; all of which indicated levels within the range of ambient background concentration.

As a result of the investigation, AES recommended no further action for these SWMUs. Results and recommendations were reported to the EPA in 1991 and 1992.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMUs #9 and #14 are located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMUs #9 and #14 are contiguous and located approximately 200 feet north of the tank farm and 300 feet west of the railcar loading spur. See Figure No. 1 for location details.

The inactive land treatment area is a rectangular flat site measuring approximately 80 feet wide by 130 feet long. Oily wastes were formerly biodegraded on this site.

The associated drainage ditch is a man-made shallow channel cut into the earth along the western boundary of the inactive land treatment area. The ditch is approximately 3 feet wide by 2 feet deep by 150 feet long.

The inactive land treatment area and associated drainage ditch were placed in service in 1958. Land treatment area operations were discontinued in the early 1980's.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The inactive land treatment area and associated drainage ditch were observed vacant and inactive. No sign of soil staining or residual waste was evident in either location.
- Native shrubs and grasses were observed growing throughout the general vicinity and thickly within the drainage ditch. No signs of distress were evident.
- Local soil in the vicinity of these SWMUs presented as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

## 5.0 DATA REVIEW

Soil samples from within the inactive land treatment area and along the associated drainage ditch were collected and analyzed during the initial site investigation.

In 1990, the initial site investigation collected samples from seven locations and four depths; surface, 3, 5, and 7 feet below ground surface. Four of these locations were within the inactive land treatment area and three were along the drainage ditch.

Analysis detected trace VOC (ethanol) in six samples and trace SVOC in one sample. The highest detection of VOC was 24 mg/kg and the highest detection of SVOC was 26 mg/kg. The VOC was detected in several subsurface samples and the SVOC was detected in a single surface sample. The remaining 21 samples indicated no detection of either VOCs or SVOCs.

State of New Mexico corrective action levels for total hydrocarbons and BTEX in soil is 100 mg/kg and 50 mg/kg, respectively. All samples were below these action levels.

Trace metals were detected in all samples; all of which indicated levels within the range of ambient background concentration.

## 6.0 ASSESSMENT

Based on the site inspection and data review, the inactive land treatment area and drainage ditch site is assessed as follows.

- The inactive land treatment area and associated drainage ditch are inactive, vacant, and naturally revegetating.
- The inactive land treatment area and associated drainage ditch are located in a geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity which effectively serves as an aquiclude.
- Trace detection of VOC (ethanol) is below action levels. Also, ethanol is readily biodegradable and will naturally attenuate. Trace detection of SVOC is also below action levels. This detection is from a single surface sample and may represent an anomalous data point. The low level of detection for these contaminants is indicative of no significant impact.
- The no further action finding that was recommended by AES is appropriate for this site.



## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

This summary report for SWMUs #9 and #14 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

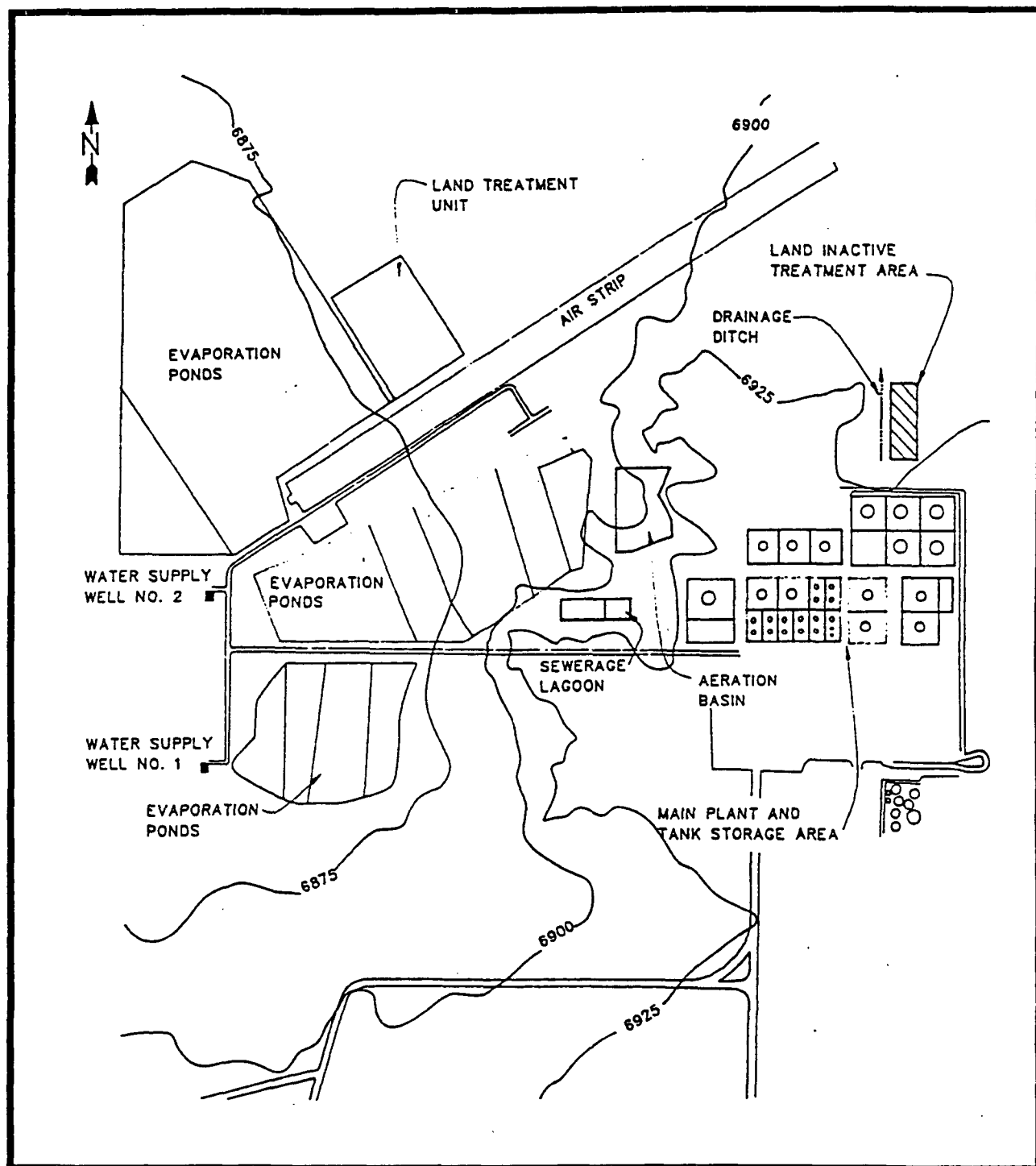
Date: April 23, 1998

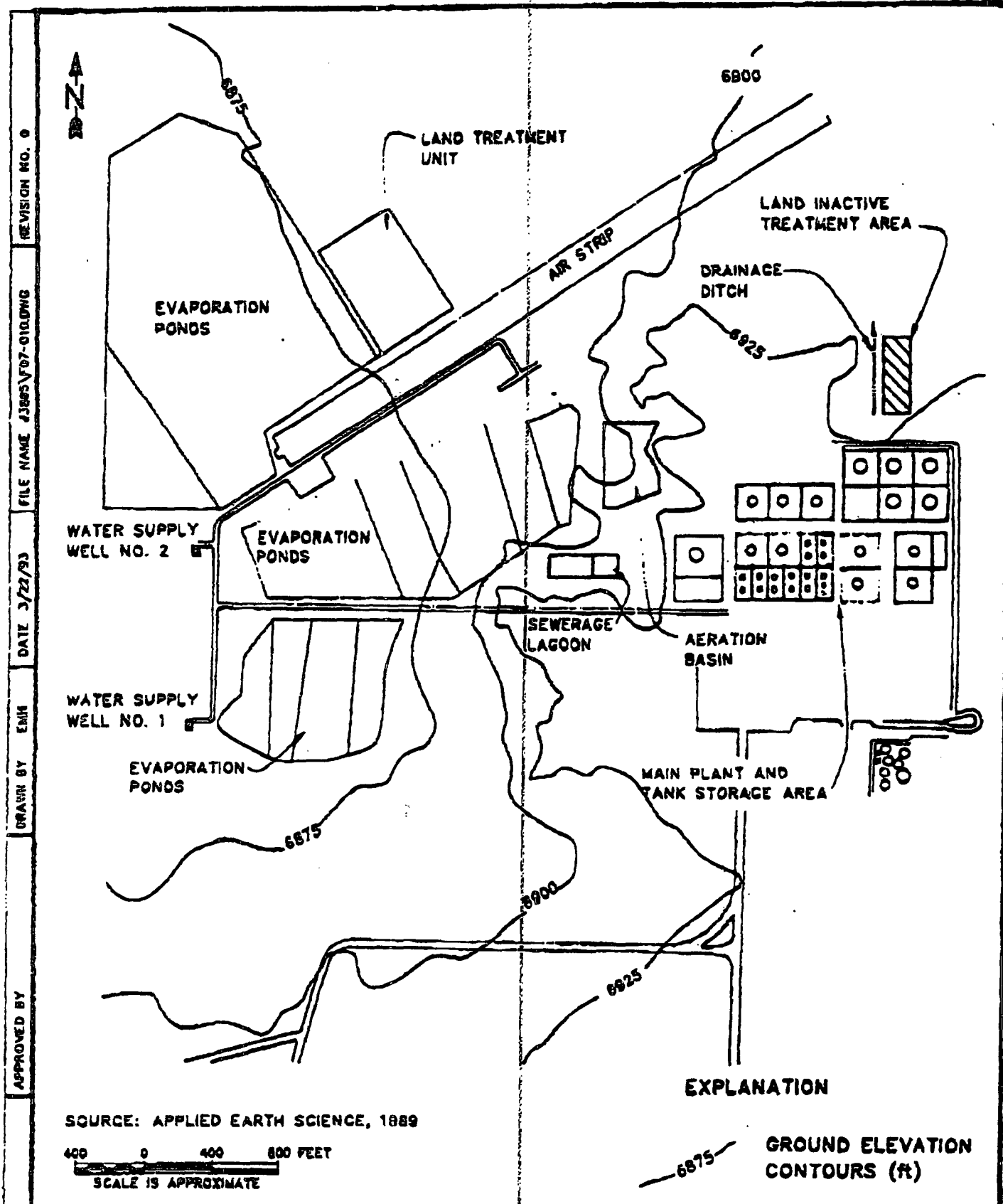
Prepared and Certified by:



Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

Figure No. 1  
Inactive Land Treatment Area & Drainage Ditch-Site





CHECKED BY



**SEC DONOHUE**  
Environment & Infrastructure

**FIGURE 10** *Sumu 9*  
**SITE MAP**  
**INACTIVE LAND TREATMENT AREA**  
**CINIZA REFINERY**  
**GIANT REFINING COMPANY**  
**GALLUP, NEW MEXICO**

# 9  
RF109 - Inactive Land Treatment Area and Drains *inactive LTH & drains*

Sample point number		07	07	07	07		01
Depth of sample		V0.0	V2.0	V5.0	V7.0	-	E5.0
Parameter	Units	Result	Result	Result	Result	Units	Result
Total Metals							
Antimony	mg/kg	ND	ND	ND	ND	mg/L	ND
Arsenic	mg/kg	1.4	0.66	0.61	0.58	mg/L	ND
Barium	mg/kg	447	234	208	240	mg/L	ND
Beryllium	mg/kg	0.59	0.97	0.66	1.0	mg/L	ND
Cadmium	mg/kg	ND	ND	ND	ND	mg/L	ND
Chromium	mg/kg	102	8.6	16.2	7.6	mg/L	ND
Cobalt	mg/kg	1.2	2.9	1.5	2.5	mg/L	ND
Copper	mg/kg	10.5	5.5	4.1	5.1	mg/L	ND
Lead	mg/kg	14.0	9.1	7.2	7.5	mg/L	ND
Mercury	mg/kg	ND	ND	ND	ND	mg/L	ND
Nickel	mg/kg	6.0	7.7	4.7	6.8	mg/L	ND
Potassium	mg/kg	953	1030	775	1390	mg/L	ND
Selenium	mg/kg	ND	ND	ND	ND	mg/L	ND
Vanadium	mg/kg	14.6	13.1	10.2	12.7	mg/L	ND
Zinc	mg/kg	157	14.2	22.8	13.4	mg/L	ND

*Sum 9  
Inactive LTH  
Drains*

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	07	07	07	07	01
Depth of sample	V0.0	V3.0	V5.0	V7.0	E5.0
Parameter	Units	Result	Result	Result	Result
Method 8270 (con't)					
Ethyl methanesulfonate	ug/kg	ND	ND	ND	ug/L ND
Fluoranthene	ug/kg	ND	ND	ND	ug/L ND
Fluorene	ug/kg	ND	ND	ND	ug/L ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ug/L ND
Hexachlorobutadiene	ug/kg	ND	ND	ND	ug/L ND
Hexachlorocyclooctadiene	ug/kg	ND	ND	ND	ug/L ND
Hexachloroethane	ug/kg	ND	ND	ND	ug/L ND
Indeno(1,2,3-cd)pyrene	ug/kg	ND	ND	ND	ug/L ND
Isophorone	ug/kg	ND	ND	ND	ug/L ND
3-Methylcholanthrene	ug/kg	ND	ND	ND	ug/L ND
Methyl methanesulfonate	ug/kg	ND	ND	ND	ug/L ND
2-Methylnaphthalene	ug/kg	ND	ND	ND	ug/L ND
Naphthalene	ug/kg	ND	ND	ND	ug/L ND
1-Naphthylamine	ug/kg	ND	ND	ND	ug/L ND
2-Naphthylamine	ug/kg	ND	ND	ND	ug/L ND
2-Nitroaniline	ug/kg	ND	ND	ND	ug/L ND
3-Nitroaniline	ug/kg	ND	ND	ND	ug/L ND
4-Nitroaniline	ug/kg	ND	ND	ND	ug/L ND
Nitrobenzene	ug/kg	ND	ND	ND	ug/L ND
2-Nitrophenol	ug/kg	ND	ND	ND	ug/L ND
4-Nitrophenol	ug/kg	ND	ND	ND	ug/L ND
N-Nitroso-di-n-butylamine	ug/kg	ND	ND	ND	ug/L ND
N-Nitrosodimethylamine	ug/kg	ND	ND	ND	ug/L ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ug/L ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ug/L ND
N-Nitrosopiperidine	ug/kg	ND	ND	ND	ug/L ND
Pentachlorobenzene	ug/kg	ND	ND	ND	ug/L ND
Pentachloronitrobenzene	ug/kg	ND	ND	ND	ug/L ND
Pentachlorophenol	ug/kg	ND	ND	ND	ug/L ND
Phenacetin	ug/kg	ND	ND	ND	ug/L ND
Phenanthrene	ug/kg	ND	ND	ND	ug/L ND
Phenol	ug/kg	ND	ND	ND	ug/L ND
2-Picoline	ug/kg	ND	ND	ND	ug/L ND
Pronazide	ug/kg	ND	ND	ND	ug/L ND
Pyrene	ug/kg	ND	ND	ND	ug/L ND
1,2,4,5-Tetrachloro-benzene	ug/kg	ND	ND	ND	ug/L ND
2,3,4,6-Tetrachlorophenol	ug/kg	ND	ND	ND	ug/L ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ug/L ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ug/L ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ug/L ND
Benzidine	ug/kg	ND	ND	ND	ug/L ND
Benzoic acid	ug/kg	ND	ND	ND	ug/L ND
1-Chloronaphthalene	ug/kg	ND	ND	ND	ug/L ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ug/L ND

## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	07	07	07	07	01	
Depth of sample	V0.0	V3.0	V5.0	V7.0	E5.0	
Parameter	Units	Result	Result	Result	Result	
Method 8270						
Acenanthrene	ug/kg	ND	ND	ND	ug/L	ND
Acenaphthylene	ug/kg	ND	ND	ND	ug/L	ND
Acetophenone	ug/kg	ND	ND	ND	ug/L	ND
4-Aminobiphenyl	ug/kg	ND	ND	ND	ug/L	ND
Aniline	ug/kg	ND	ND	ND	ug/L	ND
Anthracene	ug/kg	ND	ND	ND	ug/L	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ug/L	ND
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ug/L	ND
Benzo(k)fluoranthene	ug/kg	ND	ND	ND	ug/L	ND
Benzo(g,h,i)perylene	ug/kg	ND	ND	ND	ug/L	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ug/L	ND
Benzyl alcohol	ug/kg	ND	ND	ND	ug/L	ND
bis(2-Chloroethoxy)-methane	ug/kg	ND	ND	ND	ug/L	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ug/L	ND
bis(2-Chloroisopropyl)-ether	ug/kg	ND	ND	ND	ug/L	ND
bis(2-Ethylhexyl) phthalate	ug/kg	ND	ND	ND	ug/L	ND
4-Bromophenyl phenyl ether	ug/kg	ND	ND	ND	ug/L	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ug/L	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ug/L	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ug/L	ND
2-Chloromanthralene	ug/kg	ND	ND	ND	ug/L	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ug/L	ND
4-Chlorophenyl phenyl ether	ug/kg	ND	ND	ND	ug/L	ND
o-Cresol	ug/kg	ND	ND	ND	ug/L	ND
m & p-Cresol(s)	ug/kg	ND	ND	ND	ug/L	ND
Chrysene	ug/kg	ND	ND	ND	ug/L	ND
Dibenz(a,h)anthracene	ug/kg	ND	ND	ND	ug/L	ND
Di-n-butyl phthalate	ug/kg	ND	ND	ND	ug/L	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ug/L	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ug/L	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ug/L	ND
3,3-Dichlorobenzene	ug/kg	ND	ND	ND	ug/L	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ug/L	ND
2,6-Dichlorophenol	ug/kg	ND	ND	ND	ug/L	ND
Diethyl phthalate	ug/kg	ND	ND	ND	ug/L	ND
p-Dimethylaminoazobenzene	ug/kg	ND	ND	ND	ug/L	ND
7,12-Dimethylbenz(a)-anthracene	ug/kg	ND	ND	ND	ug/L	ND
a,a-Dimethylphenethyl-amine	ug/kg	ND	ND	ND	ug/L	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ug/L	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ug/L	ND
1,3-Dinitrobenzene	ug/kg	ND	ND	ND	ug/L	ND
4,6-Dinitro-o-cresol	ug/kg	ND	ND	ND	ug/L	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ug/L	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ug/L	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ug/L	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ug/L	ND
Diphenylamine	ug/kg	ND	ND	ND	ug/L	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	07	07	07	07	01	
Depth of sample	V0.0	V3.0	V5.0	V7.0	E5.0	
Parameter	Units	Result	Result	Result	Units	Result
Method 8240						
Chloromethane	ug/kg	ND	ND	ND	ug/L	ND
Bromomethane	ug/kg	ND	ND	ND	ug/L	ND
Vinyl chloride	ug/kg	ND	ND	ND	ug/L	ND
Chloroethane	ug/kg	ND	ND	ND	ug/L	ND
Methylene chloride	ug/kg	ND	ND	ND	ug/L	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ug/L	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ug/L	ND
1,2-Dichloroethene (cis/trans)	ug/kg	ND	ND	ND	ug/L	ND
Chloroform	ug/kg	ND	ND	ND	ug/L	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ug/L	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ug/L	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ug/L	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ug/L	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ug/L	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ug/L	ND
Trichloroethene	ug/kg	ND	ND	ND	ug/L	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ug/L	ND
1,1,2-Trichloroethene	ug/kg	ND	ND	ND	ug/L	ND
Benzene	ug/kg	ND	ND	ND	ug/L	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ug/L	ND
2-Chloroethyl vinyl ether	ug/kg	ND	ND	ND	ug/L	ND
Bromoform	ug/kg	ND	ND	ND	ug/L	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ug/L	ND
Tetrachloroethene	ug/kg	ND	ND	ND	ug/L	ND
Toluene	ug/kg	ND	ND	ND	ug/L	ND
Chlorobenzene	ug/kg	ND	ND	ND	ug/L	ND
Ethylbenzene	ug/kg	ND	ND	ND	ug/L	ND
Acetone	ug/kg	ND	ND	ND	ug/L	12
Acrolein	ug/kg	ND	ND	ND	ug/L	ND
Acrylonitrile	ug/kg	ND	ND	ND	ug/L	ND
Carbon disulfide	ug/kg	ND	ND	ND	ug/L	ND
Dibromomethane	ug/kg	ND	ND	ND	ug/L	ND
trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ug/L	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ug/L	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ug/L	ND
Ethanol	ug/kg	ND	ND	ND	ug/L	ND
Iodomethane	ug/kg	ND	ND	ND	ug/L	ND
2-Butanone (MEK)	ug/kg	ND	ND	ND	ug/L	ND
4-Methyl-2-pentanone (MIPK)	ug/kg	ND	ND	ND	ug/L	ND
Styrene	ug/kg	ND	ND	ND	ug/L	ND
Trichlorofluoromethane	ug/kg	ND	ND	ND	ug/L	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ug/L	ND
Vinyl acetate	ug/kg	ND	ND	ND	ug/L	ND
Ethyl methacrylate	ug/kg	ND	ND	ND	ug/L	ND
Xylenes (total)	ug/kg	ND	ND	ND	ug/L	ND
2-Hexanone	ug/kg	ND	ND	ND	ug/L	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number  
Birth of sample

06 06 06 06 06  
V0.0 V3.0 D3.0 V5.0 V7.0

Parameter

Units Result Result Result Result Result

## Total Metals

Antimony	mg/kg	ND	ND	ND	ND	ND
Arsenic	mg/kg	1.7	1.2	ND	ND	0.52
Barium	mg/kg	229	243	224	241	319
Beryllium	mg/kg	0.79	1.1	1.1	0.97	0.97
Cadmium	mg/kg	ND	ND	ND	ND	ND
Chromium	mg/kg	7.2	6.3	6.2	5.1	4.1
Cobalt	mg/kg	2.3	2.6	2.6	1.9	1.7
Copper	mg/kg	14.3	5.4	5.4	4.5	4.9
Lead	mg/kg	29.1	9.2	8.1	7.5	9.1
Mercury	mg/kg	ND	ND	ND	ND	ND
Nickel	mg/kg	11.4	7.0	7.2	5.3	5.0
Potassium	mg/kg	999	1110	1120	997	928
Selenium	mg/kg	ND	ND	ND	ND	ND
Vanadium	mg/kg	14.5	14.5	14.2	12.6	13.0
Zinc	mg/kg	22.8	10.6	10.4	9.4	7.8



## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	06	06	06	06	06
Depth of sample	V0.0	V3.0	D3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result
Method 8270 (con't)					
Ethyl methanesulfonate	ug/kg	ND	ND	ND	ND
Fluoranthene	ug/kg	ND	ND	ND	ND
Fluorene	ug/kg	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ND
Hexachlorobutadiene	ug/kg	ND	ND	ND	ND
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	ND
Hexachloroethane	ug/kg	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	ND	ND	ND	ND
Isophorone	ug/kg	ND	ND	ND	ND
3-Methylcholanthrene	ug/kg	ND	ND	ND	ND
Methyl methanesulfonate	ug/kg	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND
1-Naphthylamine	ug/kg	ND	ND	ND	ND
2-Naphthylamine	ug/kg	ND	ND	ND	ND
2-Nitroaniline	ug/kg	ND	ND	ND	ND
3-Nitroaniline	ug/kg	ND	ND	ND	ND
4-Nitroaniline	ug/kg	ND	ND	ND	ND
Nitrobenzene	ug/kg	ND	ND	ND	ND
2-Nitrophenol	ug/kg	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND
N-Nitroso-di-n-butylamine	ug/kg	ND	ND	ND	ND
N-Nitrosodimethylamine	ug/kg	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ND
N-Nitrosopiperidine	ug/kg	ND	ND	ND	ND
Pentachlorobenzene	ug/kg	ND	ND	ND	ND
Pentachloronitrobenzene	ug/kg	ND	ND	ND	ND
Pentachlorophenol	ug/kg	ND	ND	ND	ND
Phenacetin	ug/kg	ND	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND
Phenol	ug/kg	ND	ND	ND	ND
2-Picoline	ug/kg	ND	ND	ND	ND
Pronamide	ug/kg	ND	ND	ND	ND
Pyrene	ug/kg	20000	ND	ND	ND
1,2,4,5-Tetrachloro-benzene	ug/kg	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ug/kg	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ND
Benzidine	ug/kg	ND	ND	ND	ND
Benzoic acid	ug/kg	ND	ND	ND	ND
1-Chloronaphthalene	ug/kg	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number		06	06	06	06	06
Depth of sample		V0.0	V3.0	B3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result
Method 8270						
Acenaphthene	ug/kg	ND	ND	ND	ND	ND
Acenaphthylene	ug/kg	ND	ND	ND	ND	ND
Acetophenone	ug/kg	ND	ND	ND	ND	ND
4-Aminobiphenyl	ug/kg	ND	ND	ND	ND	ND
Aniline	ug/kg	ND	ND	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND
Benzyl alcohol	ug/kg	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)-methane	ug/kg	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl)-ether	ug/kg	ND	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ND	ND
2-Chloromethylphthalate	ug/kg	ND	ND	ND	ND	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND
o-Cresol	ug/kg	ND	ND	ND	ND	ND
m & p-Cresol(s)	ug/kg	ND	ND	ND	ND	ND
Chrysene	ug/kg	25000	ND	ND	ND	ND
Dibenz(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND
Di-n-butyl phthalate	ug/kg	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
3,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND
2,6-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	ND	ND
n-Dimethylaminoazobenzene	ug/kg	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)-anthracene	ug/kg	ND	ND	ND	ND	ND
a,a-Dimethylphenethyl-amine	ug/kg	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND
1,3-Dinitrobenzene	ug/kg	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	ug/kg	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND
Diphenylamine	ug/kg	ND	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	06	06	06	06	06
Depth of sample	V0.0	V2.0	D3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result
Method 8240					
Chloromethane	ug/kg	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND
Methylene chloride	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND
1,2-Dichloroethene (cis/trans)	ug/kg	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethene	ug/kg	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ug/kg	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND
Tetrachloroethene	ug/kg	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND
Iodomethane	ug/kg	ND	ND	ND	ND
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND
Trichlorofluoromethane	ug/kg	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND
Ethyl methacrylate	ug/kg	ND	ND	ND	ND
Xylenes (total)	ug/kg	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	05	05	05	05	05
Depth of sample	V0.0	V3.0	V5.0	D5.0	V7.0
Parameter	Units	Result	Result	Result	Result
Total Metals					
Antimony	mg/kg	ND	ND	ND	ND
Arsenic	mg/kg	ND	ND	ND	ND
Barium	mg/kg	285	418	333	375
Beryllium	mg/kg	1.2	0.77	0.94	0.91
Cadmium	mg/kg	ND	ND	ND	ND
Chromium	mg/kg	8.1	32.2	6.1	6.8
Cobalt	mg/kg	4.6	5.0	3.5	3.9
Copper	mg/kg	5.5	11.9	3.5	4.2
Lead	mg/kg	14.9	31.0	13.7	14.4
Mercury	mg/kg	ND	ND	ND	ND
Nickel	mg/kg	9.1	9.7	5.5	6.9
Potassium	mg/kg	1160	1100	925	936
Selenium	mg/kg	ND	ND	ND	ND
Vanadium	mg/kg	17.9	13.9	15.5	16.4
Zinc	mg/kg	12.1	55.6	8.4	10.1

## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	05	05	05	05	05
Depth of sample	V0.0	V3.0	V5.0	D5.0	V7.0
Parameter	Units	Result	Result	Result	Result
Method 8270 (con't)					
Ethyl methanesulfonate	ug/kg	ND	ND	ND	ND
Fluoranthene	ug/kg	ND	ND	ND	ND
Fluorene	ug/kg	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ND
Hexachlorobutadiene	ug/kg	ND	ND	ND	ND
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	ND
Hexachloroethane	ug/kg	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	ND	ND	ND	ND
Isophorone	ug/kg	ND	ND	ND	ND
3-Methylcholanthrene	ug/kg	ND	ND	ND	ND
Methyl methanesulfonate	ug/kg	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND
1-Naphthylamine	ug/kg	ND	ND	ND	ND
2-Naphthylamine	ug/kg	ND	ND	ND	ND
2-Nitroaniline	ug/kg	ND	ND	ND	ND
3-Nitroaniline	ug/kg	ND	ND	ND	ND
4-Nitroaniline	ug/kg	ND	ND	ND	ND
Nitrobenzene	ug/kg	ND	ND	ND	ND
2-Nitrophenol	ug/kg	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND
N-Nitroso-di-n-butylamine	ug/kg	ND	ND	ND	ND
N-Nitrosodimethylamine	ug/kg	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ND
N-Nitrosopiperidine	ug/kg	ND	ND	ND	ND
Pentachlorobenzene	ug/kg	ND	ND	ND	ND
Pentachloronitrobenzene	ug/kg	ND	ND	ND	ND
Pentachlorophenol	ug/kg	ND	ND	ND	ND
Phenacetin	ug/kg	ND	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND
Phenol	ug/kg	ND	ND	ND	ND
2-Picoline	ug/kg	ND	ND	ND	ND
Pronamide	ug/kg	ND	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND	ND
1,2,4,5-Tetrachloro-benzene	ug/kg	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ug/kg	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ND
Benzidine	ug/kg	ND	ND	ND	ND
Benzoic acid	ug/kg	ND	ND	ND	ND
1-Chloronaphthalene	ug/kg	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	05	05	05	05	05
Depth of sample	V0.0	V3.0	V5.0	D5.0	V7.0
Parameter	Units	Result	Result	Result	Result
Method 8270					
Acenanthrene	ug/kg	ND	ND	ND	ND
Acenaphthylene	ug/kg	ND	ND	ND	ND
Acetophenone	ug/kg	ND	ND	ND	ND
4-Aminobiphenyl	ug/kg	ND	ND	ND	ND
Aniline	ug/kg	ND	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	ND	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND
Benzyl alcohol	ug/kg	ND	ND	ND	ND
bis(2-Chloroethoxy)-methane	ug/kg	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ND
bis(2-Chloroisopropyl)-ether	ug/kg	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ug/kg	ND	ND	ND	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ND
2-Chloromaphthalene	ug/kg	ND	ND	ND	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ug/kg	ND	ND	ND	ND
o-Cresol	ug/kg	ND	ND	ND	ND
m & p-Cresol(s)	ug/kg	ND	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND
Dibenz(a,h)anthracene	ug/kg	ND	ND	ND	ND
Di-n-butyl phthalate	ug/kg	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND
3,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ND
2,6-Dichlorophenol	ug/kg	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	ND
p-Dimethylaminobenzene	ug/kg	ND	ND	ND	ND
7,12-Dimethylbenz(a)-anthracene	ug/kg	ND	ND	ND	ND
a,a-Dimethylphenethyl-amine	ug/kg	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND
1,3-Dinitrobenzene	ug/kg	ND	ND	ND	ND
4,6-Dinitro-o-cresol	ug/kg	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND
Diphenylamine	ug/kg	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number		05	05	05	05	05
Depth of sample		V0.0	V3.0	V5.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result
Method 8240						
Chloromethane	ug/kg	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND
Methylene chloride	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethene (cis/trans)	ug/kg	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND
1,1,2-Trichloroethene	ug/kg	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ug/kg	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND
Tetrachloroethene	ug/kg	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND
Iodomethane	ug/kg	ND	ND	ND	ND	ND
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND
Trichlorofluoromethane	ug/kg	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND
Ethyl methacrylate	ug/kg	ND	ND	ND	ND	ND
Xylenes (total)	ug/kg	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number  
Depth of sample

02 03 03 03 - 04 04 04 04  
V0.0 V3.0 V5.0 V7.0 V0.0 V3.0 V5.0 V7.0

Parameter

Units Result Result Result Result Result Result Result Result

## Total Metals

Antimony	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	mg/kg	ND	ND	ND	0.58	2.1	ND	ND	ND
Barium	mg/kg	214	307	334	224	406	275	309	239
Beryllium	mg/kg	0.73	1.0	1.2	1.1	0.91	1.3	1.1	1.4
Cadmium	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	mg/kg	4.9	5.1	7.5	7.5	12.3	5.7	5.2	3.1
Cobalt	mg/kg	1.6	2.1	3.4	3.2	4.4	4.1	3.4	4.8
Copper	mg/kg	4.5	4.8	8.5	5.8	13.9	6.5	5.2	7.2
Lead	mg/kg	5.0	8.0	9.9	7.3	29.7	13.9	12.4	16.4
Mercury	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	mg/kg	5.1	6.7	9.1	8.2	10.0	7.4	5.1	7.9
Potassium	mg/kg	991	955	1300	1860	1250	1100	983	1560
Selenium	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	mg/kg	10.1	13.1	15.1	14.9	15.4	16.4	12.3	13.1
Zinc	mg/kg	8.7	9.6	13.4	13.3	69.6	11.1	9.1	14.0



## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number		03	03	03	03	04	04	04	04
Depth of sample		V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result
Method 8270 (con't)									
Ethyl methanesulfonate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylcholanthrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Methyl methanesulfonate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1-Naphthylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Naphthylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-butylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodimethylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosopiperidine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachloronitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenacetin	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Picoline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4,5-Tetrachloro-benzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzidine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloronaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND

## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number	03	03	03	03	04	04	04	04
Depth of sample	V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result
Method 8270								
Acenaphthene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Acetophenone	ug/kg	ND	ND	ND	ND	ND	ND	ND
4-Aminobiphenyl	ug/kg	ND	ND	ND	ND	ND	ND	ND
Aniline	ug/kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Benzyl alcohol	ug/kg	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)-methane	ug/kg	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl)-ether	ug/kg	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND
o-Cresol	ug/kg	ND	ND	ND	ND	ND	ND	ND
m & p-Cresol(s)	ug/kg	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,6-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
n-Dimethylaminoazobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)-anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND
a,a-Dimethylphenethyl-amine	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
1,3-Dinitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND
Dirhenylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND

## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number		03	03	03	03	04	04	04	04
Depth of sample		V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result
Method 8240									
Chloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (cis/trans)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	ND	ND	ND	ND	20000	22000	12000
Iodomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl methacrylate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND

RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number  
Depth of sample

01 01 01 01 02 02 02 02  
V0.0 V3.0 V5.0 V7.0 V0.0 V3.0 V5.0 V7.0

Parameter

Units Result Result Result Result Result Result Result Result

Total Metals

Antimony	mg/kg	ND	ND	ND	ND	ND	ND	ND
Arsenic	mg/kg	0.86	ND	ND	ND	ND	ND	ND
Barium	mg/kg	316	320	332	309	302	318	262
Beryllium	mg/kg	0.95	0.82	1.1	1.2	1.3	1.2	0.59
Cadmium	mg/kg	ND	ND	ND	ND	ND	ND	ND
Chromium	mg/kg	13.9	4.9	5.4	5.4	11.8	6.3	2.3
Cobalt	mg/kg	3.2	2.9	3.8	4.0	5.8	3.7	2.0
Copper	mg/kg	7.4	3.6	5.3	5.7	9.1	5.6	ND
Lead	mg/kg	13.4	11.4	9.8	13.2	16.1	13.9	11.9
Mercury	mg/kg	ND	ND	ND	ND	ND	ND	ND
Nickel	mg/kg	6.3	5.2	5.7	6.7	11.4	6.8	ND
Potassium	mg/kg	1210	712	1400	963	2110	1220	1640
Selenium	mg/kg	ND	ND	ND	ND	ND	ND	ND
Vanadium	mg/kg	12.9	12.9	14.1	14.7	20.4	15.0	9.5
Zinc	mg/kg	19.7	6.9	9.3	9.2	18.4	12.0	5.7

## RF109 - Inactive Land Treatment Area and Drainage Ditch

Sample point number  
Length of sample

01	01	01	01	02	02	02	02
V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0

Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result
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Method 8270 (con't)

Ethyl methanesulfonate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Isorhorone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylcholanthrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Methyl methanesulfonate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1-Naphthylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Naphthylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-butylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodimethylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosopiperidine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachloronitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenacetin	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Picoline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4,5-Tetrachloro-benzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzidine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloronaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND

Sample point number		01	01	01	01	02	02	02	02
Depth of sample		V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result
Method 8270									
Acenanthrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acenanthylene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Aminobiphenyl	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Aniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,h,i)perylene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl alcohol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)-methane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl)-ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloromethylphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
o-Cresol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
m & p-Cresol(s)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
p-Dimethylaminoazobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)-anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
a,a-Dimethylphenethyl-amine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dinitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Diphenylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND

## RFI09 - Inactive Land Treatment Area and Drainage Ditch

Sample point number		01	01	01	01	02	02	02	02
Depth of sample		V0.0	V3.0	V5.0	V7.0	V0.0	V3.0	V5.0	V7.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result
Method 8240									
Chloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (cis/trans)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane,	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acrolein	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethanol	ug/kg	ND	16000	ND	24000	ND	23000	ND	ND
Iodomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl methacrylate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND

## SWMU No. 10, *Sludge Pits*

The sludge pits were identified as a solid waste management unit (SWMU) and designated as SWMU No. 10 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation included soil sampling and analysis, which indicated the presence of organic contaminants above State of New Mexico corrective action levels and trace metals slightly above ambient background concentration. Results and recommendations were reported to the U.S. Environmental Protection Agency (EPA) in 1990. In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling and analysis confirmed the original findings.

A final remedy plan was proposed in the Phase I RFI supplemental report, which included remediation of the soils. In-place remediation of the soils was formalized in the voluntary corrective action plan (VCAP) for the sludge pits submitted to the EPA in December 1992. The EPA approved the VCAP in November 1993, requiring additional site monitoring. The additional monitoring was completed in 1994.

### 10.1 Site Description and Operational History

SWMU No. 10, *Sludge Pits*, (Figure 10-1) consists of two former American Petroleum Institute (API) separator sludge pits located approximately 200 feet southwest of the existing API separator. The sludge pit area is an oblong flat site measuring approximately 120 feet wide by 200 feet long. Within this area, two pits were previously excavated and filled with oily waste from the API separator. In 1980, the sludge was removed from the pits and replaced with clean fill soil. The site was then covered with a layer of clean soil. Photographs of the sludge pits, taken during the 1998 site inspection performed by Practical Environmental Services, Inc. (PES), are provided in the SWMU No. 10 Summary Report.

### 10.2 Land Use

The sludge pits have been backfilled and are no longer being used. The area is vacant of operations and is naturally revegetating. The area, which has not been designated for a new purpose, will remain under the ownership of Ciniza.

### 10.3 Investigation Activities

Applied Earth Sciences (AES) investigated the sludge pits in 1990 and 1995. Soil samples were collected and analyzed. Trace volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals were detected in several of the samples.



1 10.3.1 Investigation #1

2 During the initial site investigation in 1990, AES collected and analyzed soil samples from eight locations  
3 and multiple depths within the sludge pits: surface, and 3, 6, 9, and 12.5 feet below ground surface. VOCs  
4 were detected in 7 of 27 samples; xylenes, at 540 mg/kg, represented the highest detected concentration.  
5 SVOCs were detected in 10 of 27 samples; methylnaphthalene, at 1,400 mg/kg, represented the highest  
6 detected concentration.

7 As a result of this investigation, AES recommended tilling the site to promote natural attenuation of  
8 organics, followed by capping to contain residual metals. Results and recommendations were reported to  
9 the EPA in 1990. In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling  
10 and analysis confirmed the original findings.

11 10.3.2 Investigation #2

12 In 1995, AES conducted a second round of sampling and analysis at eight locations and depths of 19 and  
13 25 feet below ground surface. No VOCs were detected in any sample. Trace SVOCs were detected in four  
14 samples, of which di-n-butyl phthalate, at 13 mg/kg, represented the highest detected concentration.

15 State of New Mexico corrective action levels for benzene, toluene, ethylbenzene, and xylenes (BTEX) in  
16 soil is 50 mg/kg total and 10 mg/kg benzene. Seven of 43 samples indicated BTEX constituents, the  
17 highest of which was over 900 mg/kg total; which is above the 50 mg/kg action level.

18 All samples detected trace metals. Chromium and lead were detected at levels above ambient background  
19 concentration.

20 10.4 Site Conceptual Model

21 There is no impact on the environmental fate of the land.

22 10.5 Site Assessments

23 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- 24 • The sludge pits area was observed vacant and inactive. No sign of soil staining or residual  
25 waste was evident at or in the vicinity of the site.
- 26 • Native shrubs and grasses were observed growing throughout the general vicinity. No signs  
27 of distress were evident.
- 28 • Local soil in the vicinity of the sludge pits is bentonitic clays and silts. Similar soil strata  
29 from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

1 PES did not perform any sampling or analysis during this site inspection. The inspection was limited only  
2 to visual observations.

3 Based on this site assessment, PES determined that SWMU No. 10 has been characterized in accordance  
4 with current applicable state and federal regulations and that installation of an engineered earthen cap is  
5 recommended as corrective action for this site.

#### 6 10.6 NFA Proposal

7 Ciniza is proposing that no further action is required for SWMU No. 10 based on the following criterion:  
8 A release from the SWMU to the environment has occurred, but the SMWU was characterized and  
9 remediated (capped), adequately addressing RCRA corrective action. Documentation, such as a closure  
10 letter, is available. (NFA Criterion 4)

11 The following provides the basis for this proposal:

- 12 • Oily waste originally placed in the sludge pits has been substantially removed and the pits  
13 now contain a mixture of residual waste and backfilled clean soil.
- 14 • Residual organic contaminants, consisting of both VOCs and SVOCs, are present in moderate  
15 concentrations and substantially confined to a 20 foot soil layer beneath the surface cover.
- 16 • Residual metal contaminants, consisting primarily of chromium and lead, are present in the  
17 same soil layer at elevated levels.
- 18 • The currently approved VCAP recommended excavation and tilling to enhance  
19 biodegradation of organics. This technique would have exposed soil metals to oxidation and  
20 precipitation; thereby mobilizing these contaminants and promoting migration. The  
21 alternative corrective action of installing an engineered soil cap represented a preferred and  
22 appropriate remedy for this site.
- 23 • Local soil underlying this site has a very low hydraulic conductivity, which effectively  
24 inhibits outward migration of contaminants.

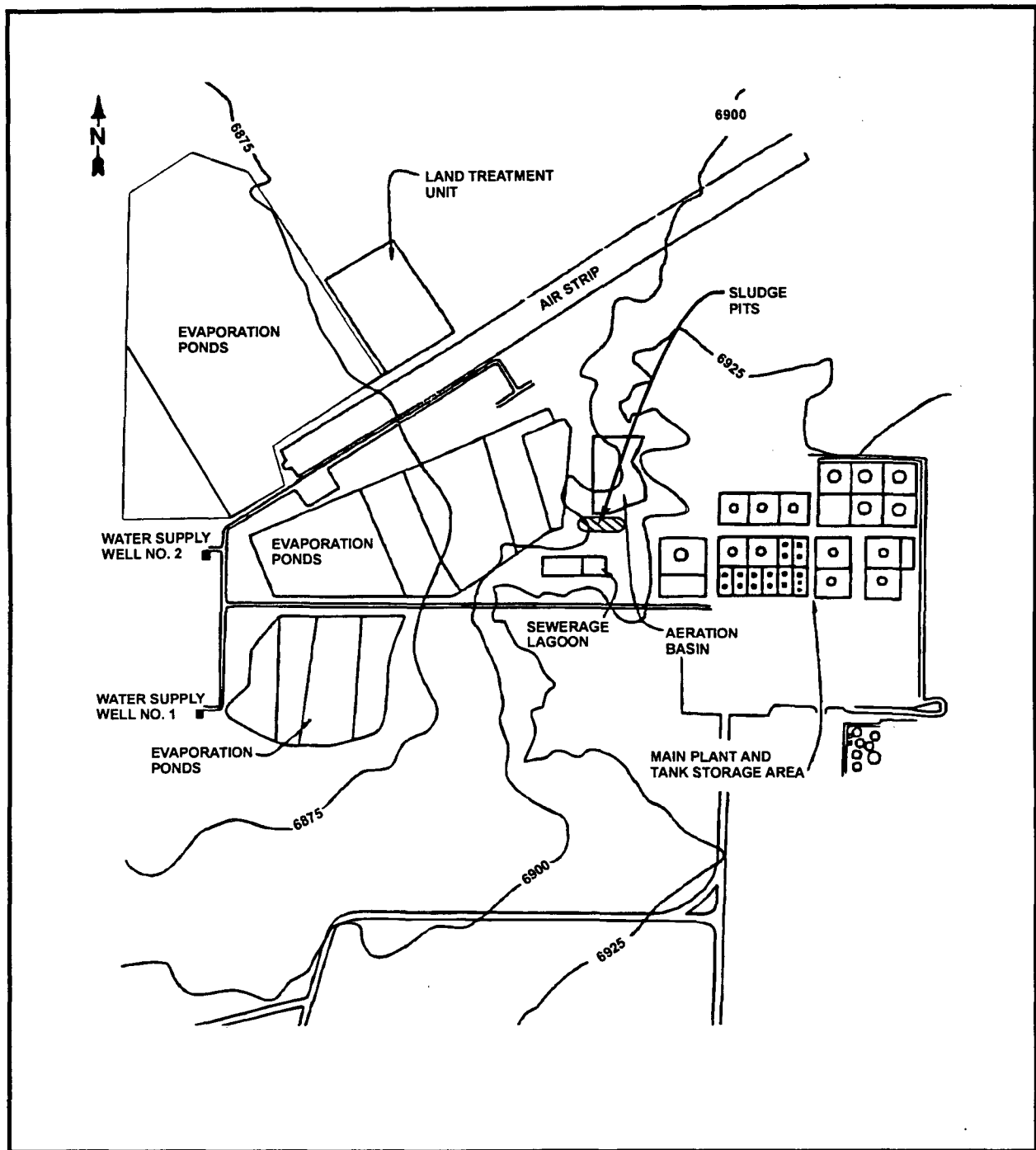


Figure 10-1. SWMU No. 10, Sludge Pits

# SWMU #10 Summary Report

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## Sludge Pits

Ciniza Refinery  
McKinley County, New Mexico



Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the sludge pits located at the Ciniza Refinery, in McKinley County, New Mexico.

The sludge pits area was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #10, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, detected organic contaminants, and recommended corrective action.

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested additional sampling at greater depth. Results confirmed previous findings. A corrective plan was prepared by Ciniza and approved by the EPA.

This summary report for SWMU #10 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #10 have been completed. This assessment is summarized as follows.

- ⇒ Sludge was removed from the pits in 1980 and replaced with clean soil. The site was then covered with a layer of clean soil.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent re-investigation at greater depth. Organic contaminants were detected above corrective action levels.
- ⇒ SWMU #10 has been characterized in accordance with current applicable state and federal regulations.
- ⇒ Installation of an engineered earthen cap is recommended as corrective action for this site.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "solid waste management units" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the sludge pits area was identified as SWMU #10.

Applied Earth Sciences (AES) investigated the sludge pits area during the early 1990s. Soil samples were collected and analyzed. Organic contaminants were detected above State of New Mexico corrective action levels. Trace metals were also detected; of which, a few samples indicated levels slightly above ambient background concentration.

As a result of the investigation, AES recommended tilling the site to promote natural attenuation of organics, followed by capping to contain residual metals. Results and recommendations were reported to the EPA in 1990. In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling and analysis confirmed the original findings.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMU #10 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #10 is located approximately 200 feet southwest of the API separator. See Figure No. 1 for location details.

The sludge pits area is an oblong flat site measuring approximately 120 feet wide by 200 feet long. Within this area, two pits were previously excavated and filled with oily waste from the API separator.

In 1980, the sludge was removed from the pits and replaced with clean fill soil. The site was then covered with a layer of clean soil.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The sludge pits area was observed vacant and inactive. No sign of soil staining or residual waste was evident at or in the vicinity of the site.
- Native shrubs and grasses were observed growing throughout the general vicinity. No signs of distress were evident.
- Local soil in the vicinity of the sludge pits presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

### 5.0 DATA REVIEW

Soil samples from within the sludge pits area were collected and analyzed during the initial site investigation and subsequent re-sampling at greater depth.

In 1990, the initial site investigation collected samples at eight locations and multiple depths; including surface, 3, 6, 9, and 12.5 feet below ground surface. VOCs were detected in 7 of 27 samples; of which, xylenes at 540 mg/kg represented the highest detection. SVOCs were detected in 10 of 27 samples; of which, methylnaphthalene at 1,400 mg/kg represented the highest detection.

In 1995, a second round of sampling and analysis was conducted at eight locations and depths of 19 and 25 feet below ground surface. No VOCs were detected in any sample. Trace SVOCs were detected in four samples; of which, di-n-butyl phthalate at 13 mg/kg represents the highest detection.

State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg of benzene. Seven of 43 samples indicated BTEX constituents, the highest of which was over 900 mg/kg total; which is above the 50 mg/kg action level.

All samples detected trace metals; of which, chromium and lead were detected at levels above ambient background concentration.

## 6.0 ASSESSMENT

Based on the site inspection and data review, the sludge pits area is assessed as follows.

- Oily waste originally placed in the sludge pits has been substantially removed and the pits now contain a mixture of residual waste and backfilled clean soil.
- Residual organic contaminants, consisting of both VOCs and SVOCs, are present in moderate concentrations and substantially confined to a 20 foot soil layer beneath the surface cover.
- Residual metal contaminants, consisting primarily of chromium and lead, are present in the same soil layer at elevated levels.
- The currently approved CAP recommends excavation and tilling to enhance biodegradation of organics. This technique will expose soil metals to oxidation and precipitation; thereby mobilizing these contaminants and promoting migration.
- Local soil underlying this site has a very low hydraulic conductivity which effectively inhibits outward migration of contaminants.
- An alternative corrective action is recommended. Installation of an engineered soil cap represents a preferred and appropriate remedy for this site.

## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

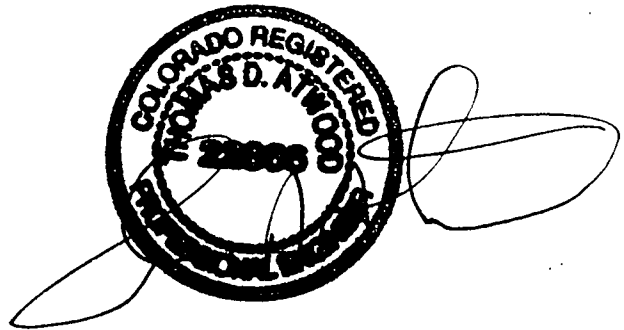
This summary report for SWMU #10 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

Date: April 23, 1998

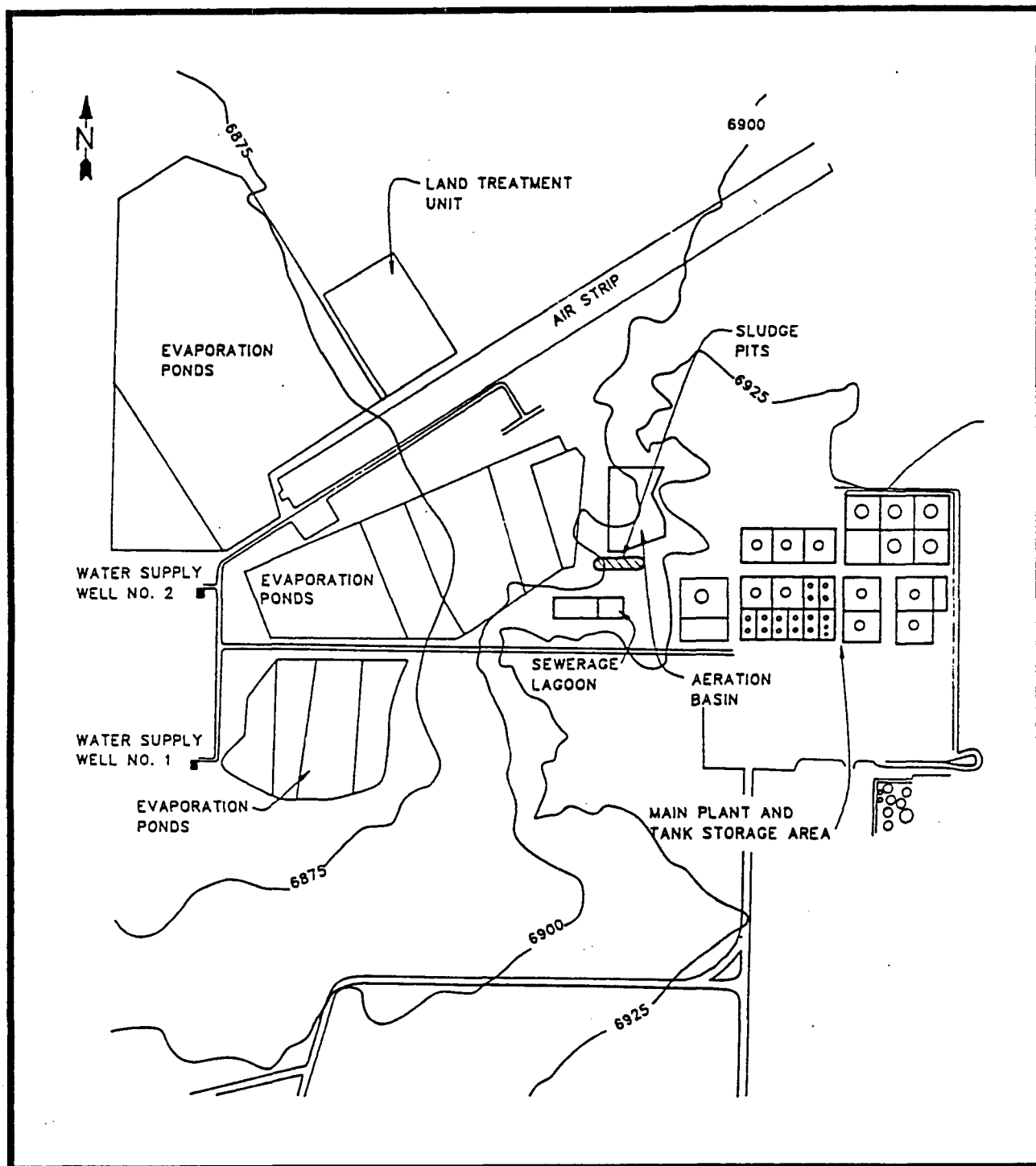
Prepared and Certified by:



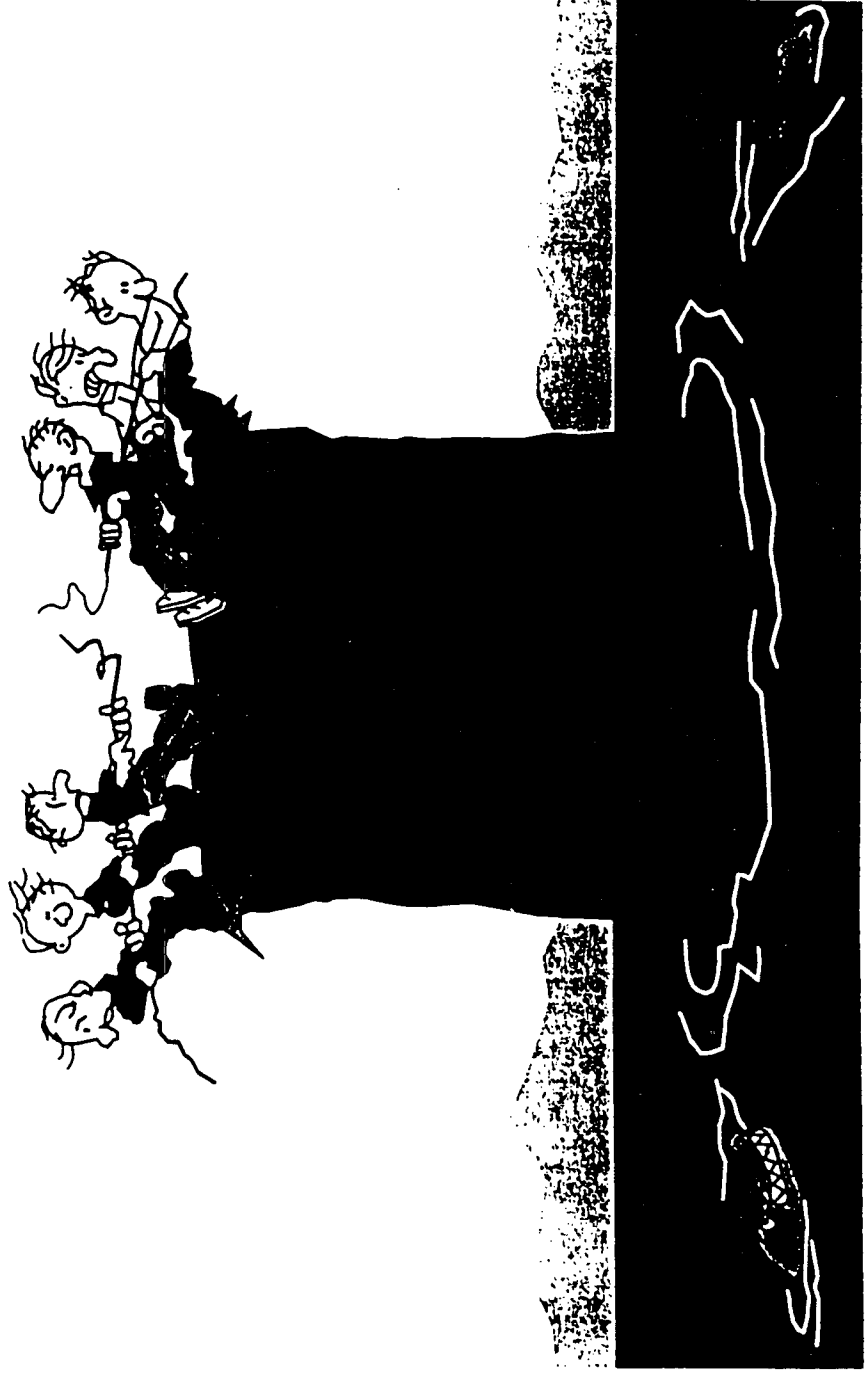
Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

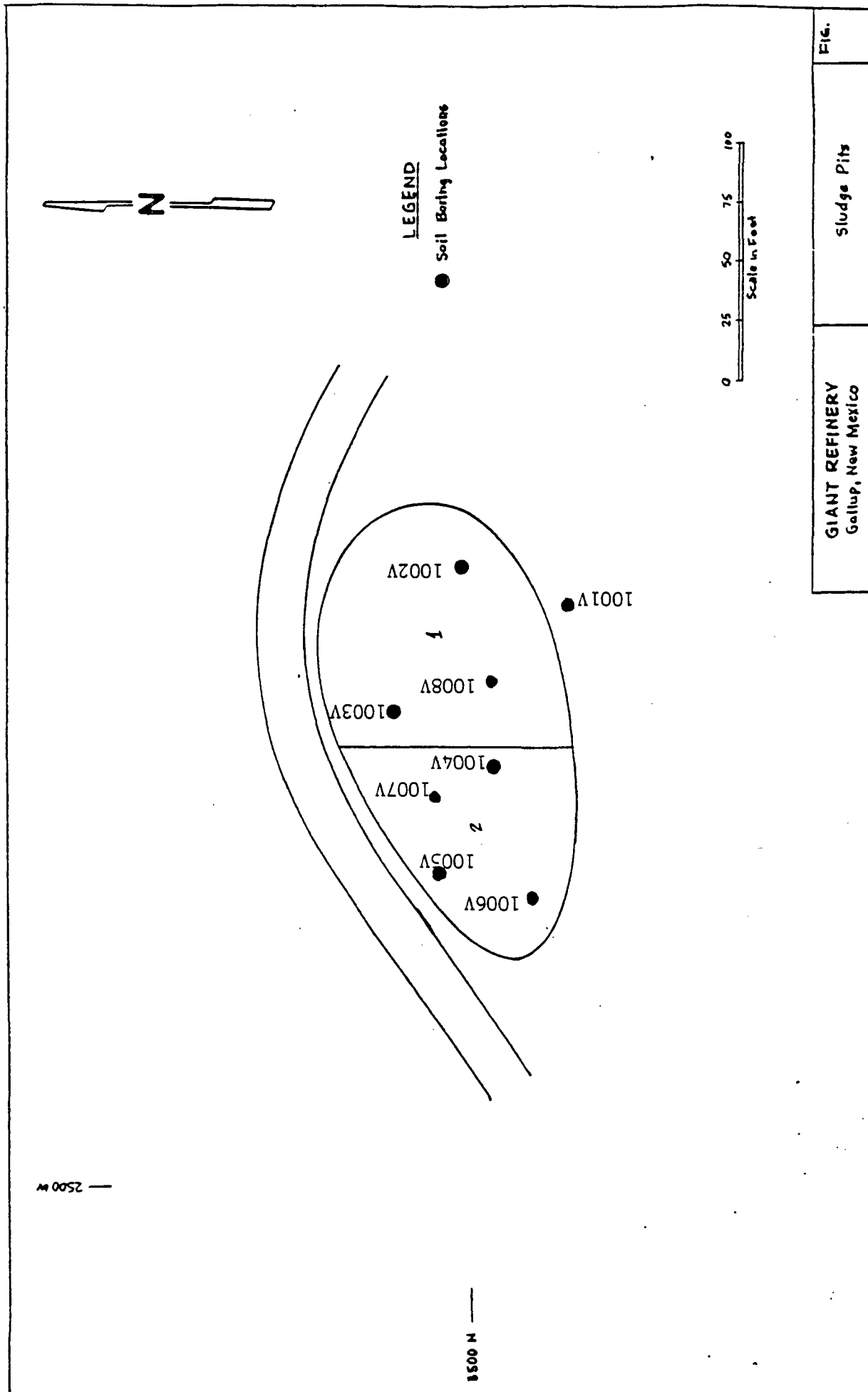


Figure No. 1  
Sludge Pits Area



# SWMU-9 SLUDGE PITS





SENT BY:

3-15-96 ; 3:36PM ;

Reg 6 Haz Waste

5057220210:# 1/ 3

## FACSIMILE TRANSMITTAL



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Ciniza

MACHINE NUMBER: 505.722.0210

VERIFICATION NUMBER: 505.722.0227

FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist

PHONE: (214) 665-8302

Mail Codes: GPD-N

OFFICE: New Mexico/Federal Facilities Section

PAGES, INCLUDING COVER SHEET

3

DATE: March 15, 1996

PLEASE NUMBER ALL PAGES

## INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT:

FACSIMILE NUMBER:

VERIFICATION NUMBER:

PANAFAX UF-766

(214) 665-6762

(214) 665-6760

## COMMENTS

Ed,

Here's what I have been using to track Giant, Ciniza's corrective action program. Please review and let's discuss it next week. Have a good one.

Thank,

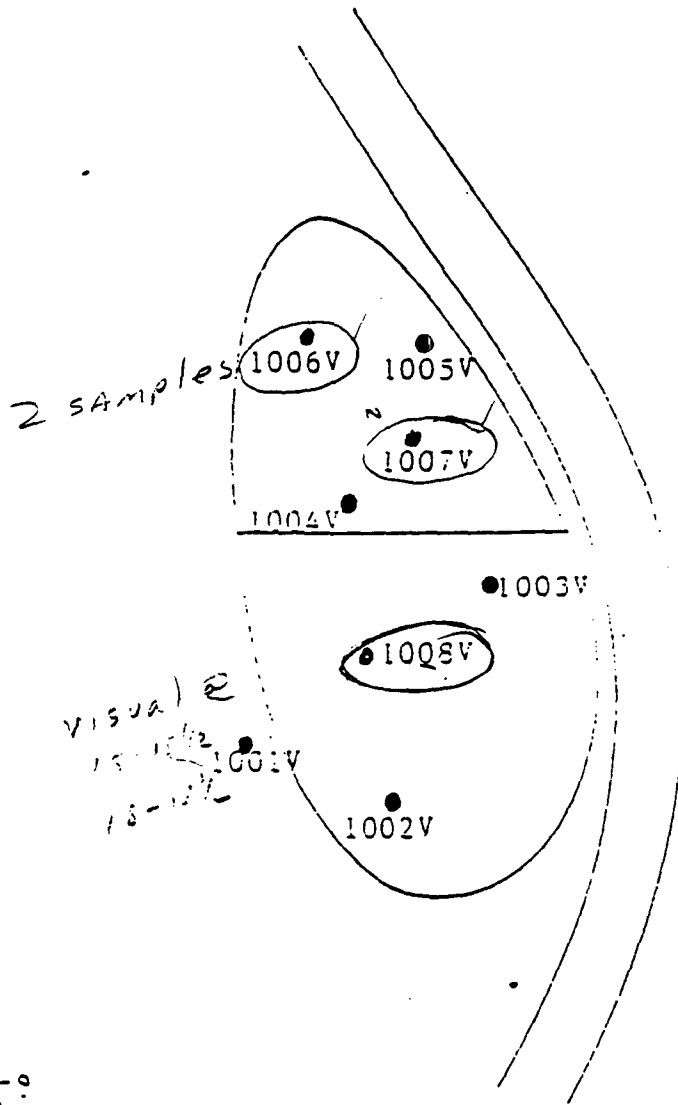
James

**BMU TRACKING LIST - GIANT REFINERY EPA ID: MND000333211, Gallup, NM**

<b>BMU # now using 5/90 RFI WKPLM Designation; HSWA in ( ).</b>	<b>PHASE/GROUP</b>	<b>STATUS</b>	<b>COMMENTS/NOTES</b>
<b>6: The Tank Farm - Leaded Gasoline Tanks (3)</b>	Phase I		Additional sampling for extent of contamination and confirmation sampling is required; completed first quarter '95
<b>9: The Drainage Ditch near the Inactive Land Farm (10 &amp; 13)</b>	"		Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process.
<b>8: The Railroad Rack Lagoon (6)</b>	"	under voluntary corrective action	monitoring requirements submitted w/quarterly status reports; notify EPA when final closure has been initiated; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
<b>8: The Overflow Ditch (associated w/Railroad Rack Lagoon) (6)</b>	"	"	"
<b>8: The Fan Out Area (associated w/Railroad Rack Lagoon) (6)</b>	"	"	"
<b>10: The Sludge Pits (9)</b>	"	"	monitoring requirements submitted w/quarterly status reports; notify EPA when final closure has been initiated

8500 N

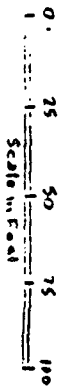
2500 W



● Soil Boring Locations

LEGEND

N



GIANT REFINERY  
Guthrie, New Mexico

Sludge Pits

OCD INSPECTION (TENTATIVE)

4-29 MON - BAIL, PUMP + SAMPLE OW 16, 25, 26

PUMP MW 4, OW 5, 7

4-30 TUES - SAMPLE MW-4, OW 5, 7

PUMP OW 1, 2, 9, + 10

5-1 WED - SAMPLE OW 1, 2, 9 + 10

INSPECT

5-2+3 THU + FRI OPEN (FINISH INSPECTION, SAMPLE  
OW 12, 13, 14, 20)

RFI PHASE I + II

MON, MAY 6 - SWMU #8 - 2 samples 7-7 1/2'

+ DUPLICATE, 1 TRIP BLANK

SWMU #6 - TAVIL #51, 453 11-11 1/2'

#568 - 11-11 1/2'

CUT DIKE ON #567 FOR TUESDAY

(TUES) MAY 7 - SAMPLE #569 - 11-11 1/2' (+ DUPLICATE)

(1 DUP) (EQPT RINSE) #569 (2 sample points) 11-11 1/2'

(TRIP BLANK) #570 - 11-11 1/2'

#571

#572

(WED) MAY 8 - SWMU #10 -  
(SLUDGE PIT)

2 SAMPLES @ 15-15 1/2'  
(1 DUPLICATE + 1 EQUIP BLANK)

(STEAM BUCKET @ 12-13')

VISUAL @ 18'

1 VISUAL ON 3RD HOLE @ 15-15'

VISUAL @ 18'

(SEPARATE SAMPLE OF BLACK SLUDGE)  
FOR INSITU REMEDIATION ~ 1 qt.

~~MAY 9 - SWMU #13 - POND #10 + DITCH~~

~~1 DUPLICATE~~

~~4 holes 2-2 1/2 + 4-4 1/2~~

~~1 TRIP BLANK~~

~~8 samples~~

~~1 EQUIPMENT~~

MAY 10, 13, 15 START SWMU #2 - TAKE PROBABLY  
THREE DAYS

12 VERTICAL, 6 ANGLE - 3 1/2-4, 5-5 1/2, 6 1/2-7

(54 samples)

(3 DUPLICATES, 2 EQUIP BLANKS, 3 TRIP BLANKS)

MAY -14 KRAMER AIR SAMPLING

MAY 16<sup>17, 20</sup> SWMU #1 AERATION LAGOONS 1 vertical  
(3 DAYS) 2 ANGLE

4-4 1/2, 9-9 1/2, 11-11 1/2, 14-14 1/2

24 samples

2 EQU BLANKS, 3 TRIP BLANKS

2 DUPLICATES





Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

June 28, 1994

Rich Mayer  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the Quarterly Progress Report for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

  
John Stokes  
Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.

David Pavlich, Health/Safety and Environmental Manger  
Giant Refining Company

INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton *LS*

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
3	6.0', 10.0'	\$475		\$7,026

II. SWMU #5 Landfill Areas

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
9	11.0', 16.0, 20.0'	\$2,848		\$21,525

III. SWMU #6 Tank Farm

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
8	16.0', 20.0'	\$2,531		\$1,000

IV. SWMU #7 Fire Training Area

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
2	7.0', 11.0'	\$348		\$400

V. SWMU #10 Sludge Pits

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
18	19.0', 25.0'	\$7,119		\$18,450

VI. SWMU #11 Secondary Oil Skimmer

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
2	6.0', 10.0'	\$316		\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp

OCD

INSPECTION

(TENTATIVE)

4-29 MON -

BAIL, PUMP + SAMPLE OW 16, 25, 26

PUMP MW 4, OW 5, 7

4-30 TUES -

SAMPLE MW-4, OW 5, 7

PUMP OW 1, 2, 9, + 10

5-1 WED -

SAMPLE OW 1, 2, 9 + 10

INSPECT

5-2+3 THU + FRI

OPEN (FINISH INSPECTION, SAMPLE

OW 12, 13, 14, 20)

RFI PHASE I + II

MON, MAY 6 - SWMU #8 - 2 samples 7-7 1/2'

+ DUPLICATE, 1 TRIP BLANK

SWMU #6 - TANIL #54, #53 11-11 1/2'

#569 - 11-11 1/2'

CUT DIKE ON #567 FOR TUESDAY

TUES) MAY 7 - SAMPLE #569 - 11-11 1/2' (+ DUPLICATE)

(1 DUP) (EQPT RINSE) #569 - (2 sample points) 11-11 1/2'

(TRIP BLANK) #570 - 11-11 1/2'

#571

#572 -

(WED) MAY 8 -

SWMTU #10 -  
(SLUDGE PIT)

2 samples @ 15-15 1/2'

(1 DUPLICATE + 1 EQUIP BLANK)

(STEAM BUCKET @ 12-13')

VISUAL @ 18'

1 VISUAL ON 3RD HOLE @ 15-15 1/2'

VISUAL @ 18'

(SEPARATE SAMPLE OF BLACK SLUDGE)

FOR INSITU REMEDIATION ~ 1 qt.

~~MAY 9 - SWMU #13 - POND #10 + DITCH~~

~~1 DUPLICATE~~

~~4 holes 2-2 1/2 + 4-4 1/2~~

~~1 TRIP BLANK~~

~~8 samples~~

~~1 EQUIPMENT~~

MAY 10, 13, 15 START SWMU #2 - TAKE PROBABLY  
THREE DAYS

12 VERTICAL, 6 ANGLE - 3 1/2-4, 5-5 1/2, 6 1/2-7

(54 samples)

(3 DUPLICATES, 2 EQUIP BLANKS, 3 TRIP BLANKS)

MAY -14 KRAMER AIR SAMPLING

MAY 16<sup>17, 20</sup> SWMU #1 AERATION LAGOONS 1 vertical  
(3 DAYS) 2 ANGLE

4-4 1/2, 9-9 1/2, 11-11 1/2, 14-14 1/2

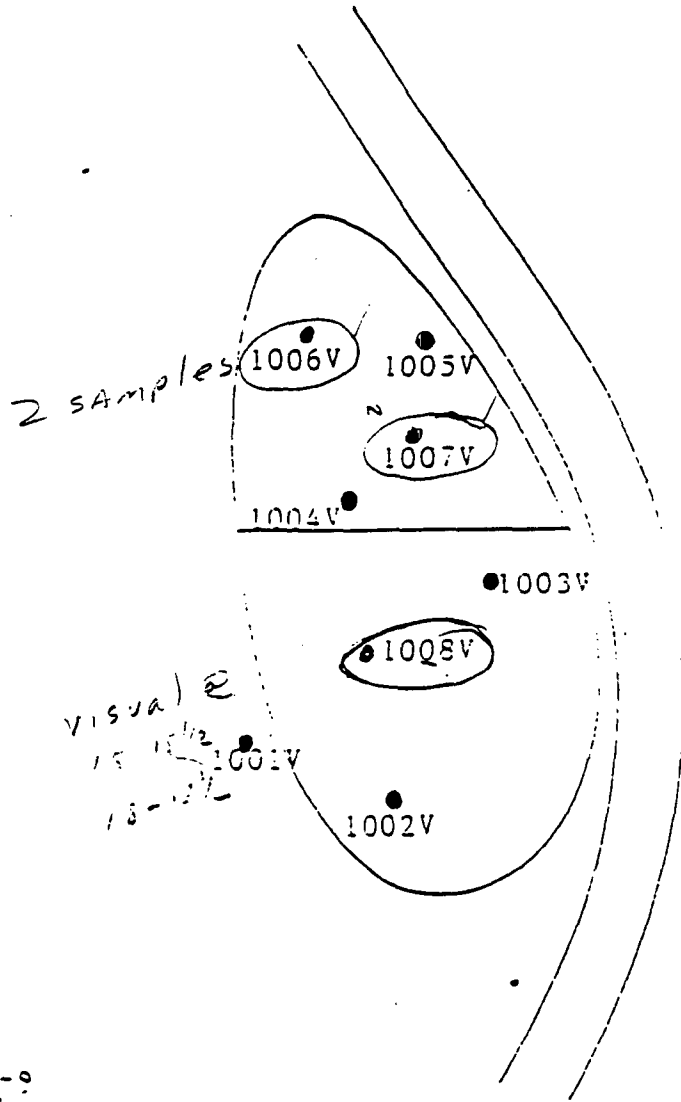
24 samples

2 EQU BLANKS, 3 TRIP BLANKS

2 DUPLICATES

8500 ft

2500 ft

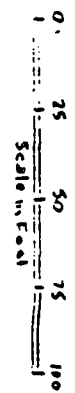


visual R  
15-16 1/2  
18-19 1/2

● Soil Boring Locations

LEGEND

N



GIANT REFINERY Gallup, New Mexico	Sludge Pits
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#### 4.0 SUMMARY AND DISCUSSION OF SWMUs

This section summarizes the methods used to investigate each of the SWMUs and presents a summary of the field observations and analytical results. Recommendations are also made for future corrective actions.

##### 4.1 SWMU No. 4 - Old Burn Pit

SWMU No. 4 consists of the old burn pit located just north and slightly west of the tank farm (Figure 4). The old burn pit was used to burn acid-soluble oils (ASO) which are a high molecular weight, asphalt-type cross polymerized hydrocarbon. The pit has been inactive since the early 1980s.

##### 4.1.1 Methods

Three soil borings were drilled within the perimeter of the old burn pit using a CME drilling rig with a 2½" hollow-stem carbon steel auger to a depth of 10.0 feet. Samples were collected at the 6.0 and 10.0 foot intervals. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Attempts were made to take field headspace measurements with the photo ionization detector (PID), but, part way through the sampling schedule, the PID pump ceased functioning.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to Westech Laboratories in El Paso, Texas under chain of custody (COC). Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); semi-volatile organic compounds (SVOCs) using EPA Method 8270 (Skinner



List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.1.2 Results

Only one VOC (Methyl Ethyl Ketone [MEK]) and no SVOCs were observed in the analytical data. MEK was observed in RFI 0406V6.0 at a concentration of 1.2 mg/kg.

Chromium and nickel were observed in concentrations that exceeded background levels for soil at the Ciniza refinery area. Chromium exceedances were observed in 4 of 7 samples, ranging from 23 to 49% above background levels. Nickel exceedances were observed in 3 of 7 samples, ranging from 35 to 53% above background levels. Cadmium, lead, mercury, arsenic, barium, beryllium, and vanadium concentrations were within background levels in all of the samples examined.

#### 4.1.3 Recommendations

Soil analyzed from the old burn pit contained only one elevated concentration of VOCs and some elevated levels of nickel and chromium. The VOC, methyl ethyl ketone, was detected at 1.2 mg/kg.

Remediation of this site should be limited to tilling the soil to a depth of 4.5 feet to aerate the deeper soil to promote natural attenuation. The metals can be isolated from human contact and surface receptors by applying a cap of native soil. This would also prevent infiltration of surface water and thereby limit downward migration of constituents.

A corrective action plan will be prepared for SWMU No. 4 and submitted for EPA approval.

#### 4.2 SWMU No. 5 - Landfill Areas

SWMU No. 5 consists of landfill areas midway between the tank farm and the air strip (Figure 6). The landfills were used to dispose of non-regulated, non-hazardous materials from the refinery. The landfills have been inactive since the early 1980s.

#### 4.2.1 Methods

Seven soil borings were drilled, as extensions of previous RFI borings, with a CME drilling rig using a 2½" hollow stem carbon steel auger to a depth of 20 feet (Figure 7). Samples were collected at 11.0, 16.0, and 20.0 feet. A description of the soil types encountered during drilling was recorded on the lithologic log (Appendix C). Field headspace measurements of volatile organic concentrations in each soil sample were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed in a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOC using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.2.2 Results

VOCs were not detected in any of the soil samples collected. Field headspace measurements of volatile organic compounds made with a PID were all non-detect.

One SVOC was detected in three samples from three bore holes. Di-n-Butyl phthalate was detected in RFI 0515V20.0 at 13 mg/kg; in RFI 0516V16.0 at 7.5 mg/kg; and in RFI 0516V20.0 at 13.0 mg/kg.

Barium, chromium, lead, and nickel were detected concentrations exceeding background levels in the refinery area. Chromium was detected in 12 of 22 samples in concentrations from 7 to 120% above background levels. Barium was detected in 2 of 22 samples in concentrations from 25 to 31% above background levels. Lead was detected in 3 of 22

samples in concentrations from 2 to 15% above background levels; and nickel was detected in 12 of 22 samples in concentrations of 33 to 34% above background levels.

#### 4.2.3 Recommendations

Elevated concentrations of chromium, barium, lead, and nickel were detected in the landfill area. Capping with a native soil cap, sloped to allow drainage away from the SWMU, will isolate the metals from surface receptors and will limit infiltration of surface water and downward migration of contaminants. Giant proposes to proceed with the corrective action plan submitted in February, 1993 to USEPA Region VI.

#### 4.3 SWMU No. 6 - Tank Farm

SWMU No. 6 consists of seven hydrocarbon storage tanks, (ranging in size from 1,000 to 24,800 barrels) that have contained leaded gasoline (that is, gasoline blended with the compound tetraethyl lead). The tank farm is located immediately north of the operating units (Figure 2).

##### 4.3.1 Methods

Seven borings were made, as extension of previous RFI borings, with a CME drilling rig using a 2½" hollow stem carbon steel auger. Samples were collected at 16.0 feet in all borings except RFI 0642V20.0 which was collected at 20.0 feet per USEPA request. Additional depths were sampled as necessary. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted with a PID, but the meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Section 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam

cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: 8020 BTEX with the exception of samples RFI 0610V16.0 and RFI 0641V19.0 which were accidentally marked on the COC for VOCs by 8240/8260 Skinner List. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.3.2 Results

Elevated levels of VOCs were detected in most samples. Two tanks in particular showed high concentrations of BTEX, with results for total BTEX of 601,000 ug/kg in sample RFI 0639V16.0 (Tank 569) and 318,600 ug/kg in sample RFI 0640V16.0 (Tank 570). Concentrations in both of these borings showed marked reductions from the 16.0 foot to the 20.0 foot levels: 82% and 41% respectively. Other samples ranged from 52 ug/kg to 190,300 ug/kg for total BTEX. It is important to note that the highest benzene concentration in any sample was 4,600 ug/kg. It is also important to note that none of the deeper samples exceeded the New Mexico Environment Improvement Board water quality control regulatory action limits, which are:

Benzene	-	10,000 ug/kg
BTEX	-	500,000 ug/kg

In the event that obvious contamination is observed in a boring, standard practice is to continue drilling until two "clean" samples are obtained. As previously mentioned, the PID meter malfunctioned part way through the sampling program and, due to the fact that the Ciniza refinery is so isolated, a replacement PID meter could not be found in a timely manner. Sampling and drilling personnel were thus forced to rely on their olfactory senses in determining whether or not the samples collected appeared to be "clean".

#### 4.3.3 Recommendations

Although the deepest samples contained BTEX in concentrations lower than WQCC standards, Giant has contracted to drill additional corings at Tank 569 and 570 to more adequately characterize BTEX concentrations. This drilling will occur on

October 24, 1994.

Giant was unable to drill a coring at tank 451 due to limited operating space. A hand auger was used, but sampling personnel were unable to penetrate a gravel interval at approximately 14.0 feet. A portable pneumatic sampling spoon will be used on October 24 or 25 to obtain the samples at RFI 0635V16.0 (Tank 451). Results of both additional sampling activities will be submitted by December 1, 1994.

Elevated BTEX levels at the leaded tanks will need to be addressed. Giant will submit a corrective action plan to EPA to address those problems.

#### 4.4 SWMU No. 7 - Fire Training Area

SWMU No. 7 consists of an open top tank, approximately 1,000 bbl, cut to one-third of its original height. This tank has been used once or twice per year for fire training for the Ciniza fire fighting team.

##### 4.4.1 Methods

Two borings were made, at two points that had been previously sampled, at an angle under the tank. Samples were collected at 7.0 and 11.0 feet in both borings. A description of the soil types encountered during drilling was recorded on the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample was attempted, but the PID meter was found to be defective.

The soil samples were collected in a clean stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All auger flights, split spoons, and sampling equipment were decontaminated by steam cleaning and/or washing as outlined by Section 5.0 of the Generic Sampling Plan.

Westech Laboratories analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method

8270 (Skinner List); Total Petroleum Hydrocarbon and Oil & Grease. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.4.2 Results

No VOCs were detected in SWMU No. 7. An SVOC (di-n-butyl phthalate) was detected in two samples (RFI 0705A11.OD and RFI 0706A7.0). No concentrations of Total Petroleum Hydrocarbon or Oil & Grease were detected in this SWMU.

#### 4.4.3 Recommendations

Additional sampling has demonstrated that Oil & Grease and TPH contamination is limited to a total depth of approximately 4.5 feet. Tilling and additions of nutrients will reduce the Oil & Grease concentrations. Upon approval by EPA, Giant will implement the corrective action plan submitted in February, 1993.

### 4.5 SWMU No. 10 - Sludge Pits

SWMU No. 10 consists of two connected pits that received API separator sludge (K051) and slop oil emulsion solids (K049) in the past. Contents of the pits were vacuumed out in 1980 and clean, dry soil was used to backfill the pits. The sludge pits were sampled in 1990 and again in 1991. A corrective action plan was submitted in 1993 and Giant has been given the authorization to proceed with bioremediation activities, with requirements (see EPA letter of January 7, 1994, in the Correspondence Section).

#### 4.5.1 Methods

Eight borings were made to a depth of 25.0 feet, two being required by EPA to fully characterize the extent of potentially hazardous constituents, and the other six to satisfy requirements of closure of SWMU #10. All borings were made with a CME drilling rig using a 2½" hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic log (Appendix C). Field headspace measurement of volatile organic concentrations in each soil sample were made with a PID meter and

these data were recorded on the data management forms.

The soil samples were collected into a stainless steel pan and were then placed into laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each use by steam cleaning and/or washing as outlined in Section 5.0 of the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List); SVOCs using EPA Method 8270 (Skinner List); and Total Metals. Analytical results are summarized below and are also presented in tabulated form in the appendices.

#### 4.5.2

##### Results

No VOCs were detected in SWMU No. 10. An SVOC (di-n-butyl phthalate) was detected in four samples: RFI 1018V19.0 at 13 mg/kg; RFI 1019V25.0 at 11 mg/kg; RFI 1021V19.0 at 11 mg/kg; and RFI 1021V25.0 at 11 mg/kg. Giant believes these results may be due to outside contamination. Barium, chromium, lead, and nickel showed significant statistical exceedances above background soil samples from the refinery area. Barium exceedances were observed in 10 of 17 samples, ranging from 2 to 182 % above background. Chromium exceedances were observed in 13 of 17 samples, ranging from 2 to 95%. Lead was observed in 11 of 17 samples, ranging from 2 to 28%. Nickel was observed in 17 of 17 samples, ranging from 9 to 67% above background. The detection of metals showed even distribution throughout the SWMU.

#### 4.5.3

##### Recommendations

Due to the absence of hazardous hydrocarbon constituents at the deeper levels, Giant proposes to implement the corrective action plan submitted to EPA in February, 1993.

#### 4.6 SWMU No. 11 - Secondary Skimmer

SWMU No. 11 consists of the area where the old secondary skimmer was situated, in a drainage ditch south of evaporation Lagoon #4. The secondary skimmer has not been used since the late 1970s and was removed in 1991 to expedite sampling.

##### 4.6.1 Methods

Two borings were made , to a depth of 10.0 feet, within the area occupied by the secondary skimmer with a CME drilling rig using a 2½" hollow stem carbon steel auger. A visual description of the soil types encountered while drilling was recorded in the lithologic logs (Appendix C). Field headspace measurement of volatile organic concentrations were made with a PID meter and recorded on the data management forms.

The soil samples were collected in a stainless steel pan and were then place in laboratory supplied containers, labeled, and placed into a cooler chilled to approximately 4°C for shipment to the lab under COC. Samples were collected, labeled, and shipped as required by Sections 3.4, 4.0, and 6.0 of the Generic Sampling Plan. All augers, split spoons, and sampling equipment were decontaminated prior to each used by steam cleaning and/or washing as outlined by Section 5.0 to the Generic Sampling Plan.

Westech Laboratory analyzed each of the soil samples collected for: VOCs using EPA Method 8240/8260 (Skinner List) and SVOCs using EPA Method 8270 (Skinner List). Analytical results are summarized below and are also presented in tabulated form in the appendices.

##### 4.6.2 Results

Two VOCs (ethylbenzene and xylenes) were detected in two borings: RFI 1104V6.0 and RFI 1104V10.0. No SVOCs were detected.

##### 4.6.3 Recommendations

The extremely low levels of volatile organic compounds present no threat to human health or the environment. Giant believes that natural attenuation will remove the remaining trace VOCs.



INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *JS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- \* Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- \*\* Tank Farm
- \*\* Empty Container Storage
- \*\* Old Burn Pit
- \*\* Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

### III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3  
1994 Analytical Costs

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

TABLE 4  
BIENNIAL ANALYTICAL COST

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
2	7	Metals	6,900
		8240	1,750
		8270	2,765
13	12	Metals	1,435
		pH	70
		8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>



**TABLE 5**  
**TOTAL COST OF 1994 SAMPLING**  
**(ESTIMATE)**

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR</u> *	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

\* Including Drilling Rig

#### IV. Conclusions

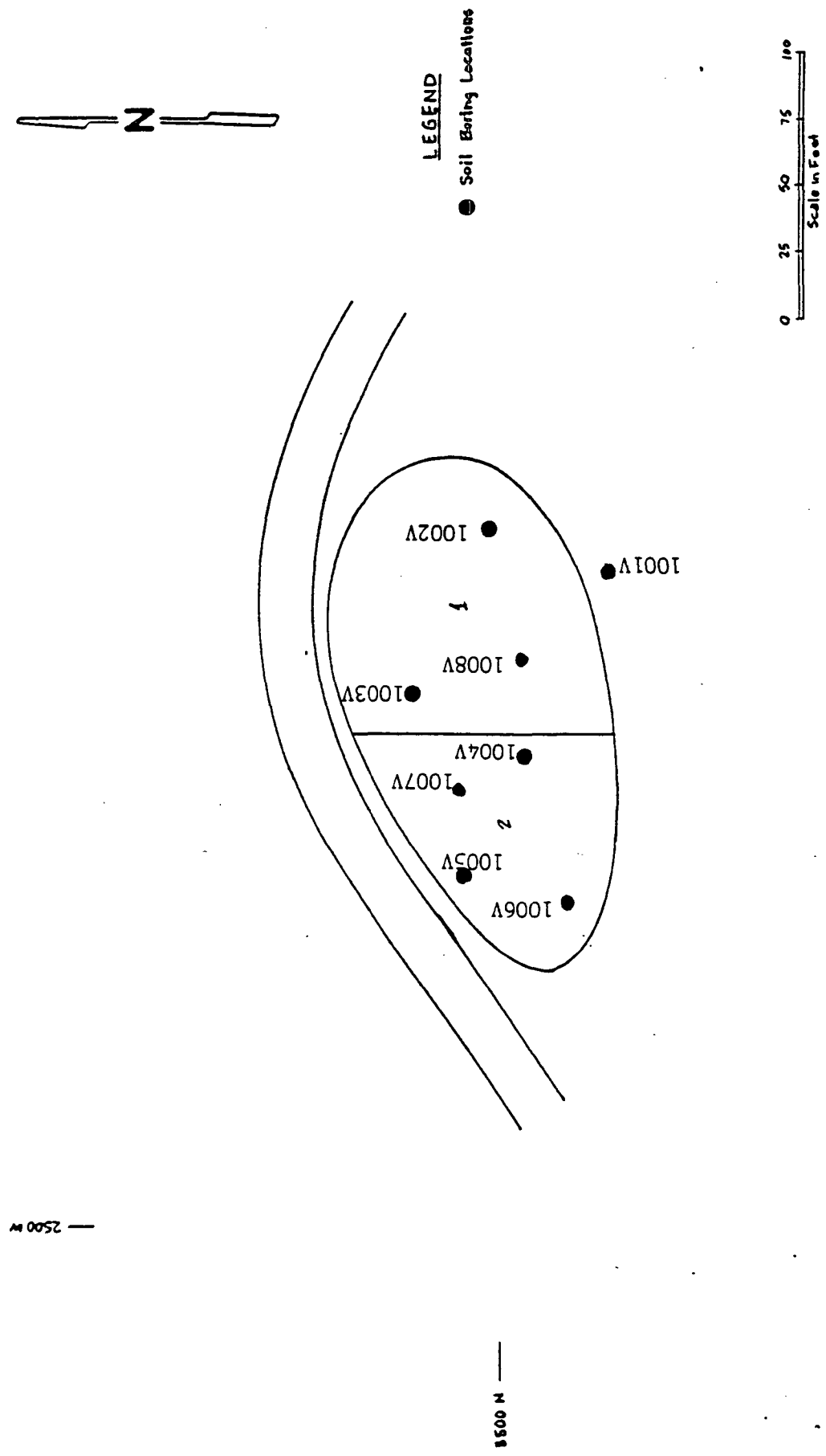
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.

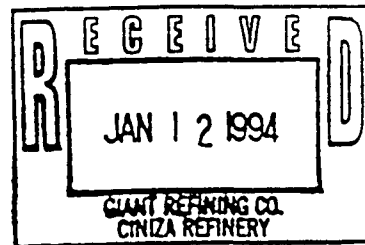




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 07 1994



CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

APPROVAL WITH MODIFICATIONS  
RFI PHASE I SUPPLEMENTARY REPORT  
RFI PHASE II REPORT AND THE  
VOLUNTARY CORRECTIVE ACTION PLANS

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

GENERAL COMMENTS

SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

SWMU 6, The Tank Farm

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area

The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

**SWMU 6, The Railroad Rack Lagoon**

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

**Continuation of SWMU 6, The Overflow Ditch**

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

**Continuation of SWMU 6, The Fan Out Area**

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

**SWMU #12, Contact Waste Water Collection System (CWWCS)**

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

**SWMU 9, The Sludge Pits**

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 - 19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

<sup>10</sup>  
SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

MODIFICATIONS

SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I Supplemental and RFI Phase II Reports - Giant Refining Co. - NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase I Supplemental Report dated August 21, 1991 and the RFI Phase II Report dated October 21, 1991, with the enclosed modifications. The Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon (submitted November and December 1992, respectfully) are also approved, with the enclosed modifications.

The Annual Monitoring (see enclosure for SWMUs requiring monitoring) Report is due to EPA by December 31, 1994, and each year thereafter. The additional soil sampling results for the Sludge Pits and the Tank Farm are due to EPA by June 1, 1994. If you have any further questions pertaining to the above discussed items, please contact Nancy Morlock or Richard Mayer of my staff at (214) 655-6650.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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**APPROVAL OF THE RFI PHASE I SUPPLEMENTARY REPORT, RFI PHASE II  
REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS (CAP), WITH  
MODIFICATIONS, FOR GIANT REFINING COMPANY**

Below are EPA's general comments and modifications pertaining to Giant's RFI Reports and the voluntary CAP for the Sludge Pits and the Railroad Rack Lagoon. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

**General Comment:** EPA agrees with the finding of no further action for the following SWMUs: SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Ponds; and, SWMU #13, the Drainage Ditch. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMUs will be required (see below under modifications).

On SWMU #6, the Tank Farm, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 9 out of 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #9, the Sludge Pits, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, two samples at the 15' interval (the deepest interval sampled) contained semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

EPA agrees with the finding of no further action for SWMU #8, the Railroad Rack Lagoon, Overflow Ditch and Fan Out Area. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMU will be required. Giant has decided to perform voluntary corrective measures (bioremediation of the wastes) on the above mentioned SWMU and will perform periodic monitoring on the SWMU while bioremediation is occurring. Giant's voluntary bioremediation should reduce the volume and toxicity of the waste contained in the SWMUs while continuing periodic monitoring of the SWMUs (which satisfies EPA's monitoring requirements). Also, EPA included some additional monitoring requirements besides those included by Giant in the CAP (see below under modifications).

Also, EPA will require one administrative control for all SWMUs which EPA has tentatively approved a no further action determination. It is the following: A survey plat of each SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control (for each SWMU), then Giant can submit a Class III permit modification to terminate the RFI/CMS process for a particular SWMU.

### Modifications

**SWMU #1, the Aeration Basin:** Giant shall take soil samples around the Aeration Basin every 2 years, with sampling beginning in calendar year 1994. Sampling requirements shall be identical to what was performed in the previous RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #6, the Tank Farm:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91): number's 21, 22, 23, 25, 26, 27, 30, and 31. Sampling intervals shall be at 16', except for #31, which shall be taken at 20'. Samples shall be analyzed for **BTEX** constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

**SWMU #2, Evaporation Ponds:** Giant shall monitor the seven groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

WHICH WELLS

**SWMU #13, Drainage Ditch between APis Evaporation Ponds and Neutralisation Tank Evaporation Ponds:** Giant shall take soil samples around the Drainage Ditch every 2 years, with sampling beginning in calendar year 1994. Sampling procedures and constituents to be analyzed shall be identical to those required in the RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 6-6.5 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #8, Railroad Rack Lagoon:** Giant shall take 5 soil borings within the lagoon after it has stopped receiving wastes and it is practicable to sample. Three of the five borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Also, all six borings required under the CAP closure (Section 5.0) must be sampled at the 5-6', the 10-11' interval, and the 14-15'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

**Continuation of SWMU #6, the Overflow Ditch:** Giant shall take 3 soil borings in the Overflow Ditch after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those

required in the previous RFI. Soil borings shall be taken at the 3-4' interval and at the 6.5-7' interval. Results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU #6, the Fan Out Area: Giant shall take 4 soil borings in the Fan Out Area after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil samples shall be taken at the 3-4' interval and at the 6.5' to 7' interval. Results shall be included in the 1994 Annual Monitoring Report.

SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative method be used). Results shall be included in the appropriate Annual Monitoring Report.

*SWMU 10*  
~~SWMU #9~~, Sludge Pits: Giant shall take soil borings as close as possible to sampling points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91) 6 and 7. Sampling intervals shall be at 18-19' and 24-25'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

*2 west pit only*  
Before final closure of the West pit under the CAP, all soil borings shall have samples taken at the 18-19' and 24-25' intervals. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Three soil borings shall also be taken (before closure) from the east pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.



Route 3, Box 7  
Gallup, New Mexico  
87301

December 4, 1992

Ms. Barbra Driscoll  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

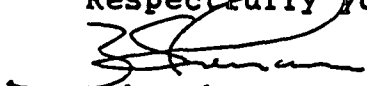
RE: Ciniza Refinery's RFI Phase III Process Sewer Inspection  
Report, Revised Corrective Action Plans

Dear Ms. Driscoll:

Enclosed is the RFI Phase III Process Sewer Inspection Report, and the revised RFI Phase II corrective action plans for the Rail Road Rack Lagoon and Sludge Pit. The draft corrective action plans for the Phase III investigations are under development and should be complete and to your office by early January, 1993.

I would be glad to answer any questions you may have about these submittals. Please contact me at (505) 722-3833 at your convenience.

Respectfully yours,



Zeke Sherman  
Manager of Environmental Affairs  
Ciniza Refinery  
Giant Industries Arizona, Inc.



August 21, 1991

Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

Mr. Rich Mayer  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue Suite 1200  
Dallas, Texas 75202-2733

RE: Phase I RFI Supplemental Report  
Giant Refining Company  
NMD000333211

Dear Mr. Mayer:

The attached document includes the supplemental sampling data outlined in the Phase I RFI Final Report submitted on April 8, 1991 and the additional requirements outlined in your July 9, 1991 approval letter. Sections 1 through 7 includes data associated with the additional sampling requirements. Section 8 contains Giant's conclusions and recommendations, including Final Remedy Plans (FRP's) for SWMU #8 - Railroad Rack Lagoon and SWMU #10 - Two Sludge Pits. Amendments to the RFI Work Plans are also included to cover the work required by the FRP's.

If you have any questions, contact my office at (505) 722-0217.

Sincerely,

Claud Rosendale  
Environmental Manager  
Ciniza Refinery

cc w/enclosure - David Boyer - Director  
New Mexico Oil Conservation Division

Richard Mitzelfelt - Director  
New Mexico Environment Department

Linda Carleson - Head Librarian  
Gallup Public Library

Kim Bullerdick - Corporate Counsel  
Giant Industries Arizona, Inc.

File  
Giant Refining

## SWMU No. 11, *Secondary Oil Skimmer*

The secondary oil skimmer was identified as a solid waste management unit (SWMU) and designated as SWMU No. 11 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation included soil sampling and analysis, which indicated the presence of organics. Based on sample results, Ciniza recommended no further action (NFA) for the SWMU. The U.S. Environmental Protection Agency (EPA) rejected the recommendation and required two additional borings with samples collected at a depth of 10 feet. Follow-up sampling and analysis confirmed the original findings. Ciniza proceed with corrective action in accordance with the approved VCAP criteria. The secondary oil skimmer area was capped in 1999 in conjunction with the closure activities of SWMUs Nos. 5, 7 and 8.

### 11.1 Site Description and Operational History

SWMU No. 11, Secondary Oil Skimmer (Figures 11-1, 11-2) consists of the secondary oil skimmer located south of the main evaporation ponds. The secondary oil skimmer site is a rectangular area measuring approximately 10 feet wide by 25 feet long, and centered over an earthen stormwater drainage ditch. Within this area, a steel box was previously installed and used to collect suspended oil and sediment from stormwater flowing through the ditch. This box was known as the secondary oil skimmer. Before removal, it was used as a backup oil skimmer during maintenance activities on the primary oil skimmer. Remediation efforts include excavation and backfilling with clean soil as well as retrenching the ditch for proper stormwater drainage. Photographs of the secondary oil skimmer site, taken during the site inspection performed by Practical Environmental Services, Inc. (PES) in 1998, are provided SWMU No. 11 Summary Report.

### 11.2 Land Use

The secondary oil skimmer box has been removed and is no longer present at the site. The area, which is vacant of operations, is part of the refinery drainage system and will remain under the ownership of Ciniza.

### 11.3 Investigation Activities

Applied Earth Sciences (AES) investigated the secondary oil skimmer area during the early 1990s. Soil samples were collected and analyzed. Trace volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) were detected in several of the samples. AES performed additional sampling operations in 1994, with similar results.

11.3.1 Investigation #1

During the initial site investigation in 1992, AES collected and analyzed soil samples from two locations and depths within the secondary oil skimmer area: surface and 3 feet below ground surface. Trace VOCs and SVOCs were detected in three of four samples, of which, xylenes, at 98 mg/kg, and ethylbenzene, at 15 mg/kg, represented the highest concentrations detected. Most of the remaining constituents were detected in much lower concentrations, typically less than 5 mg/kg.

11.3.2 Investigation #2

In 1994, AES conducted a second round of sampling and analysis at two locations and depths of 6 and 10 feet below ground surface. Xylenes were detected in one bore at 5 mg/kg at a depth of 6 feet and 0.5 mg/kg at a depth of 10 feet.

State of New Mexico corrective action levels for benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil is 50 mg/kg total and 10 mg/kg of benzene. Four of six samples indicated BTEX constituents, the highest of which was over 100 mg/kg total; which is above the 50 mg/kg action level.

11.4 Site Conceptual Model

There is no impact on the environmental fate of the land.

11.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- The secondary oil skimmer box has been removed and is no longer present at the site.
- At the time of the inspection, no water was present in the ditch.
- Local soil in the vicinity of the secondary oil skimmer site is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.
- No soil staining or distressed vegetation was present at or in the vicinity of the secondary oil skimmer site.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only to visual observations.



1 11.6 NFA Proposal

2 Ciniza is proposing that no further action is required for SWMU No. 11 based on the following criterion:

3 A release from the SWMU to the environment has occurred, but the SWMU has been characterized and  
4 remediated in accordance with current applicable state regulations, which adequately addressed RCRA  
5 corrective action. Documentation, such as a closure letter, is available. (NFA Criterion 4)

6 The following is the basis for this proposal:

- 7 • The secondary oil skimmer enclosure has been removed and is no longer present in the  
8 drainage ditch adjoining Evaporation No. 4.
- 9 • Soil sampling and analysis were conducted during an initial site investigation and subsequent  
10 re-investigation at greater depth. Organic contaminants were detected in both investigations.
- 11 • BTEX constituents have been detected at levels exceeding New Mexico corrective action  
12 levels.
- 13 • Contaminated soil has been removed from the site and replaced with clean fill dirt. A closure  
14 letter is on file.

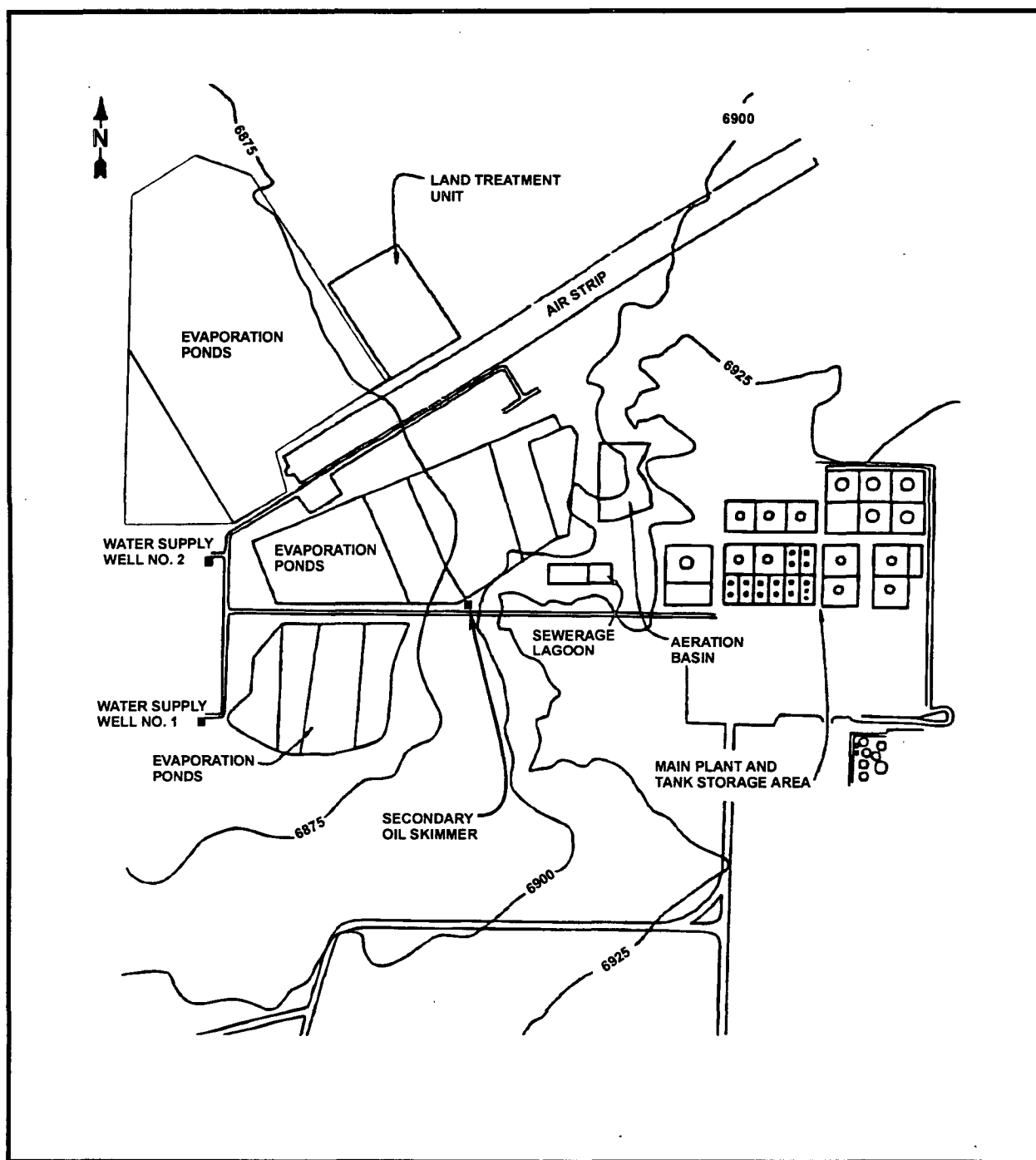


Figure 11-1. SWMU No. 11, Secondary Oil Skimmer Area



Figure 11-2. SWMU No. 11, Soil from Secondary Oil Skimmer

# SWMU #11 Summary Report

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## Secondary Oil Skimmer

Ciniza Refinery  
McKinley County, New Mexico



Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the secondary oil skimmer located at the Ciniza Refinery, in McKinley County, New Mexico.

The secondary oil skimmer site was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #11, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, detected organic contaminants, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested additional sampling at greater depth. Trace organic contaminants were again detected and remediation by natural attenuation was recommended.

This summary report for SWMU #11 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #11 have been completed. This assessment is summarized as follows.

- ⇒ The secondary oil skimmer enclosure has been removed and is no longer present in the drainage ditch adjoining Evaporation No. 4.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent re-investigation at greater depth. Organic contaminants were detected in both investigations.
- ⇒ BTEX constituents have been detected at levels exceeding New Mexico corrective action levels.
- ⇒ Contaminated soil should be removed from the site and replaced with clean fill dirt prior to closure.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the secondary oil skimmer site was identified as SWMU #11.

Applied Earth Sciences (AES) investigated the secondary oil skimmer site during the early 1990s. Soil samples were collected and analyzed. Organic contaminants, including BTEX constituents, were detected.

As a result of the investigation, AES recommended no further action for this SWMU. Results and recommendations were reported to the EPA in 1992.



In 1994, the EPA requested additional sampling at greater depth. Follow-up sampling and analysis again detected organic contaminants.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMU #11 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #11 is located along the drainage ditch south of Evaporation Pond No. 5. See Figure No. 1 for location details.

The secondary oil skimmer site is a rectangular area measuring approximately 10 feet wide by 25 feet long, and centered over an earthen stormwater drainage ditch. Within this area, a steel box was previously installed and used to collect suspended oil and sediment from stormwater flowing through the ditch. This box was known as the secondary oil skimmer.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The secondary oil skimmer box has been removed and is no longer present at the site.
- At the time of the inspection, no water was present in the ditch.
- Local soil in the vicinity of the secondary oil skimmer site presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.
- No soil staining or distressed vegetation was present at or in the vicinity of the secondary oil skimmer site.

### 5.0 DATA REVIEW

Soil samples from within the secondary oil skimmer site were collected and analyzed during the initial site investigation and subsequent re-sampling at greater depth.

In 1992, the initial site investigation collected samples at two locations and two depths; surface and 3 feet below ground surface. Trace VOCs and SVOCs were detected in three of four samples; of which, xylenes at 98 mg/kg and ethylbenzene at 15 mg/kg represented the highest detections. Most of the remaining constituents were detected in much lower concentrations, typically less than 5 mg/kg.

In 1994, a second round of sampling and analysis was conducted at two locations and depths of 6 and 10 feet below ground surface. Xylenes were detected in one sample at 5 mg/kg at a depth of 6 feet and 0.5 mg/kg at a depth of 10 feet.

State of New Mexico corrective action levels for BTEX in soil is 50 mg/kg total and 10 mg/kg of benzene. Four of six samples indicated BTEX constituents, the highest of which was over 100 mg/kg total; which is above the 50 mg/kg action level.

## 6.0 ASSESSMENT

Based on the site inspection and data review, the secondary oil skimmer site is assessed as follows.

- The secondary oil skimmer is no longer present in the drainage ditch. Oily stormwater no longer flows in the drainage ditch.
- Soil sampling and analysis has detected organic contaminants, primarily BTEX constituents, at the site. Significant contamination is localized to single "hot spot" underlying the former location of the skimmer box.
- Contaminated soil should be removed from the site and replaced with clean fill dirt prior to closure.

## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

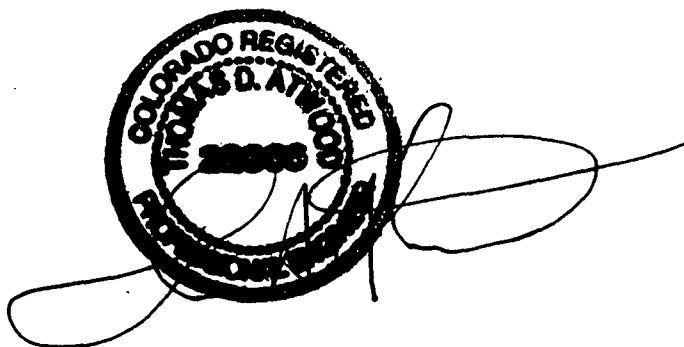
This summary report for SWMU #11 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

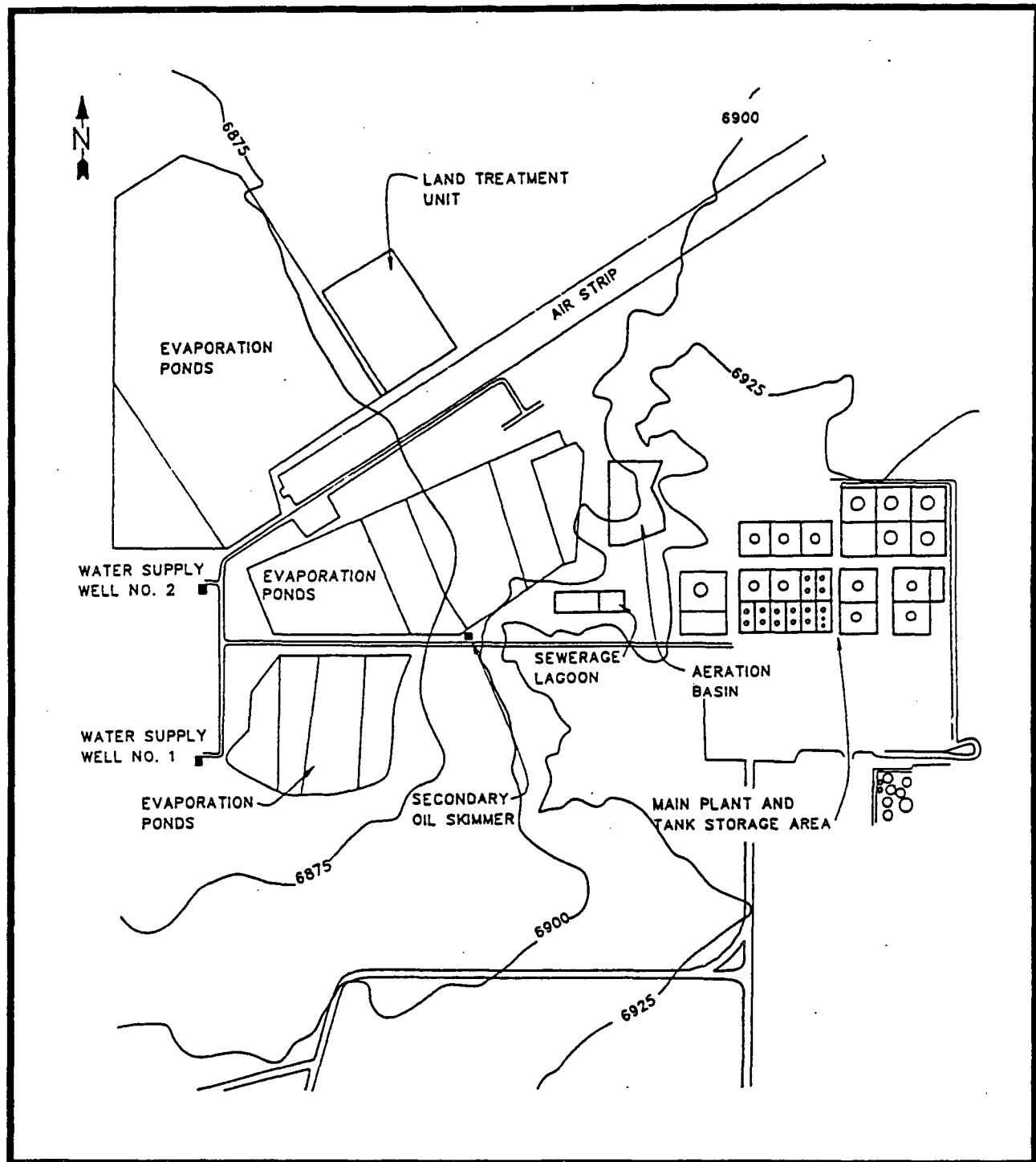
Date: April 23, 1998

Prepared and Certified by:



Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

Figure No. 1  
Secondary Oil Skimmer Area





# SWMU-11 SECONDARY OIL SKIMMER



P  
LAB

9-D Pan American Freeway N  
uquerque, New Mexico 87107  
ne (505) 344-3777  
: (505) 344-4413

905047

GIANT REFINING COMPANY  
ROUTE 3 BOX 7  
GALLUP, NM 87301

Project Name SWMU 11 CLOSURE  
Project Number (none)

Attention: STEVE MORRIS

On 5/14/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **non-aq** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

This report is being reissued to correct the project name. This report was originally dated 6/11/99.

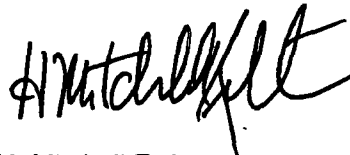
EPA method 8260 was performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by ESL (OR) Inc., Portland, OR.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.



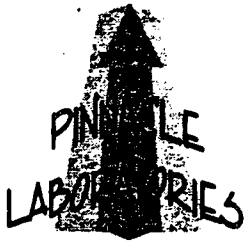
Kimberly D. McNeill  
Project Manager



H. Mitchell Rubenstein, Ph. D.  
General Manager

MR: mt

Enclosure



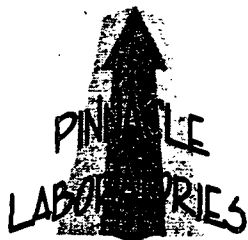
2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

CLIENT : GIANT REFINING COMPANY  
PROJECT # : (none)  
PROJECT NAME : SWMU 11 CLOSURE

PINNACLE ID : 905047  
DATE RECEIVED : 5/14/99  
REPORT DATE : 6/11/99

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	SWMU-11-1-7FT-051199	NON-AQ	5/11/99
02	SWMU-11-2-6FT-051199	NON-AQ	5/11/99
03	SWMU-11-3-10FT-051299	NON-AQ	5/12/99
04	TRIP BLANK	AQUEOUS	4/29/99

Pics?  
Ted or Steve



2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

### GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 905047  
PROJECT # : NONE DATE RECEIVED : 5/14/99  
PROJECT NAME : SWMU 11 CLOSURE

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
905047-01	SWMU-11-1-7FT 051199	SOIL	5/11/99	5/25/99	05/25/99	1
PARAMETER	DET. LIMIT	UNITS				

1,4-Dioxane	5.0	< 5.1	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroethylvinyl Ether	0.05	< 0.05	MG/KG	(DRY WEIGHT)

#### SURROGATE % RECOVERY

1,2-Dichloroethane-d4	95 ( 80 - 120 )
Toluene-d8	98 ( 81 - 117 )
Bromofluorobenzene	93 ( 74 - 121 )

#### DRY WEIGHT RESULTS (%DRY) = 98

Analyst: Vincent Speshock



2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

# GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 905047  
PROJECT # : NONE DATE RECEIVED : 5/14/99  
PROJECT NAME : SWMU 11 CLOSURE

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
905047-02	SWMU-11-2-6FT 051199	SOIL	5/11/99	5/25/99	05/25/99	1

PARAMETER	DET. LIMIT	UNITS
1,4-Dioxane	5.0 < 5.1	MG/KG (DRY WEIGHT)
2-Butanone	0.5 < 0.5	MG/KG (DRY WEIGHT)
Carbon Disulfide	0.05 < 0.05	MG/KG (DRY WEIGHT)
1,2-Dichloroethane	0.05 < 0.05	MG/KG (DRY WEIGHT)
Benzene	0.05 < 0.05	MG/KG (DRY WEIGHT)
Toluene	0.05 < 0.05	MG/KG (DRY WEIGHT)
1,2-Dibromoethane	0.05 < 0.05	MG/KG (DRY WEIGHT)
Chlorobenzene	0.05 < 0.05	MG/KG (DRY WEIGHT)
Ethylbenzene	0.05 < 0.05	MG/KG (DRY WEIGHT)
o-Xylene	0.05 < 0.05	MG/KG (DRY WEIGHT)
m&p Xylenes	0.05 < 0.05	MG/KG (DRY WEIGHT)
Styrene	0.05 < 0.05	MG/KG (DRY WEIGHT)
Chloroethylvinyl Ether	0.05 < 0.05	MG/KG (DRY WEIGHT)

## SURROGATE % RECOVERY

1,2-Dichloroethane-d4	96 ( 80 - 120 )
Toluene-d8	104 ( 81 - 117 )
Bromofluorobenzene	95 ( 74 - 121 )

## DRY WEIGHT RESULTS (%DRY) = 98

Analyst: Vincent Speshock



2709-D Pan American Freeway NE  
Albuquerque, New Mexico 87107  
Phone (505) 344-3777  
Fax (505) 344-4413

### GC/MS RESULTS

TEST : VOLATILE ORGANICS EPA METHOD 8260 (MODIFIED SKINNER LIST)  
CLIENT : GIANT REFINING COMPANY PINNACLE I.D. : 905047  
PROJECT # : NONE DATE RECEIVED : 5/14/99  
PROJECT NAME : SWMU 11 CLOSURE

SAMPLE ID #	CLIENT ID	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
905047-03	SWMU-11-3-10FT 051299	SOIL	5/12/99	5/25/99	05/25/99	1
PARAMETER	DET. LIMIT	UNITS				

1,4-Dioxane	5.0	< 5.1	MG/KG	(DRY WEIGHT)
2-Butanone	0.5	< 0.5	MG/KG	(DRY WEIGHT)
Carbon Disulfide	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dichloroethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Benzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Toluene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
1,2-Dibromoethane	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chlorobenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Ethylbenzene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
o-Xylene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
m&p Xylenes	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Styrene	0.05	< 0.05	MG/KG	(DRY WEIGHT)
Chloroethylvinyl Ether	0.05	< 0.05	MG/KG	(DRY WEIGHT)

#### SURROGATE % RECOVERY

1,2-Dichloroethane-d4	85 ( 80 - 120 )
Toluene-d8	93 ( 81 - 117 )
Bromofluorobenzene	90 ( 74 - 121 )

#### DRY WEIGHT RESULTS (%DRY) = 99

Analyst: Vincent Speshock

# *Environmental Services Laboratory, Inc.*



*17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520*

June 07, 1999

Kim McNeill  
Pinnacle Laboratories  
2709-D Pan American Fwy NE  
Albuquerque, NM 87107

TEL: 505-344-3777  
FAX (505) 344-4413

RE: 905047/GRC/ SWMU 11 CLOSURE

Order No.: 9905076

Dear Kim McNeill,

Environmental Services Laboratory received 3 samples on 5/17/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:

SKINNER LIST-SEMI VOL MASS SPEC (SW8270B)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Kimberly Hill  
Project Manager  
New Line

Technical Review

# Environmental Services Laboratory

Date: 07-Jun-99

CLIENT: Pinnacle Laboratories  
Lab Order: 9905076  
Project: 905047/GRC/ SWMU 11 CLOSURE  
Lab ID: 9905076-01A

Client Sample ID: SWMU-11-1-7FT-051199  
Tag Number:  
Collection Date: 5/11/99  
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
<b>SKINNER LIST-SEMI VOL MASS SPEC</b>						Analyst: keh
1,2-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	5/24/99
1,3-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	5/24/99
1,4-Dichlorobenzene	ND	0.192		mg/Kg-dry	1	5/24/99
1-Methylnaphthalene	ND	0.192		mg/Kg-dry	1	5/24/99
2,4-Dimethylphenol	ND	0.192		mg/Kg-dry	1	5/24/99
2,4-Dinitrophenol	ND	0.384		mg/Kg-dry	1	5/24/99
2-Methylphenol	ND	0.192		mg/Kg-dry	1	5/24/99
3&4-Methylphenol	ND	0.192		mg/Kg-dry	1	5/24/99
3-Methylcholanthrene	ND	0.192		mg/Kg-dry	1	5/24/99
4-Nitrophenol	ND	0.384		mg/Kg-dry	1	5/24/99
6-Methyl Chrysene	ND	0.192		mg/Kg-dry	1	5/24/99
7,12-Dimethylbenz(a)anthracene	ND	0.192		mg/Kg-dry	1	5/24/99
Anthracene	ND	0.192		mg/Kg-dry	1	5/24/99
Benz(a)anthracene	ND	0.192		mg/Kg-dry	1	5/24/99
Benzo(a)pyrene	ND	0.192		mg/Kg-dry	1	5/24/99
Benzo(b)&(j)fluoranthene	ND	0.192		mg/Kg-dry	1	5/24/99
Benzo(k)fluoranthene	ND	0.192		mg/Kg-dry	1	5/24/99
Bis(2-ethylhexyl)phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Butyl benzyl phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Chrysene	ND	0.192		mg/Kg-dry	1	5/24/99
Di-n-butyl phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Di-n-octyl phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Dibenz(a,h)acridine	ND	0.192		mg/Kg-dry	1	5/24/99
Dibenz(a,h)anthracene	ND	0.192		mg/Kg-dry	1	5/24/99
Dibenz(a,j)acridine	ND	0.192		mg/Kg-dry	1	5/24/99
Diethyl phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Dimethyl phthalate	ND	0.192		mg/Kg-dry	1	5/24/99
Fluoranthene	ND	0.192		mg/Kg-dry	1	5/24/99
Indene	ND	0.192		mg/Kg-dry	1	5/24/99
Naphthalene	ND	0.192		mg/Kg-dry	1	5/24/99
Phenanthrene	ND	0.192		mg/Kg-dry	1	5/24/99
Phenol	ND	0.192		mg/Kg-dry	1	5/24/99
Pyrene	ND	0.192		mg/Kg-dry	1	5/24/99
Pyridine	ND	0.192		mg/Kg-dry	1	5/24/99
Quinoline	ND	0.192		mg/Kg-dry	1	5/24/99
Thiophenol	ND	0.192		mg/Kg-dry	1	5/24/99
Surr: 2,4,6-Tribromophenol	69.5	19-122		%REC	1	5/24/99
Surr: 2-Fluorobiphenyl	40.5	30-115		%REC	1	5/24/99
Surr: 2-Fluorophenol	58.1	25-121		%REC	1	5/24/99
Surr: 4-Terphenyl-d14	80.0	18-137		%REC	1	5/24/99

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range



**Environmental Services Laboratory**

Date: 07-Jun-99

CLIENT: Pinnacle Laboratories

Client Sample ID: SWMU-11-1-7FT-051199

Lab Order: 9905076

Tag Number:

Project: 905047/GRC/SWMU 11 CLOSURE

Collection Date: 5/11/99

Lab ID: 9905076-01A

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: Nitrobenzene-d5	52.7	23-120		%REC	1	5/24/99
Surr: Phenol-d5	61.9	24-113		%REC	1	5/24/99
PERCENT MOISTURE		ASTM				Analyst: tmh
% Moisture	13	0.		wt%	1	5/24/99

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level

# Environmental Services Laboratory

Date: 07-Jun-99

CLIENT: Pinnacle Laboratories

Client Sample ID: SWMU-11-2-6FT-051199

Lab Order: 9905076

Tag Number:

Project: 905047/GRC/ SWMU 11 CLOSURE

Collection Date: 5/11/99

Lab ID: 9905076-02A

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SKINNER LIST-SEMI VOL MASS SPEC						Analyst: keh
1,2-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	5/24/99
1,3-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	5/24/99
1,4-Dichlorobenzene	ND	0.196		mg/Kg-dry	1	5/24/99
1-Methylnaphthalene	ND	0.196		mg/Kg-dry	1	5/24/99
2,4-Dimethylphenol	ND	0.196		mg/Kg-dry	1	5/24/99
2,4-Dinitrophenol	ND	0.393		mg/Kg-dry	1	5/24/99
2-Methylphenol	ND	0.196		mg/Kg-dry	1	5/24/99
3&4-Methylphenol	ND	0.196		mg/Kg-dry	1	5/24/99
3-Methylcholanthrene	ND	0.196		mg/Kg-dry	1	5/24/99
4-Nitrophenol	ND	0.393		mg/Kg-dry	1	5/24/99
6-Methyl Chrysene	ND	0.196		mg/Kg-dry	1	5/24/99
7,12-Dimethylbenz(a)anthracene	ND	0.196		mg/Kg-dry	1	5/24/99
Anthracene	ND	0.196		mg/Kg-dry	1	5/24/99
Benz(a)anthracene	ND	0.196		mg/Kg-dry	1	5/24/99
Benzo(a)pyrene	ND	0.196		mg/Kg-dry	1	5/24/99
Benzo(b)&(j)fluoranthene	ND	0.196		mg/Kg-dry	1	5/24/99
Benzo(k)fluoranthene	ND	0.196		mg/Kg-dry	1	5/24/99
Bis(2-ethylhexyl)phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Butyl benzyl phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Chrysene	ND	0.196		mg/Kg-dry	1	5/24/99
Di-n-butyl phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Di-n-octyl phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Dibenz(a,h)acridine	ND	0.196		mg/Kg-dry	1	5/24/99
Dibenz(a,h)anthracene	ND	0.196		mg/Kg-dry	1	5/24/99
Dibenz(a,j)acridine	ND	0.196		mg/Kg-dry	1	5/24/99
Diethyl phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Dimethyl phthalate	ND	0.196		mg/Kg-dry	1	5/24/99
Fluoranthene	ND	0.196		mg/Kg-dry	1	5/24/99
Indene	ND	0.196		mg/Kg-dry	1	5/24/99
Naphthalene	ND	0.196		mg/Kg-dry	1	5/24/99
Phenanthrene	ND	0.196		mg/Kg-dry	1	5/24/99
Phenol	ND	0.196		mg/Kg-dry	1	5/24/99
Pyrene	ND	0.196		mg/Kg-dry	1	5/24/99
Pyridine	ND	0.196		mg/Kg-dry	1	5/24/99
Quinoline	ND	0.196		mg/Kg-dry	1	5/24/99
Thiophenol	ND	0.196		mg/Kg-dry	1	5/24/99
Surr: 2,4,6-Tribromophenol	66.4	19-122		%REC	1	5/24/99
Surr: 2-Fluorobiphenyl	41.5	30-115		%REC	1	5/24/99
Surr: 2-Fluorophenol	52.1	25-121		%REC	1	5/24/99
Surr: 4-Terphenyl-d14	81.8	18-137		%REC	1	5/24/99

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level

**Environmental Services Laboratory**

Date: 07-Jun-99

**CLIENT:** Pinnacle Laboratories**Client Sample ID:** SWMU-11-2-6FT-051199**Lab Order:** 9905076**Tag Number:****Project:** 905047/GRC/SWMU 11 CLOSURE**Collection Date:** 5/11/99**Lab ID:** 9905076-02A**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: Nitrobenzene-d5	48.7	23-120		%REC	1	5/24/99
Surr: Phenol-d5	56.5	24-113		%REC	1	5/24/99
<b>PERCENT MOISTURE</b>		<b>ASTM</b>				
% Moisture	15	0.		wt%	1	5/24/99

Analyst: tmh

**Qualifiers:** ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level

# Environmental Services Laboratory

Date: 07-Jun-99

CLIENT: Pinnacle Laboratories  
Lab Order: 9905076  
Project: 905047/GRC/ SWMU 11 CLOSURE  
Lab ID: 9905076-03A

Client Sample ID: SWMU-11-3-10FT-051299  
Tag Number:  
Collection Date: 5/12/99  
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
<b>SKINNER LIST-SEMI VOL MASS SPEC</b>						Analyst: keh
1,2-Dichlorobenzene	ND	0.188		mg/Kg-dry	1	5/24/99
1,3-Dichlorobenzene	ND	0.188		mg/Kg-dry	1	5/24/99
1,4-Dichlorobenzene	ND	0.188		mg/Kg-dry	1	5/24/99
1-Methylnaphthalene	ND	0.188		mg/Kg-dry	1	5/24/99
2,4-Dimethylphenol	ND	0.188		mg/Kg-dry	1	5/24/99
2,4-Dinitrophenol	ND	0.375		mg/Kg-dry	1	5/24/99
2-Methylphenol	ND	0.188		mg/Kg-dry	1	5/24/99
3&4-Methylphenol	ND	0.188		mg/Kg-dry	1	5/24/99
3-Methylcholanthrene	ND	0.188		mg/Kg-dry	1	5/24/99
4-Nitrophenol	ND	0.375		mg/Kg-dry	1	5/24/99
6-Methyl Chrysene	ND	0.188		mg/Kg-dry	1	5/24/99
7,12-Dimethylbenz(a)anthracene	ND	0.188		mg/Kg-dry	1	5/24/99
Anthracene	ND	0.188		mg/Kg-dry	1	5/24/99
Benz(a)anthracene	ND	0.188		mg/Kg-dry	1	5/24/99
Benzo(a)pyrene	ND	0.188		mg/Kg-dry	1	5/24/99
Benzo(b)&(j)fluoranthene	ND	0.188		mg/Kg-dry	1	5/24/99
Benzo(k)fluoranthene	ND	0.188		mg/Kg-dry	1	5/24/99
Bis(2-ethylhexyl)phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Butyl benzyl phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Chrysene	ND	0.188		mg/Kg-dry	1	5/24/99
Di-n-butyl phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Di-n-octyl phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Dibenz(a,h)acridine	ND	0.188		mg/Kg-dry	1	5/24/99
Dibenz(a,h)anthracene	ND	0.188		mg/Kg-dry	1	5/24/99
Dibenz(a,j)acridine	ND	0.188		mg/Kg-dry	1	5/24/99
Diethyl phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Dimethyl phthalate	ND	0.188		mg/Kg-dry	1	5/24/99
Fluoranthene	ND	0.188		mg/Kg-dry	1	5/24/99
Indene	ND	0.188		mg/Kg-dry	1	5/24/99
Naphthalene	ND	0.188		mg/Kg-dry	1	5/24/99
Phenanthrene	ND	0.188		mg/Kg-dry	1	5/24/99
Phenol	ND	0.188		mg/Kg-dry	1	5/24/99
Pyrene	ND	0.188		mg/Kg-dry	1	5/24/99
Pyridine	ND	0.188		mg/Kg-dry	1	5/24/99
Quinoline	ND	0.188		mg/Kg-dry	1	5/24/99
Thiophenol	ND	0.188		mg/Kg-dry	1	5/24/99
Surr: 2,4,6-Tribromophenol	71.1	19-122		%REC	1	5/24/99
Surr: 2-Fluorobiphenyl	50.1	30-115		%REC	1	5/24/99
Surr: 2-Fluorophenol	62.0	25-121		%REC	1	5/24/99
Surr: 4-Terphenyl-d14	83.4	18-137		%REC	1	5/24/99

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

# Environmental Services Laboratory

Date: 07-Jun-99

CLIENT: Pinnacle Laboratories

Client Sample ID: SWMU-11-3-10FT-051299

Lab Order: 9905076

Tag Number:

Project: 905047/GRC/ SWMU 11 CLOSURE

Collection Date: 5/12/99

Lab ID: 9905076-03A

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
Surr: Nitrobenzene-d5	58.1	23-120		%REC	1	5/24/99
Surr: Phenol-d5	66.0	24-113		%REC	1	5/24/99
PERCENT MOISTURE		ASTM				Analyst: tmh
% Moisture	11	0.		wt%	1	5/24/99

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

\* - Value exceeds Maximum Contaminant Level

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER:		ANALYSIS REQUEST		NUMBER OF CONTAINERS	
COMPANY: <u>Giant Refining Company</u>		General Chemistry:		Metals:	
ADDRESS: <u>Route 3 Box 7</u>		Polynuclear Aromatics (610/8310)		RCRA Metals (8)	
PHONE: <u>505 722 3833</u>		Base/Neutral/Acid Compounds GC/MS (625/8270)		Target Analyte List Metals (23)	
FAX: <u>505 722 0210</u>		Herbicides (615/8151)		Priority Pollutant Metals (13)	
BILL TO: <u>SAME</u>		Pesticides /PCB (608/8081)			
COMPANY:		8260 (Landfill) Volatile Organics			
ADDRESS:		8260 (CUST) Volatile Organics			
		8260 (Full) Volatile Organics			
		8260 (TCL) Volatile Organics			
		8260 (TCL) Volatile Organics			
		504.1 EDB □ / DBCP □			
		8021 (CUST)			
		8021 (HALO)			
		8021 (EDX)			
		8021 (TCL)			
		8021 (BTX) □ MTBE □ TMB □ PCE			
		8021 (BTX)/8015 (Gasoline)			
		(M8015) Gas/Purge & Trap			
		(MOD.8015) Diesel/Direct Inject			
		Petroleum Hydrocarbons (418.1) TRPH			

PROJECT INFORMATION	PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS	RELINQUISHED BY:
PROJ. NO.:	(RUSH) <input type="checkbox"/> 24hr <input type="checkbox"/> 48hr <input type="checkbox"/> 72hr <input type="checkbox"/> 1 WEEK (NORMAL) <input checked="" type="checkbox"/>	Signature: _____ Time: _____
PROJ. NAME: <u>SWMU 11 Closure</u>	CERTIFICATION REQUIRED: <input type="checkbox"/> NM <input type="checkbox"/> SDWA <input type="checkbox"/> OTHER	Printed Name: _____ Date: _____
P.O. NO.:	METHANOL PRESERVATION <input type="checkbox"/>	Company: _____
SHIPPED VIA:	COMMENTS: <u>Spinner Hat - attached. Extra sample sent for each sample point in case of breakage.</u>	RECEIVED BY: (LAB)
SAMPLE RECEIPT		Signature: <u>Steve Morris</u> Time: <u>0900</u>
NO. CONTAINERS: <u>11</u>		Printed Name: <u>Steve Morris</u> Date: <u>5-12-99</u>
CUSTODY SEALS: <u>0 N/A</u>		Company: <u>Giant Refining</u>
RECEIVED INTACT: <u>105</u>		RECEIVED BY: (LAB)
BLUE TAG: <u>1300</u>		Signature: <u>Steve Morris</u> Time: <u>1035</u>
		Printed Name: <u>Steve Morris</u> Date: <u>5-12-99</u>
		Company: <u>American Environmental Network (NM), Inc.</u>

SWMU # 3 - EMPTY CONTAINER STORAGE AREA  
PARAMETERS - 5240 PRIORITY POLLUTANTS  
12 SAMPLES

SWMU # 4 - BURN PIT  
PARAMETERS - pH  
~~500-5240~~ SKINNER LIST ORGANICS  
BACKGROUND METALS  
9 SAMPLES

SWMU # 5 - FOUR LAND FILLS  
PARAMETERS - 8240 PRIORITY POLLUTANTS  
BACKGROUND METALS  
pH  
48 SAMPLES

SWMU # 7 - FIRE TRAINING AREA  
PARAMETERS - TPH  
OIL & GREASE  
12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER + ASSC. DITCH  
PARAMETERS - ~~500-5240~~ SKINNER LIST <sup>ORGANICS</sup> (CONSTITUENTS)  
4 SAMPLES

55 INDIVIDUAL SAMPLES

## FACSIMILE TRANSMITTAL



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Cimiza

MACHINE NUMBER: 505.722.0210

VERIFICATION NUMBER: 505.722.0227

FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist

PHONE: (214) 665-8302

Mail Codes 6PD-N

OFFICE: New Mexico/Federal Facilities Section

PAGES, INCLUDING COVER SHEET  
3

ATE: March 15, 1996

PLEASE NUMBER ALL PAGES

## INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT:

FACSIMILE NUMBER:

VERIFICATION NUMBER:

PANAFAX UP-766

(214) 665-6762

(214) 665-6760

## COMMENTS

Ed,

Here's what I have been using to track Giant, Cimiza's corrective action program. Please review and let's discuss it next week. Have a good one.

Thank,

JAMES



1: Aeration Basin (1)	Phase II	so and groundwater sampling every five years	RFI PHII RPT APP 1, w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
2: The Evaporation Ponds (2)	"	"	Survey and closure certification must be submitted prior to initiating Class III Permit Mod process
12: Contact Waste Water Collection System (CWWCS)	"	Inspection every 5 years beginning 1996	
13: The Drainage Ditch between APIS Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	"	soil and groundwater sampling every five years	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
3: Empty Container Storage Area (5)	Phase III		"
4: Old Burn Pit (8)	"		
5: Landfill Areas (7)	"	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.	EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities
7: Fire Training Area (4)	"	Under VCA	
11: Secondary Oil Skimmer (11)	"	Under VCA	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"

Prepared by: James A. Harris, Jr. VCA as at March 15, 1996



Route 3, Box 7  
Gallup, New Mexico  
87301

January 6, 1995

FILE COPY

William Honker, Chief  
RCRA Permits Branch  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: RCRA Facility Investigation (RFI) Additional Sampling -  
Revised Report  
Giant Refining Company - NMD000333211

Dear Mr. Honker:

Giant Refining Company - Ciniza submits the revised report requested in your letter of December 19, 1994. Specifically, the comments are listed and addressed below:

General Comment:

Giant needs to justify in a revised report why the detection limits for the volatile and semi-volatile soil analysis (8240/8260) for each SWMU were relatively high. For example, the PQL for benzene for a low contaminated sample should be 5 ug/kg, Giant's detection limit was 500 ug/kg; likewise, the PQL for chrysene in a low contaminated sample should be 300 ug/kg, Giant's detection limit was 5,000 ug/kg.

Response:

Giant used the reporting limits for volatiles and semi-volatiles (8240/8260) that have been used in all of the RFI sampling since sampling began in 1990 and that are included in the approved Generic Sampling Plan (May 17, 1990). Giant recognizes that there is a considerable difference between the reporting (detection) limits used in the RFI sampling and the practical quantitation limits determined in a laboratory and that a comparison of the two was never intended. Because no regulatory requirements for reporting (detection) limits in soil were noted, Giant reasoned

that, for consistency, the reporting (detection) limits for all 8240/8260 analysis would remain the same as in past RFI sampling events. As the reporting (detection) limits were well below New Mexico Water Quality Control Regulations and NMED's Solid Waste Management Regulations corrective action levels, Giant considered the limits used to be reasonable and acceptable.

General Comment:

Please include in a revised report the original data package from the sampling event and the QA/QC discussion/analysis on this data package.

Response:

A copy of the original laboratory data and QA/QC report was forwarded to Region VI on or about December 19, 1994.

General Comment:

EPA is requiring that Giant use the boring log/description format attached in the January 7, 1994, RFI Phase I and II approval letter for all future borings required by EPA. Each boring log must indicate whether or not there is visual contamination in each interval; whether or not there is olfactory contamination in each interval; and, include the PID reading for each interval. In addition, Giant should carry an extra PID instrument when conducting the RFI investigations.

Response:

Giant will use the boring log/description format supplied by the EPA in all future borings required by EPA. A copy of the requested format is attached. Giant will also lease an additional photo-ionization detector when conducting all future RFI sampling.

SWMU #5, Landfill Areas - Field Notes/Analytical Results:

Please explain in a revised RFI report why the PID reading for sample number 0513 at 16 feet was 230 ppm, but the analytical result for the soil sample was non-detect.

Response:

Although every effort is made during sampling to keep all equipment and materials downwind of the samples, it must be remembered that this is a field sampling project in a refinery and occasional changes in wind patterns, equipment movement, and sample collection, to name a few site variables, may bias certain observations. Giant feels that this is the case with sample 0513 at 16.0 feet and that exhaust fumes were detected with the PID.

Giant will keep more detailed notes of PID observations, PID background levels and weather changes on the RFI Data Management Forms during all future sampling required by EPA.

SWMU #6, Tank Farm - Page 4.5; Results:

EPA's interpretation of the soil boring results indicate that there is BTEX contamination in the most vertical interval taken at each tank boring. Therefore, the full extent of contamination has not been determined at each tank.

Response:

Using the same sampling locations and intervals, numbering system, and sampling protocol as the August, 1994 event, Giant will bore and sample until two clean samples are obtained at each tank. This sampling will occur in the first quarter of 1995.

SWMU #11, Secondary Oil Skimmer - Field Notes from Coring 1104:

Please clarify in the revised RFI report whether the discolored clay/sand at 6 feet is from hydrocarbon contamination or just the natural soil color.

Response:

The discolored soil mentioned in the field notes is the natural color. No hydrocarbon staining or odor was observed in any interval of this boring.

SWMU #11, Secondary Oil Skimmer - Field Notes from Coring 1103:

Please clarify in the revised RFI report whether the black "fill" sand at 5 feet is from hydrocarbon contamination or just the natural soil color.

Response:

The "black fill" sand was a recording error. It should read "back filled" sand and I should have caught the mistake. There were some grey/black sections in the 1.5 to 7.5 foot interval that were not hydrocarbon contaminated. Those sections were most likely the natural soil color or possibly the end product of natural biodegradation of organic matter.

Thank you for the opportunity to address the deficiencies in the Report on the Additional RFI Sampling, October, 1994. If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton  
Senior Environmental Coordinator  
Giant Refining Company

TLS:sp

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.

Benito Garcia, Bureau Chief HRMB  
New Mexico Environment Department

BORING LOG  
RFI Project 1995  
Boring ID Number:  
Date:

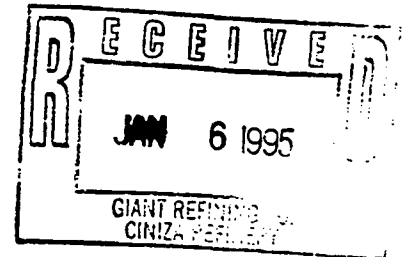
GIANT - CINIZA  
Logged by:  
Drilled by:  
Total Depth:

Description (Include odors and discoloration of soil)	Depth	Symbol	Sample	PID (ppm)
	0.0			
	2.0			
	4.0			
	6.0			
	8.0			
	10.0			
	12.0			
	14.0			
	16.0			
	18.0			
	20.0			
	22.0			
	24.0			
	26.0			
	28.0			
	30.0			
	32.0			
	34.0			
	36.0			
	38.0			
	40.0			



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733



DEC 22 1994

**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, NM 87301

RE: RCRA Facility Investigation (RFI) Additional Sampling  
Report, Giant Refining Co. - NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RFI report, dated October 1, 1994, and has determined that the report is deficient. Enclosed is a list of deficiencies for your review.

A revised Report addressing the enclosed deficiencies must be submitted to EPA by February 10, 1995. If this revised report is not approved, then EPA may make further modifications as required. The modified report then becomes the approved RFI report.

If you should have any questions or need additional information, please feel free to contact Mr. Rich Mayer of my staff at (214) 665-7442.

Sincerely yours,

William K. Honker, P.E., Chief  
RCRA Permits Branch

Enclosure

cc: Mr. Benito Garcia  
New Mexico Environment Department



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contains at least 50% recycled fiber

**DEFICIENCY COMMENTS ON GIANT'S RFI ADDITIONAL SAMPLING  
REPORT FOR SWMUs' 4, 5, 6, 10 AND 11**

**General Comment:** Giant needs to justify in a revised report why the detection limits for the volatile and semivolatile soil analysis (8240/8260) for each SWMU were relatively high. For example, the PQL for benzene for a low contaminated sample should be 5 ug/kg, Giant's detection limit was 500 ug/kg; likewise, the PQL for chrysene in a low contaminated sample should be 300 ug/kg, Giant's detection limit was 5,000 ug/kg.

**General Comment:** Please include in a revised report the original data package from the sampling event and the QA/QC discussion/analysis on this data package.

**General Comment:** EPA is requiring that Giant use the boring log/description format attached in the January 7, 1994, RFI Phase I and II approval letter for all future borings required by EPA. Each boring log must indicate whether or not there is visual contamination in each interval; whether or not there is olfactory contamination in each interval; and, include the PID reading for each interval. In addition, Giant should carry an extra PID instrument when conducting the RFI investigations.

**SWMU #5, Landfill Areas**

**Field Notes/Analytical Results:** Please explain in a revised RFI report why the PID reading for sample number 0513 at 16 feet was 230 ppm, but the analytical results for the soil sample was non-detect?

**SWMU #6, Tank Farm**

**Page 4.5; Results:** EPA's interpretation of the soil boring results indicate that there is BTEX contamination in the most vertical interval taken at each tank boring. Therefore, the full extent of contamination has not been determined at each tank.

**SWMU #11, Secondary Oil Skimmer**

**Field Notes from Coring 1104:** Please clarify in the revised RFI Report whether the discolored clay/sand at 6 feet is from hydrocarbon contamination or just the natural soil color.

**Field Notes from Coring 1103:** Please clarify in the revised RFI Report whether the black "fill" sand at 5 feet is from hydrocarbon contamination or just the natural soil color.



INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: June 28, 1994

TO: David Pavlich

FROM: Lynn Shelton *LS*

SUBJECT: Required RFI Sampling

In its January 7, 1994 letter, EPA required additional sampling and conditions of the RCRA Facility Investigation.

Although some of the requirements are considered redundant and are therefore subject to challenge, certain additional sampling requirements are acceptable and should be completed in a timely manner regardless of the protest of other, less productive sampling.

A list of the additional sampling sites, depths, and estimated costs are presented below.

I. SWUM #4 Old Burn Pit

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
3	6.0', 10.0'	\$475		\$7,026

II. SWMU #5 Landfill Areas

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
9	11.0', 16.0, 20.0'	\$2,848		\$21,525

III. SWMU #6 Tank Farm

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
8	16.0', 20.0'	\$2,531		\$1,000

IV. SWMU #7 Fire Training Area

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
2	7.0', 11.0'	\$348		\$400

V. SWMU #10 Sludge Pits

<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	Costs	<u>Analysis</u>
18	19.0', 25.0'	\$7,119		\$18,450

VI. SWMU #11 Secondary Oil Skimmer

			Costs
<u>Borings</u>	<u>Depths</u>	<u>Sampling</u>	<u>Analysis</u>
2	6.0', 10.0'	\$316	\$3,180

Total costs for this initial sampling project are estimated to be \$65,218.

It is my recommendation that Giant complete an RFE and implement the sampling and analysis by July 15, 1994.

TLS:sp



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

June 28, 1994

Rich Mayer  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the Quarterly Progress Report for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

  
John Stokes  
Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.

David Pavlich, Health/Safety and Environmental Manger  
Giant Refining Company

INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *JS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- Tank Farm
- \*\* Empty Container Storage
- Old Burn Pit
- Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.



#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.

It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

#### SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

#### SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

#### SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

### III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3  
1994 Analytical Costs

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

TABLE 4

## BIENNIAL ANALYTICAL COST

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>

TABLE 5

TOTAL COST OF 1994 SAMPLING  
(ESTIMATE)

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR</u> *	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

\* Including Drilling Rig

#### IV. Conclusions

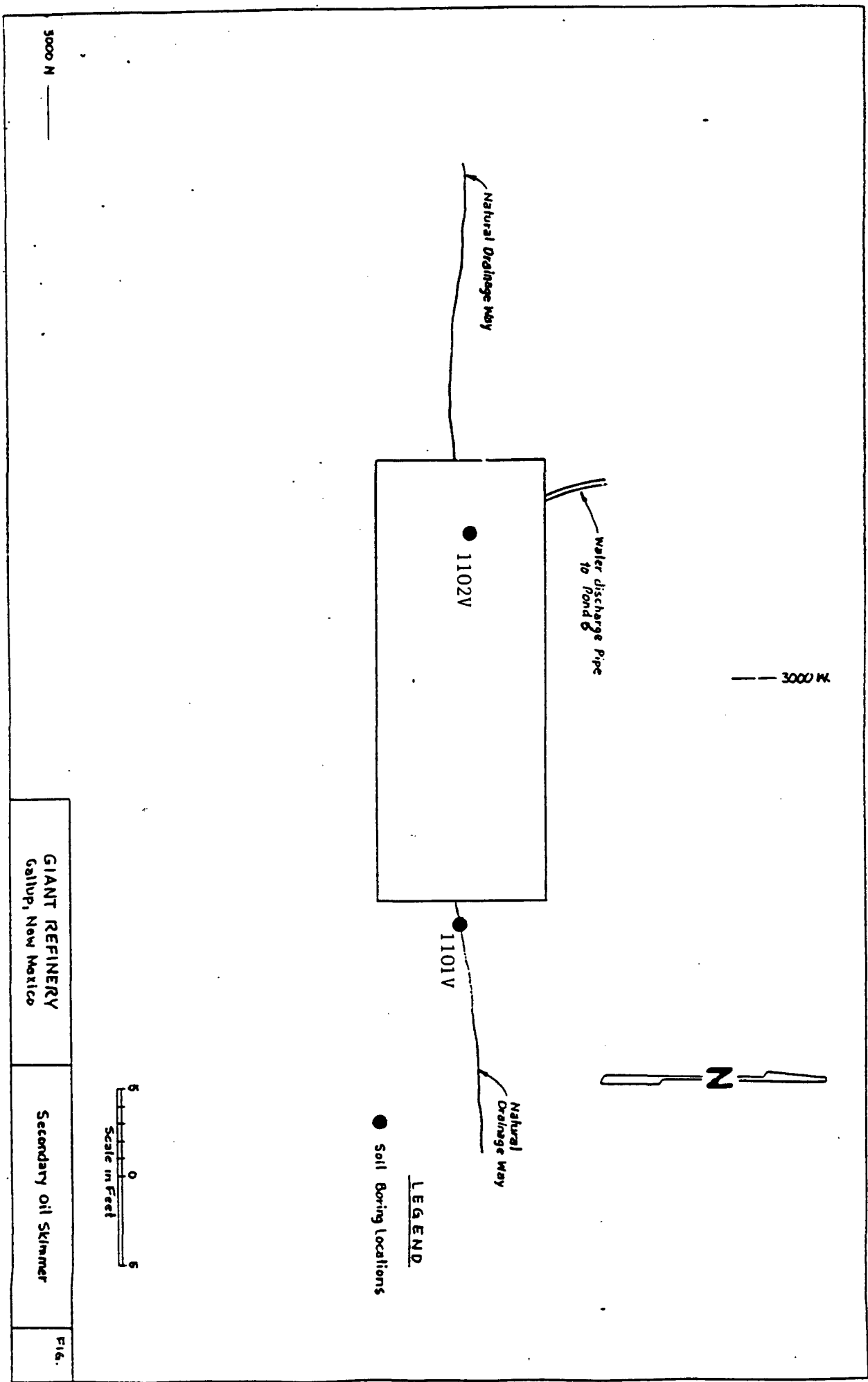
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



GIANT REFINERY  
Gallup, New Mexico

Secondary Oil Skimmer

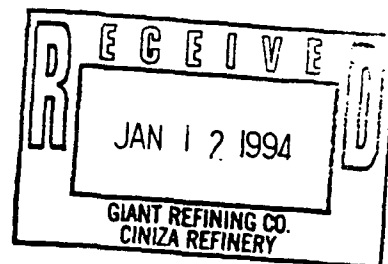
Fig.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 7 1994



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation Phase III Report dated November 3, 1992, with the enclosed modifications. The EPA is requiring that additional soil sampling be completed at several sites, including the Landfill Areas, the Old Burn Pit, the Secondary Skimmer, and the Fire Training Area. A supplementary report detailing the results of these sampling activities shall be submitted to the EPA by December 31, 1994.

Additionally, the EPA is approving the voluntary Corrective Action Plan for the Landfill Areas, submitted in March, 1993.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

*Jack Davis*

fr Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED



**APPROVAL WITH MODIFICATIONS  
GIANT REFINING COMPANY  
RCRA FACILITY INVESTIGATION PHASE III REPORT  
AND THE  
CORRECTIVE ACTION PLAN FOR THE LANDFILL AREAS**

The Environmental Protection Agency (EPA) has completed a technical review of your RCRA Facility Investigation (RFI) Phase III Report, dated October, 1992, and your voluntary Corrective Action Plan for the Landfill Area, dated February, 1993. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 5, The Empty Container Storage Area**

The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

**SWMU 8, The Old Burn Pit**

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 11, The Secondary Oil Skimmer**

Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 4, The Fire Training Area**

Due to the presence of elevated levels of oil and grease in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. Two (2) of the four (4) samples

taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2,000 ppm. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

#### SWMU 7. The Landfill Areas

Because soil borings completed in this unit indicate the presence of waste and metal contamination at depths up to 9.5 feet, the EPA is requiring that additional soil borings be completed at greater depths. These additional soil borings will be installed in order to:

- 1) Verify that saturated zones found in three (3) of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater;
- 2) Ensure that the vertical extent of waste emplacement has been defined;
- 3) Confirm that the vertical extent of metal contamination has been delineated.

Following the completion of the additional soil borings in the Landfill Areas, Giant may proceed with the capping of the landfills as per their voluntary Corrective Action Plan.

#### MODIFICATIONS

Note: All referenced sampling points correspond to the previous RFI sampling points completed in May, 1992. Soil boring logs included in future report submittals shall follow the attached example.

#### SWMU #8. The Old Burn Pit

Giant shall complete soil borings as close as possible to sample points one (1), two (2) and three (3). Sampling intervals shall be at six (6) and (10) feet and must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be submitted to the EPA by December 31, 1994.

#### SWMU #11. The Secondary Oil Skimmer

Giant shall complete two (2) soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling shall extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures and analytical requirements are identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #4, The Fire Training Area**

Giant shall complete angled soil borings as close as possible to sample points one (1) and two (2). Sampling intervals shall be at 7 and 11 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Analytical constituents shall include the Skinner constituents. The results of this sampling event shall be submitted to the EPA by December 31, 1994.





**SWMU #7, The Landfill Areas**

Giant shall take soil borings as close as possible to sample points two (2) through seven (7), and nine (9). Sampling intervals shall be at 11 feet, 16 feet and 20 feet. Sampling must extend vertically until no subsequent increase in contaminant levels is likely to occur. A minimum of two (2) "clean" samples are required to delineate contamination. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyze all samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. The results of this sampling event shall be due to EPA by December 31, 1994.

# **BORING LOG**

PROJECT: 622092005-254 (TBL-A1)  
 CLIENT:  
 BORING NUMBER: TBL-A1  
 EXCAVATED POND: N/A  
 FIRST ENCOUNTERED WATER: N/A  
 DATE COMPLETED: 01/28/93

SHEET: 1 of 1  
 DRILLED BY: Precision Eng.  
 LOGGED BY: PWC  
 SURF. ELEV: N/A  
 TOTAL DEPTH: 6.0'

DESCRIPTION	DEPTH (ft.)	SYMBOL	SAMPLE	WELL DESIGN	
0-3.0' SANDY CLAY mixed with OILY SLUDGE, stained black by hydrocarbon products, moist, sticky, strong hydrocarbon odor decreasing slightly with depth. PID 25 ppm.	1				
	2				
3.0-5.0' SANDY CLAY, brown, dry, crumbly, slight hydrocarbon odor decreasing with depth. No visual contamination, PID 35 ppm.	3				
	4				
5.0-6.0' CLAYEY SAND, tan to white, dry, crumbly, faint hydrocarbon odor. No visual contamination, PID 2.0 ppm.	5				
TD = 6.0'	6				
NOTE: Drill crew excavated the first foot by shovel, then pressed a 5.0' split recovery barrel from 1.0-6.0'.  Bentonite pellets were placed in the boring to within a foot of the surface and hydrated.					

**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RCRA Facility Investigation (RFI) Phase III Report and  
Voluntary Corrective Action Plan - Giant Refining Co. -  
NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase III RFI Report dated November 3, 1992, with the enclosed modifications. The voluntary Corrective Action Plan (CAP) for the Landfill Areas (submitted in March of 1993) is also approved.

The Phase III Supplementary Report (additional soil sampling for the Landfill Areas, the Old Burn Pit, the Secondary Skimmer and the Fire Training Area) is due to the Environmental Protection Agency (EPA) by December 31, 1994. If you have any further questions pertaining to the above mentioned items, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

6h-pn:RM:7442:12/3/93:promo disk:A:rflIIIIG:file in technical  
NMD.....211

6h-pn      6h-p      6h  
Neleigh    Honker    Morisato

**APPROVAL OF THE RFI PHASE III REPORT, WITH MODIFICATIONS, AND APPROVAL OF THE VOLUNTARY CORRECTIVE ACTION PLAN (CAP) FOR THE LANDFILL AREAS FOR GIANT REFINING COMPANY**

Below are EPA's general comments and modifications pertaining to Giant's RFI Report and the voluntary CAP for the Landfill Areas. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

**General Comment:** EPA agrees with the finding of no further action for the SWMU #3, the Empty Container Storage Area. Even though EPA is tentatively agreeing with the no further action determination, EPA will require one administrative control for the Empty Container Storage Area. The administrative control shall consist of: a survey plat of the SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control, Giant may submit a Class III permit modification to terminate the RFI/CMS process for the Empty Container Storage Area.

On SWMU #4, the Old Burn Pit, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, all 3 samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. One of the three samples at the 4.5 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #11, the Secondary Oil Skimmer, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, one of the two samples taken at the 3 foot interval (the deepest interval sampled) contained volatiles and semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #7, the Fire Training Area, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 2 of the 4 samples taken at the 4.5 foot interval (the deepest interval sampled) contained oil and grease above 2000 ppm (detection limit is <10 ppm). Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #5, the Landfill Areas, EPA believes that additional deeper borings are needed to: 1) verify that saturated zones found in 3 of the 12 deepest soil boring intervals are isolated and are not connected to the groundwater; 2) ensure that the vertical delineation of waste emplacement has been identified (soil boring logs indicate waste at the 8-9' zone, the deepest samples were taken at 9.5'); and, 3) ensure that the vertical extent of metal contamination has been identified (some of 9.5' samples had

elevated metal levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

After Giant has completed the additional sampling requirements for the Landfill Areas, they then may proceed with the capping of the landfills under the voluntary Corrective Action Plan.

#### **Modifications**

**SWMU #4, the Old Burn Pit:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done May of 1992): number's 1, 2, and 3. Sampling intervals shall be at 6 and 10 feet. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #11, the Secondary Oil Skimmer:** Giant shall take 2 soil borings within the area occupied by the former Skimmer. All borings must be sampled at the 5-6 foot and 9-10 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #7, the Fire Training Area:** Giant shall take soil borings as close as possible to sample points number 1 and 2 (numbers are from previous RFI sampling points, done in May of 1992). Sampling intervals shall be at 7' and at 11'. Sampling procedures shall be identical to those required in the previous RFI, except, that all soil borings shall be angled. Constituents to be analyzed shall include the Skinner constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

**SWMU #5, the Landfill Areas:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done in May of 1992): number's 2, 3, 4, 5, 6, 7, and 9. Sampling intervals shall be at 11', 16' and 20'. Sampling procedures shall be identical to those required in the previous RFI. Giant shall analyzed the samples for metals. If volatile or semivolatile contamination is encountered when sampling, then those constituents shall be analyzed also. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by December 31, 1994.

**Soil Boring Logs:** EPA has included an example of a soil boring log which they would like Giant to use in all future borings.



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

August 11, 1992

Barbara Driscoll  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

Giant Refining Company - Ciniza (GRC) is submitting this quarterly progress report as required by the May 31, 1990 RFI Workplan approval letter and HSWA Permit Condition C.4., Page 11.

GRC finished soil sampling of SWMU's #3, 4, 5, 7, and 11 on May 15, 1992. All samples were sent to Westech Laboratories for analysis. Hard copy of analytical results has been received and tabulated and is currently having statistical analysis done by Mr. Mark Wilson of the University of New Mexico.

The inspection of the remaining process wastewater system (that part not inspected in 1990) is being organized. Please refer to the attached drawings for lines that may be inspected. The lines were identified using the drawings included in the approved RFI Workplan and by using a corrected drawing from a hydroblasting project completed in 1988. Only lines marked in blue may be inspected and will represent what GRC believes will reasonably demonstrate the integrity of the process wastewater system. Some lines may not be inspected due to safety or process considerations.

This inspection is tentatively scheduled to take place in late August, 1992.

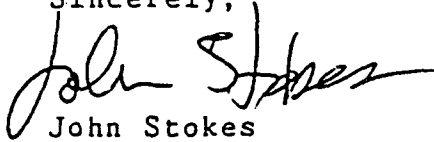
If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering



the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

A handwritten signature in dark ink, appearing to read "John Stokes". The signature is fluid and cursive, with the first name "John" being more prominent than the last name "Stokes".

John Stokes  
Refinery Manager  
Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel  
Giant Industries Arizona, Inc.

DATA MANAGEMENT

Sample Location: SUNMU #11

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. RFE1101V0.0 Sample Time/Description: 2:00 WET SOIL  
PID - 0

Sample No. RFE1101V3.0 Sample Time/Description: 2:45 PM WET SOIL  
PID - 0.2

Sample No. RFE1101D3.0 Sample Time/Description: 2:45 PM WET SOIL  
PID 0.2

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: WET AREA IN BOTTOM OF ORIGINAL  
DRAINAGE DITCH

Weather Conditions: CLOUDY, WSW @ 5 MPH, 65°F

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-1' MIXED CLAY & SAND, 1' to 3.5'  
BLACK LAYER, SMELLS LIKE SEWAGE. VERY WET.

DATA MANAGEMENT

Sample Location: SWMU #11

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: Auger

Sample No. RFE1102V0.0 Sample Time/Description: 2:10 PM MOIST SOIL  
PID - 0

Sample No. RFE1102V3.0 Sample Time/Description: 2:25 PM MOIST SOIL  
PID - 0

Sample No. RFE1102E3.0 Sample Time/Description: 2:35 PM WATER

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: BENEATH ORIGINAL SKIMMER - VERY MOIST

Weather Conditions: CLOUDY; WSW @ 5 mph, 65°F

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-4' RED / GRAY CLAY MIX WITH  
SOME WHITE SPECKLING

TABLE 2

Field Equipment Checklist  
Soil and Sludge Sampling

<u>ITEM</u>	<u>REMARKS</u>
<input checked="" type="checkbox"/> PID Meter	<input checked="" type="checkbox"/> Calibrated
<input checked="" type="checkbox"/> Site Specific SWMU Work Plan	
<input checked="" type="checkbox"/> Generic Sampling Plan	
<input checked="" type="checkbox"/> Site Map With Sample Locations	
<input checked="" type="checkbox"/> Sample Bottles	
<input checked="" type="checkbox"/> Ice Chests	
<input checked="" type="checkbox"/> Trip Blanks	
<input checked="" type="checkbox"/> <del>Methanol</del> <i>PROPANOL</i>	
<input checked="" type="checkbox"/> Deionized Water	
<input checked="" type="checkbox"/> Squeeze Bottles	
<input checked="" type="checkbox"/> Personal Protective Equipment	
<input checked="" type="checkbox"/> Chain of Custody and Sample Record Forms	
<input checked="" type="checkbox"/> Plastic Bags (To provide clean surfaces)	
<input checked="" type="checkbox"/> Disposable Gloves	
<input checked="" type="checkbox"/> Paper Towels	
<input checked="" type="checkbox"/> Tape (For labels and dispenser)	
<input checked="" type="checkbox"/> Sharpie, Pens, Pencils	
<input checked="" type="checkbox"/> Blue Ice or Ice	
<input checked="" type="checkbox"/> Zip-Lock Bags, 1 Gallon	

5-7-92

JLS

PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #11-"Old Skimmer"

8260 - Volatile Organics

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	D3.0'	V0.0'	V3.0'	E3.0'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	540	270	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	15000	19000	ND	ND	ND
Methyl Ethyl Ketone	ug/kg	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	830	280	ND	ND	ND
Toluene	ug/kg	ND	100	130	ND	ND	ND
Chloroethylviyl Ether	ug/kg	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ug/kg	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	ND	ND	ND	ND	ND	ND
Total Xylenes	ug/kg	ND	98000	740	70	ND	ND
1,2-Dibromoethane (EDB)	ug/kg	ND	ND	ND	ND	ND	ND

PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #11-"Old Skimmer"

8270 - Semi-Volatile Organics

SAMPLE POINT		01	01	01	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	D3.0'	V0.0'	V3.0'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	3500	2500	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	1900	1500	ND	ND
Diethyl phthalate	ug/kg	ND	ND	1700	ND	ND
Phenanthrene	ug/kg	ND	9200	5400	ND	ND
Anthracene	ug/kg	ND	520	ND	ND	ND
Di-n-butyl Phthalate	ug/kg	530	1300	1300	970	ND
Flouranthene	ug/kg	ND	630	ND	ND	ND
Pyrene	ug/kg	ND	1500	1200	260	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	4600	1700	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND
Benzo(b)flouranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(k)flouranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	550	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND
Dibenzo(a,j)acridine	ug/kg	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND	ND	ND
Indene	ug/kg	ND	ND	ND	ND	ND
Methylchrysene	ug/kg	ND	ND	ND	ND	ND
Pyridine	ug/kg	ND	ND	ND	ND	ND
Quinoline	ug/kg	ND	ND	ND	ND	ND
Benzenethiol	ug/kg	ND	ND	ND	ND	ND
1-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND

RFI WORKPLAN      PHASE III      1992

May 4, 1992

Training  
Load Equipment  
SWMU Site Tour

8:00      -      4:15

May 5, 1992

SWMU #4

Burn Pit

9 Samples

May 6, 1992

SWMU #3

Empty Container Storage

12 Samples

May 7, 1992

SWMU #7  
SWMU #11

Fire Training Area  
Secondary Oil Skimmer

12 Samples  
4 Samples

May 8, 1992

SWMU #5

Land Fill Area

48 Samples

May 11, 1992

Continue SWMU #5

48 Samples

May 12, 1992

Continue SWMU #5

48 Samples

May 13, 1992

Begin set-up for sewer line inspection  
Expect one week to complete



**Westech  
Laboratories  
Inc.**

1992

## CHAIN OF CUSTODY RECORD



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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7
TELEPHONE	PROJECT
(505) 722-0227	GALLUP, NM 87301
JOB / P.O. NO.	
PHASE III REF	

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE)	SAMPLER (PLEASE PRINT)	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES	SAMPLE TYPE CODES				LABORATORY SAMPLE IDENTIFICATION NUMBER	
											S - SOIL	G - SLUDGE	X - OTHER	W - WATER		T - TRAVEL BLANK
<i>Lynn Shelton</i>	<i>LYNN SHELTON</i>															
RFI1101V0.0	2:00	5-7-92		OLB				S	1	X					2206755	
RFI1101V3.0	2:45	5-7-92		SKIMMER				S	1	X					6756	
RFI1101V3.0	2:45	5-7-92		2				S	1	X					6757	
RFI1102V0.0	2:10	5-7-92						S	1	X					6758	
RFI1102V3.0	2:25	5-7-92						S	1	X					6759	
RFI1102E3.0	2:35	5-7-92						W	2	X					6760	
TRIP BLANK								W	1						6761	
* SEE ATTACHED LIST																
* ANALYZING amount of sample to analyze for semi-volatiles.																

RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
<i>Lynn Shelton</i>			
<i>WPS</i>			
<i>WPS</i>			
<i>WPS</i>			
<i>WPS</i>			





# CHAIN OF CUSTODY RECORD

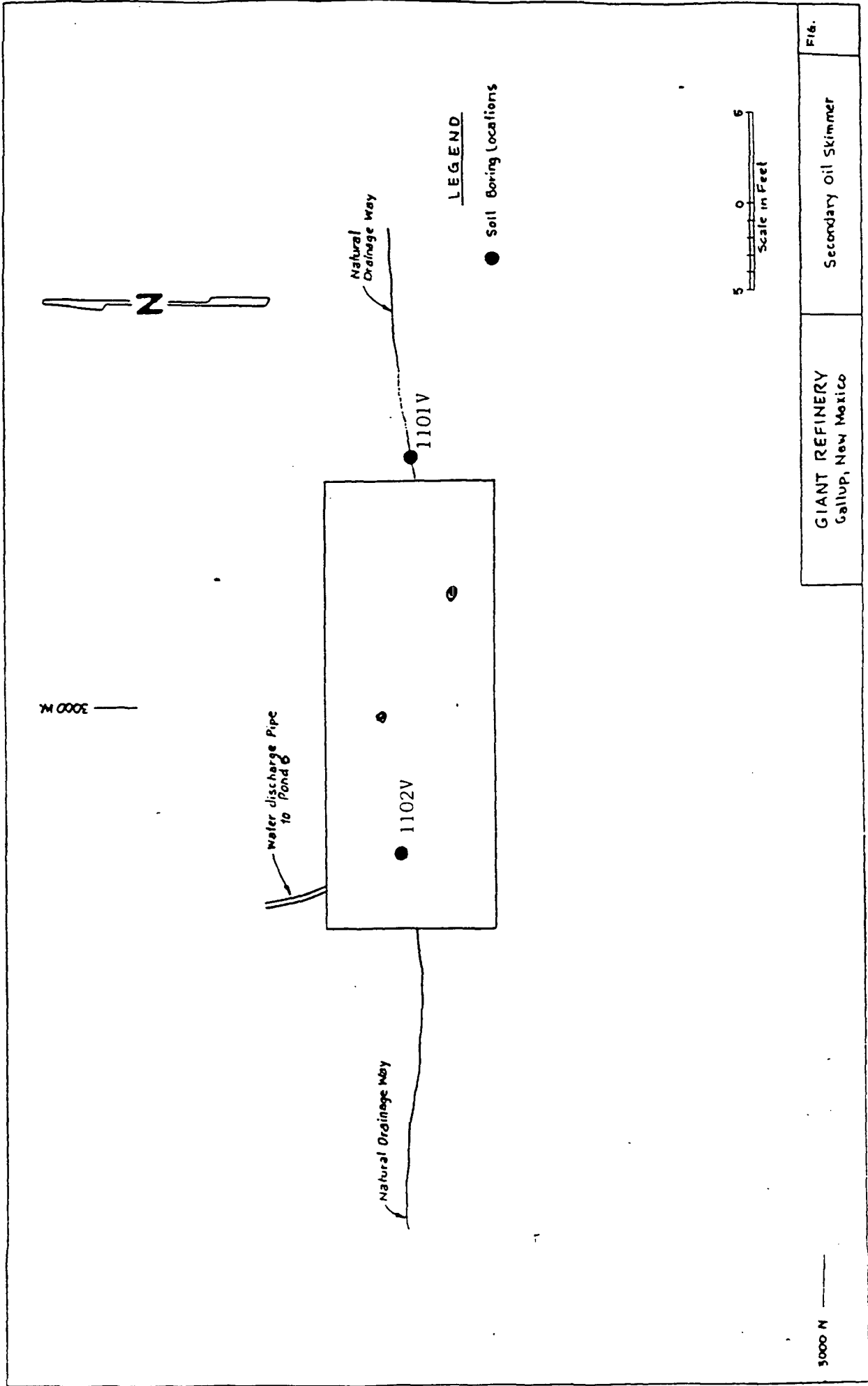
CLIENT	GIANT REFINING CO	ADDRESS	RT 3 BOX 7
TELEPHONE	(505) 722 0227	PROJECT	CALLUP, NM 87301
			PHASE III REE
			JOB / P. O. NO.

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**Flagstaff** • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469  
**El Paso** • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

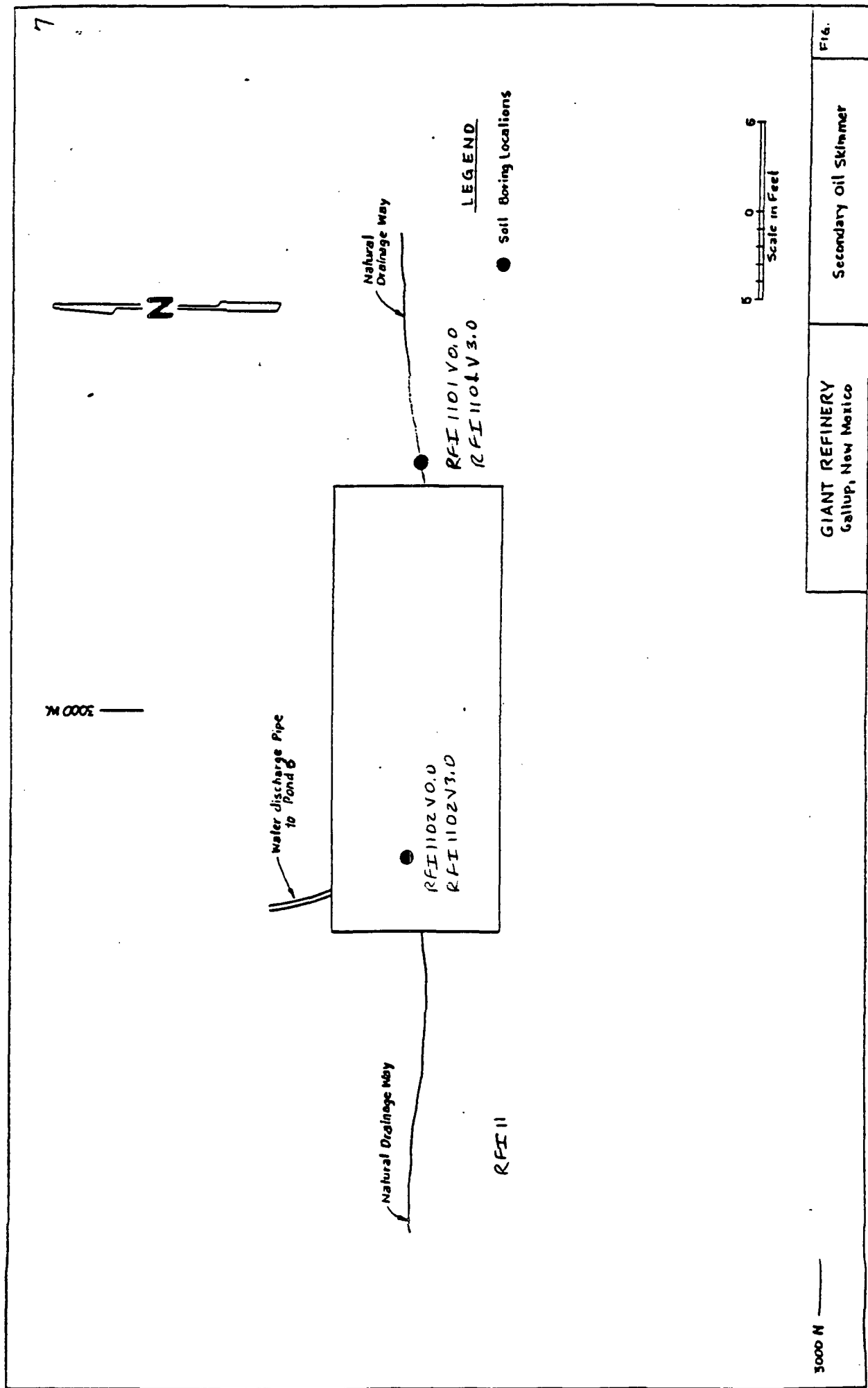
[illegible]

11 # 0 W 3 S



68-5-69

12-5-89



GIANT REFINERY Gallup, New Mexico	Secondary Oil Skimmer	Fig.
--------------------------------------	-----------------------	------

Sept. 14, 1989

APPLIED EARTH SCIENCES

RELEASE VERIFICATION

SWMU: Secondary Oil Skimmer and Associated Drainage  
Ditch

LOCATION: Figure 1, No. 39

Release verification was accomplished by a complete review of the facility records to determine if a release has occurred. In addition, plant personnel were interviewed and the area was inspected to check for a release. No oil has been found in the Drainage Ditch. At the Secondary Oil skimmer no known release has occurred.

UNIT AREA CHARACTERISTICS

TYPE OF UNIT: Secondary Oil Skimmer and associated Drainage  
Ditch

LOCATION OF UNIT: Figure 1, No. 39

DESIGN FEATURES:

A 6 x 12 foot steel skimmer unit was installed in 1968 to process storm water runoff.

OPERATING PRACTICES (PAST AND PRESENT):

Storm water runoff from a ditch which drains the western side of the process area is collected. Water is routed to Pond #6, while any oil which may be present in the runoff is stored. Periodically, sediment and any collected oil is transported to the land treatment areas.

PERIOD OF OPERATION: 1968 - Present

AGE OF UNIT:

>20 years

GENERAL PHYSICAL CONDITIONS:

Inadequate for high storm flow rates.

METHOD USED TO CLOSE THE UNIT:

Operational

WASTE CHARACTERIZATION

TYPE OF UNIT: Secondary Oil Skimmer and associated Drainage  
Ditch

LOCATION OF UNIT: Figure 1, No. 39

TYPE OF WASTE PLACED IN UNIT:

Oily waste that may be present in storm water runoff  
from the western portion of the process area.

APPROXIMATE QUANTITY MANAGED:

Unknown

PHYSICAL AND CHEMICAL CHARACTERISTICS:

Oils adsorbed onto sediment

MIGRATION AND DISPERSAL CHARACTERISTICS:

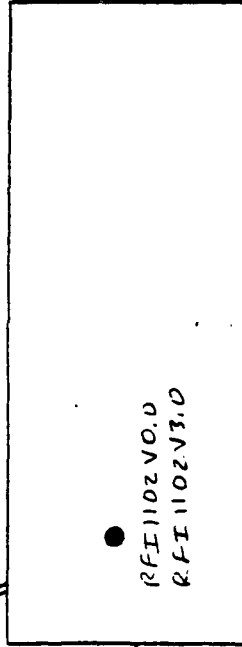
Sediment transport during storm events.

12-5-89

7

3000 M

Water discharge Pipe  
to Pond



Natural Drainage Way

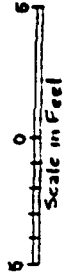
RFI 11

Natural  
Drainage Way

RFI 1101 V0.0  
RFI 1101 V3.0

LEGEND

● Soil Boring locations

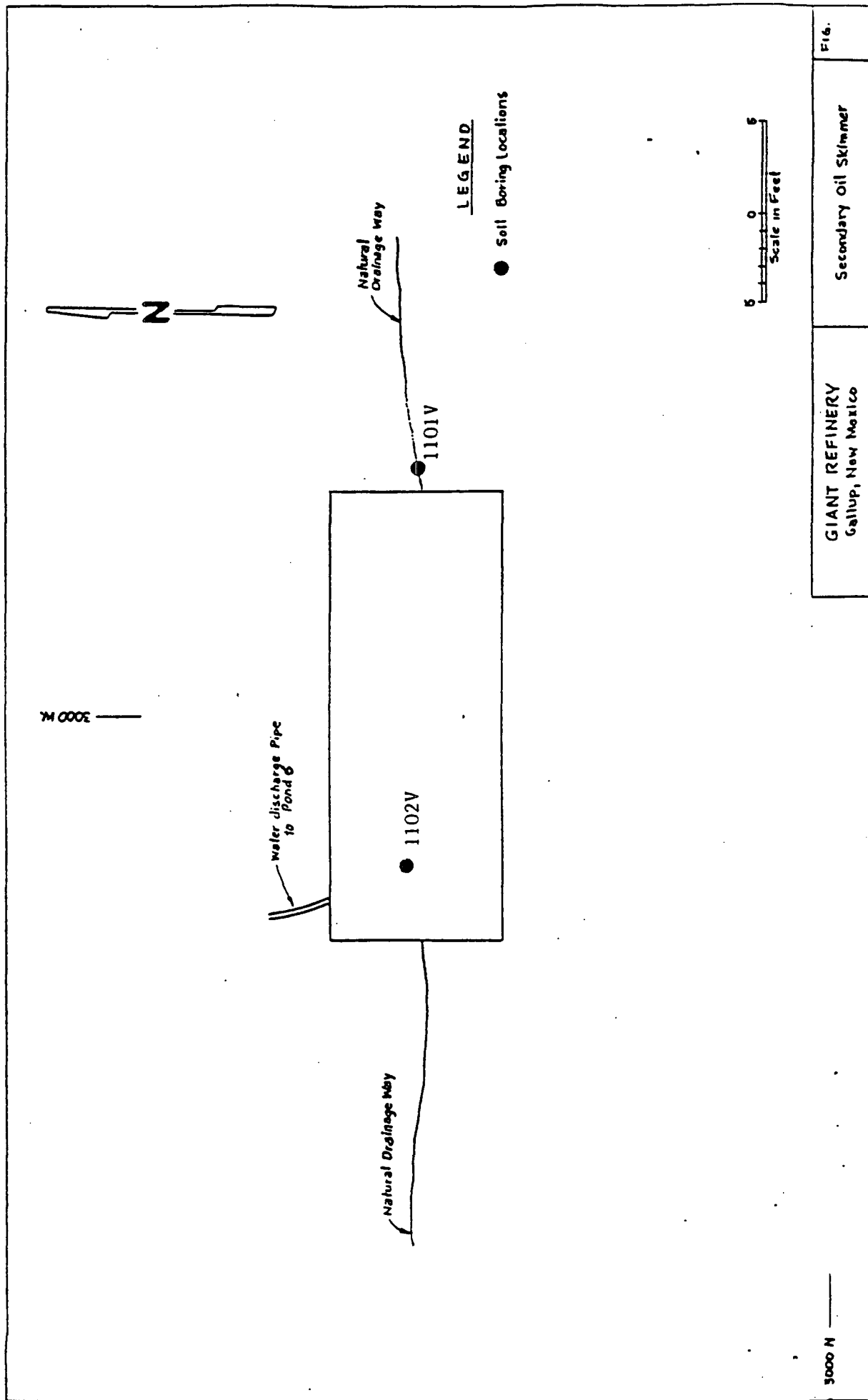


3000 M

GIANT REFINERY  
Gallup, New Mexico

Secondary Oil Skimmer

Fig.





PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #11-'Old Skimmer'

8260 - Volatile Organics

SAMPLE POINT		01	01	01	02	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	D3.0'	V0.0'	V3.0'	E3.0'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	540	270	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	ND	15000	19000	ND	ND	ND
Methyl Ethyl Ketone	ug/kg	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	ND	830	280	ND	ND	ND
Toluene	ug/kg	ND	100	130	ND	ND	ND
Chloroethylviyl Ether	ug/kg	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ug/kg	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	ND	ND	ND	ND	ND	ND
Total Xylenes	ug/kg	ND	98000	740	70	ND	ND
1,2-Dibromoethane (EDS)	ug/kg	ND	ND	ND	ND	ND	ND

PHASE III, RFI 1992  
GIANT REFINING  
CINIZA

SOLID WASTE MANAGEMENT UNIT #11-"Old Skimmer"

S270 - Semi-Volatile Organics

SAMPLE POINT		01	01	01	02	02
SAMPLE DEPTH (feet)		V0.0'	V3.0'	D3.0'	V0.0'	V3.0'
PARAMETER	UNITS	RESULT	RESULT	RESULT	RESULT	RESULT
Phenol	ug/kg	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND
2-Methylphenol	ug/kg	ND	ND	ND	ND	ND
3-Methylphenol	ug/kg	ND	ND	ND	ND	ND
4-Methylphenol	ug/kg	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND
Naphthalene	ug/kg	ND	3500	2500	ND	ND
Dimethyl phthalate	ug/kg	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	1900	1500	ND	ND
Diethyl phthalate	ug/kg	ND	ND	1700	ND	ND
Phenanthrene	ug/kg	ND	9200	5400	ND	ND
Anthracene	ug/kg	ND	520	ND	ND	ND
Di-n-butyl Phthalate	ug/kg	530	1300	1300	970	ND
Flouranthene	ug/kg	ND	630	ND	ND	ND
Pyrene	ug/kg	ND	1500	1200	260	ND
Butyl benzyl phthalate	ug/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	ug/kg	ND	4600	1700	ND	ND
Bis(2-ethylhexyl) phthalate	ug/kg	ND	ND	ND	ND	ND
Chrysene	ug/kg	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ug/kg	ND	ND	ND	ND	ND
Benzo(b)flouranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(k)flouranthene	ug/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	ND	550	ND	ND	ND
Dibenzo(a,h)anthracene	ug/kg	ND	ND	ND	ND	ND
Dibenzo(a,j)acridine	ug/kg	ND	ND	ND	ND	ND
7,12-Dimethylbenz(a)anthracene	ug/kg	ND	ND	ND	ND	ND
Indene	ug/kg	ND	ND	ND	ND	ND
Methylchrysene	ug/kg	ND	ND	ND	ND	ND
Pyridine	ug/kg	ND	ND	ND	ND	ND
Quinoline	ug/kg	ND	ND	ND	ND	ND
Benzenethiol	ug/kg	ND	ND	ND	ND	ND
1-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND



**Westech  
Laboratories  
Inc.**

1992

# CHAIN OF CUSTODY RECORD



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El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CLIENT	ADDRESS
GIANT REFINING CO	RT 3 BOX 7
TELEPHONE	PROJECT
(505) 722 0227	PHASE III REF
JOB/PO NO.	

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE)	SAMPLER (PLEASE PRINT)		HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES	SAMPLE TYPE CODES	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
	DATE	TIME									
<i>Lynn Shelton</i>	LYNN SHELTON										
REFI1101V0.0	5-1-92	2:00				S	1	X	S - SOIL	*SEE ATTACHED LIST	2204755
REFI1101V3.0	5-1-92	2:45				S	1	X	W - WATER		6756
REFI1101P3.0	5-1-92	2:45				S	1	X	O - OIL		6757
REFI1102V0.0	5-1-92	2:10				S	1	X			6758
REFI1102V3.0	5-1-92	2:25				S	1	X			6759
REFI1102E3.0	5-1-92	2:35				W	2	X			6760
TRIP BLANK						W	1				6761
RECEIVED BY (SIGNATURE) <i>WPS red</i>											
RECEIVED BY (SIGNATURE) <i>Lynn Shelton</i>											
RECEIVED BY (SIGNATURE) <i>WPS red</i>											
RECEIVED BY (SIGNATURE) <i>WPS red</i>											

\* Analytical amount of sample red  
to analyze for semi-volatiles.



# CHAIN OF CUSTODY RECORD



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GIANT REFINING CO TELEPHONE (505) 722 0237	RT 3 BOX 7	
	GALLUP, NM 87301	
	PROJECT	JOB / P.O. NO.
	PHASE III	REFI

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• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE)		SAMPLER (PLEASE PRINT)		REQUESTED ANALYSES		SAMPLE TYPE CODES		LABORATORY SAMPLE IDENTIFICATION NUMBER	
DATE	TIME	DATE	TIME	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
5-1-92	2:00	5-1-92	2:00			S	1		
5-1-92	2:45	5-1-92	2:45			S	1		
5-1-92	2:45	5-1-92	2:45			S	1		
5-1-92	2:10	5-1-92	2:10			S	1		
5-1-92	2:25	5-1-92	2:25			S	1		
5-1-92	2:35	5-1-92	2:35			W	2		
TRIP BLANK						W			
RECEIVED BY (SIGNATURE)				RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)	
RECEIVED BY (SIGNATURE)				RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)	
RECEIVED BY (SIGNATURE)				RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)	
RECEIVED BY (SIGNATURE)				RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)		RECEIVED BY (SIGNATURE)	

SWMU # 3 - EMPTY CONTAINER STORAGE AREA  
PARAMETERS - 8240 PRIORITY POLLUTANTS  
12 SAMPLES

SWMU # 4 - BURN PIT  
PARAMETERS - pH  
~~8240 PRIORITY POLLUTANTS~~ SKINNER LIST ORGANICS  
BACKGROUND METALS  
9 SAMPLES

SWMU # 5 - FOUR LAND FILLS  
PARAMETERS - 8240 PRIORITY POLLUTANTS  
BACKGROUND METALS  
pH  
48 SAMPLES

SWMU # 7 - FIRE TRAINING AREA  
PARAMETERS - TPH  
OIL & GREASE  
12 SAMPLES

SWMU # 11 - SECONDARY OIL SKIMMER + ASSC DITCH  
PARAMETERS - ~~8240 PRIORITY POLLUTANTS~~ SKINNER LIST (CONSTITUENTS) <sup>ORGANICS</sup>  
4 SAMPLES

55 INDIVIDUAL SAMPLES

DATA MANAGEMENT

Sample Location: SWMU #11

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AUGER

Sample No. REF1101VQ.0 Sample Time/Description: 2:00 WET SOIL  
PID - 0

Sample No. REF1101V3.0 Sample Time/Description: 2:45 PM WET SOIL  
PID - 0.2

Sample No. REF1101D3.0 Sample Time/Description: 2:45 PM WET SOIL  
PID 0.2

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: WET AREA IN BOTTOM OF ORIGINAL DRAINAGE DITCH

Weather Conditions: CLOUDY, WSW @ 5 MPH, 65°F

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-1' MIXED CLAY & SAND, 1' to 3.5'  
BLACK LAYER, SMELLS LIKE SEWAGE. VERY WET.

DATA MANAGEMENT

Sample Location: SWMU #11

Sample Date: 5-7-92

Sample Type: SOIL

Team Leader: L SHELTON

Sample Personnel: M BARNEY, T ROGERS

Sampling Method: AVGER

Sample No. RFI1102V0.0 Sample Time/Description: 2:10 PM MOIST SOIL  
PID - Ø

Sample No. RFI1102V3.0 Sample Time/Description: 2:25 PM MOIST SOIL  
PID - Ø

Sample No. RFI1102E3.0 Sample Time/Description: 2:35 PM WATER

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Sample No. \_\_\_\_\_ Sample Time/Description: \_\_\_\_\_

Surface Terrain: BENEATH ORIGINAL SKIMMER - VERY MOIST

Weather Conditions: CLOUDY; WSW @ 5 mph, 65°F

General Field Observations: \_\_\_\_\_

Boring Lithology: 0-4' RED / GRAY CLAY MIX WITH  
SOME WHITE SPECKLING

TABLE 2

Field Equipment Checklist  
Soil and Sludge Sampling

<u>ITEM</u>	<u>REMARKS</u>
<input checked="" type="checkbox"/> PID Meter	<input checked="" type="checkbox"/> Calibrated
<input checked="" type="checkbox"/> Site Specific SWMU Work Plan	
<input checked="" type="checkbox"/> Generic Sampling Plan	
<input checked="" type="checkbox"/> Site Map With Sample Locations	
<input checked="" type="checkbox"/> Sample Bottles	
<input checked="" type="checkbox"/> Ice Chests	
<input checked="" type="checkbox"/> Trip Blanks	
<input checked="" type="checkbox"/> <del>Methanol</del> <i>PROPANOL</i>	
<input checked="" type="checkbox"/> Deionized Water	
<input checked="" type="checkbox"/> Squeeze Bottles	
<input checked="" type="checkbox"/> Personal Protective Equipment	
<input checked="" type="checkbox"/> Chain of Custody and Sample Record Forms	
<input checked="" type="checkbox"/> Plastic Bags (To provide clean surfaces)	
<input checked="" type="checkbox"/> Disposable Gloves	
<input checked="" type="checkbox"/> Paper Towels	
<input checked="" type="checkbox"/> Tape (For labels and dispenser)	
<input checked="" type="checkbox"/> Sharpie, Pens, Pencils	
<input checked="" type="checkbox"/> Blue Ice or Ice	
<input checked="" type="checkbox"/> Zip-Lock Bags, 1 Gallon	

5-7-92 JLS



## **SWMU No. 12, Contact Wastewater Collection System**

The contact wastewater collection system (CWWCS) was identified as a solid waste management unit (SWMU) and designated as SWMU No. 12 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. A Vactor system was used to clean the sewer boxes and underground lines. Once cleaned, the lines were inspected by inserting video cameras inside the pipe and video taping the inside of the lines. The inspection showed evidence of pitting and corrosion throughout the CWWCS; however, it did not show any evidence of leaks or exfiltration of hydrocarbons into the surrounding soil. Ciniza recommended no further action (NFA) for the CWWCS in the Phase I RFI report. The U.S. Environmental Protection Agency (EPA) rejected the NFA recommendation and required inspection of the CWWCS every five years, beginning in calendar year 1996. The inspection was to be identical to the one performed in the RFI unless better technologies are proposed by Ciniza and approved by EPA.

The CWWCS is also regulated by the New Mexico Oil Conservation Division (OCD), pursuant to the Clean Water Act (G10-32-Part A). Because the CWWCS is a closed loop system connected to a permitted unit, it is exempt from the Hazardous and Solid Waste Amendments. Correspondence from the New Mexico Environment Department (NMED) to Ciniza confirms that SWMU No. 12 falls under the jurisdiction of OCD and is regulated under the facility OCD Discharge Plan (GW-032).

### **12.1 Site Description and Operational History**

SWMU No. 12, Contact Wastewater Collection System (Figure 12-1) is a component of the refinery wastewater treatment system. It consists of a network of underground piping and catch basins that are located beneath various refinery processing units and are used to collect process wastewater. This wastewater flows by gravity through the system to the API oil/water separator. Photographs of the CWWCS, taken during the site inspection performed by Practical Environmental Services, Inc. (PES) in 1998, are provided in the SWMU No. 12 Summary Report.

The CWWCS was installed in 1957 when the refinery was constructed and has operated continuously since that time.

### **12.2 Land Use**

The stormwater collection system within the refinery was replaced in 1997. The land will continue under the ownership of Ciniza.

1 12.3 Investigation Activities

2 No sampling and analytical activities were conducted at this site.

3 12.4 Site Conceptual Model

4 There is no impact on the environmental fate of the land.

5 12.5 Site Assessments

6 Cook Construction Company conducted a comprehensive video surveillance of the CWWCS during  
7 1992. All underground piping and catch basins were examined. No indications of leakage were detected.

8 As a result of the investigation, no further action was recommended for this SWMU. Results and  
9 recommendations were reported to the EPA in 1992. In 1994, the EPA requested that inspections be  
10 performed every five years.

11 During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- 12 • The piping component of the CWWCS is located below grade and cannot be directly viewed.  
13 A representative number of catch basins were opened and inspected. No signs of waste  
14 accumulation, deterioration, or leakage were evident.
- 15 • Local soil in the vicinity of the contact wastewater system is bentonitic clays and silts.  
16 Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  
17  $10^{-7}$  cm/sec.

18 PES did not perform any sampling or analysis during this site inspection. The inspection was limited only  
19 to visual observations.

20 12.6 NFA Proposal

21 Ciniza is proposing that no further action is required for SWMU No. 12 based on the following criteria:

- 22 • The SWMU is characterized and managed under another authority, OCD, which adequately  
23 addresses RCRA corrective action. (NFA Criterion 4)
- 24 • The SWMU has been characterized in accordance with current applicable state regulations  
25 and the available data indicate that contaminants pose an acceptable level of risk under  
26 current and projected future land use. (NFA Criterion 5).

27 The rationale is based on the following:

- 1 • Routine surveillance of the wastewater collection system is conducted as a condition of OCD
- 2 Discharge Plan GW-032.
- 3 • In 1992, a video camera inspection of the underground piping and catch basins was
- 4 conducted. No indications of leakage were detected.

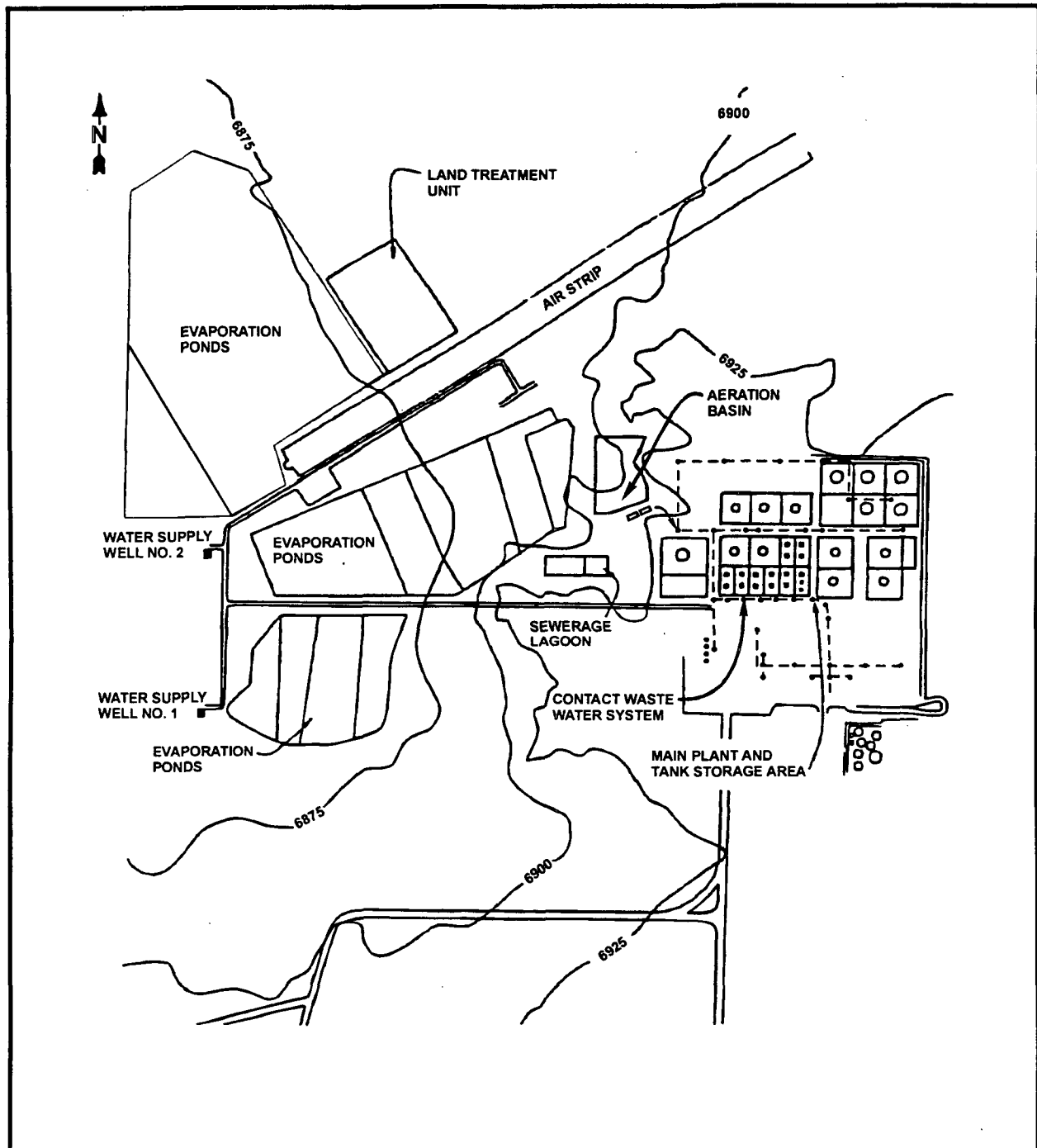


Figure 12-1. SWMU No. 12, Contact Wastewater Collection System

# SWMU #12 Summary Report

---

## Contact Wastewater Collection System

Ciniza Refinery  
McKinley County, New Mexico



Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the contact wastewater collection system located within the Ciniza Refinery, in McKinley County, New Mexico.

The contact wastewater collection system was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #12, during a RCRA Facility Investigation (RFI) conducted at the refinery in the early 1990's. This investigation included a visual inspection of underground piping and catch basins, determined that no leakage had occurred, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) requested that inspections be performed every five years.

This summary report for SWMU #12 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. This assessment is summarized as follows.

- ⇒ In 1992, a video camera inspection of the underground piping and catch basins was conducted. No indications of leakage were detected.
- ⇒ The stormwater collection system within the refinery was replaced in 1997. The process wastewater collection system is scheduled to be replaced during 1999.
- ⇒ Routine surveillance of the wastewater collection system is mandated as a condition of New Mexico Oil Conservation Division (NMOCD) Discharge Plan GW-032.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation was subsequently conducted and the contact wastewater system was identified as SWMU #12.

Cook Construction Company conducted a comprehensive video surveillance of the contact wastewater collection system during 1992. All underground piping and catch basins were examined. No indications of leakage were detected.

As a result of the investigation, no further action was recommended for this SWMU. Results and recommendations were reported to the EPA in 1992. In 1994, the EPA requested that inspections be performed every five years.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMU #12 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #12 is located predominantly within the process unit area and includes a main trunk line running to the API Separator. See Figure No. 1 for location details.

The contact wastewater collection system is a component of the refinery wastewater treatment system. It consists of a network of underground piping and catch basins which are located beneath various refinery processing units and used to collect process wastewater. This wastewater flows by gravity through the system and to the API separator.

This system was installed in 1957 when the refinery was constructed and has operated continuously since that time.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The piping component of the contact wastewater collection system is located below grade and cannot be directly viewed. A representative number of catch basins were opened and inspected. No signs of waste accumulation, deterioration, or leakage were evident.
- Local soil in the vicinity of the contact wastewater system presents as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

### 5.0 DATA REVIEW

Soil sampling and analysis was not performed at this site.

### 6.0 ASSESSMENT

Based on the site inspection and data review, the railroad rack lagoon area is assessed as follows.

- The contact wastewater collection system is scheduled for replacement in 1999. At that time, subsurface soil will be exposed for inspection. If contaminated soil is detected, it should be excavated and removed prior to installation of the new piping and catch basins.

## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

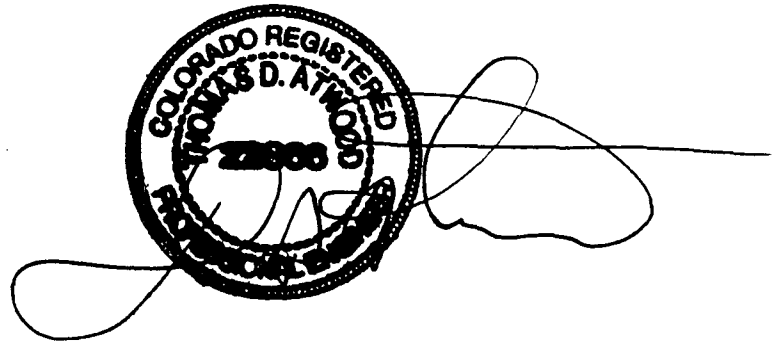
This summary report for SWMU #12 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

Date: April 23, 1998

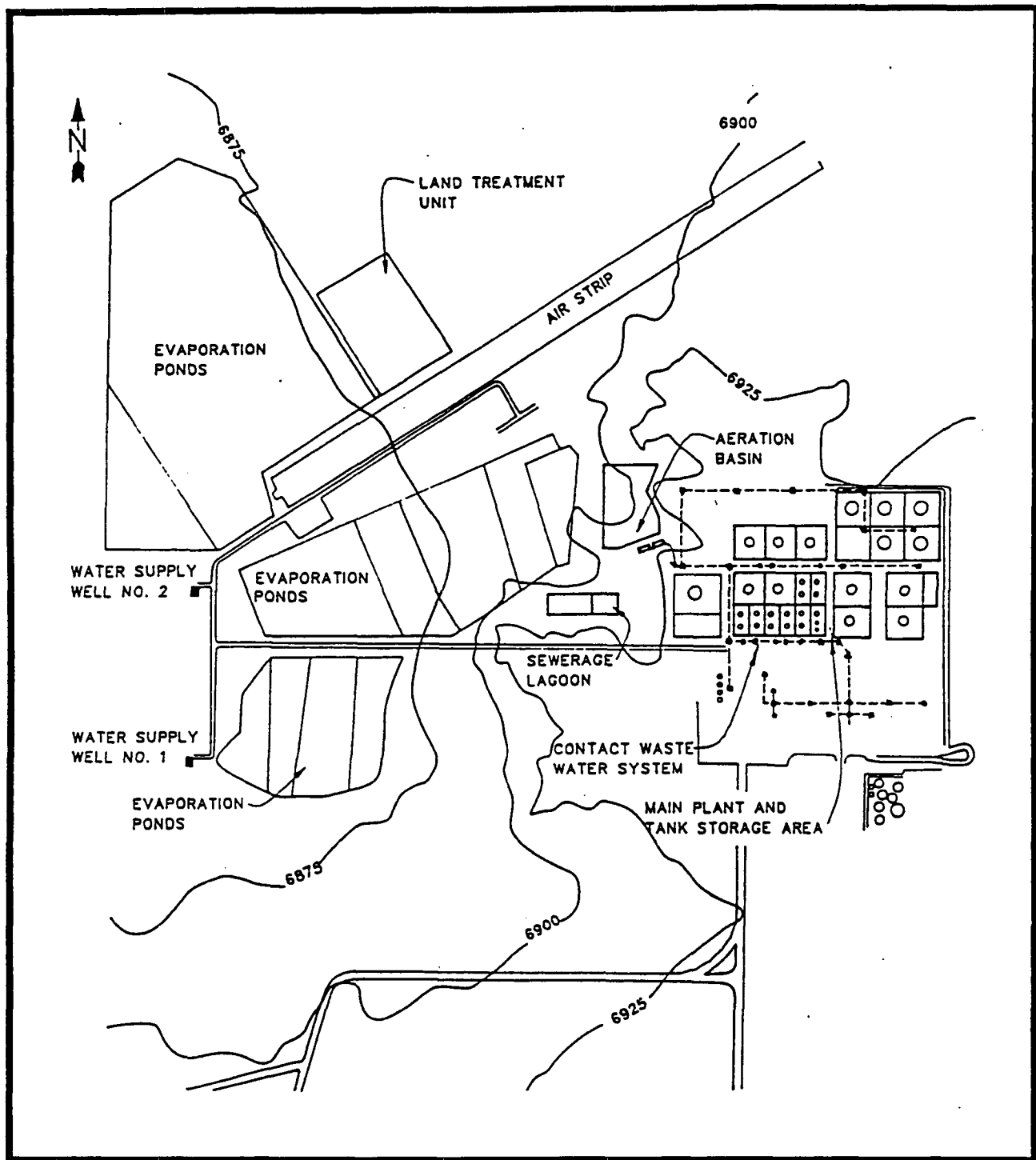
Prepared and Certified by:

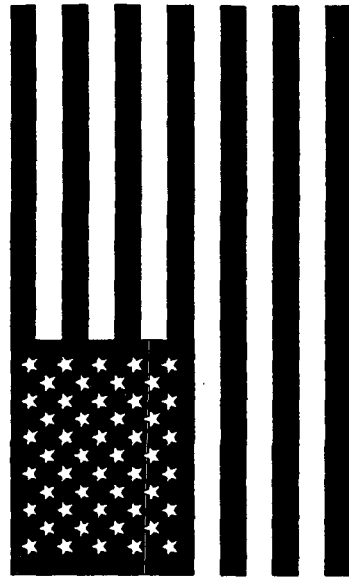
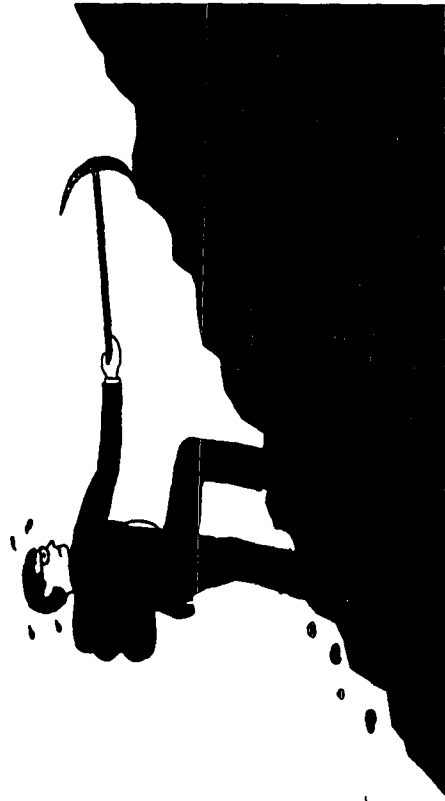
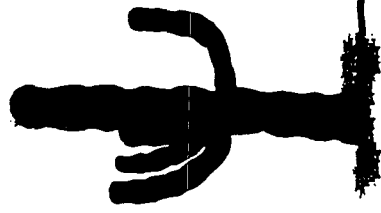


Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

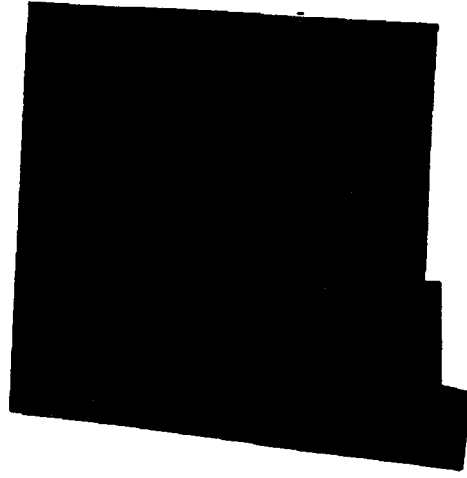
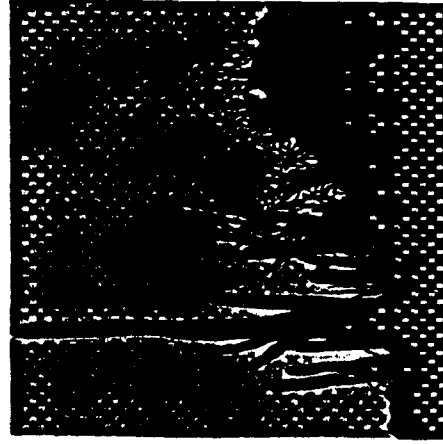


Figure No. 1  
Contact Wastewater Collection System .





# SWMU-12 WASTE WATER COLLECTION SYSTEM



## FACSIMILE TRANSMITTAL



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Cimiza

MACHINE NUMBER: 505.722.0210

VERIFICATION NUMBER: 505.722.0227

FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist

PHONE: (214) 665-8302

Mail Codes GFD-N

OFFICE: New Mexico/Federal Facilities Section

PAGES, INCLUDING COVER SHEET

3

DATE: March 15, 1996

PLEASE NUMBER ALL PAGES

## INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT:

FACSIMILE NUMBER:

VERIFICATION NUMBER:

PANAFAX UF-766

(214) 665-6762

(214) 665-6760

## COMMENTS

Ed,

Here's what I have been using to track Giant, Cimiza's corrective action program. Please review and let's discuss it next week. Have a good one.

Thank,

James

1: The Aeration Basin (1)	Phase II	soil and groundwater sampling every five years	RFI PHII RPT APP 1/94 w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
2: The Evaporation Ponds (2)	"	"	Survey and closure certification must be submitted prior to initiating Class III Permit Mod process
12: Contact Waste Water Collection System (CWWCS)	"	Inspection every 5 years beginning 1996	
13: The Drainage Ditch between APIS Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	"	soil and groundwater sampling every five years	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
3: Empty Container Storage Area (5)	Phase III		"
4: Old Burn Pit (8)	"		
5: Landfill Areas (7)	"	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.	EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities
7: Fire Training Area (4)	"	Under VCA	
11: Secondary Oil Skimmer (11)	"	Under VCA	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"

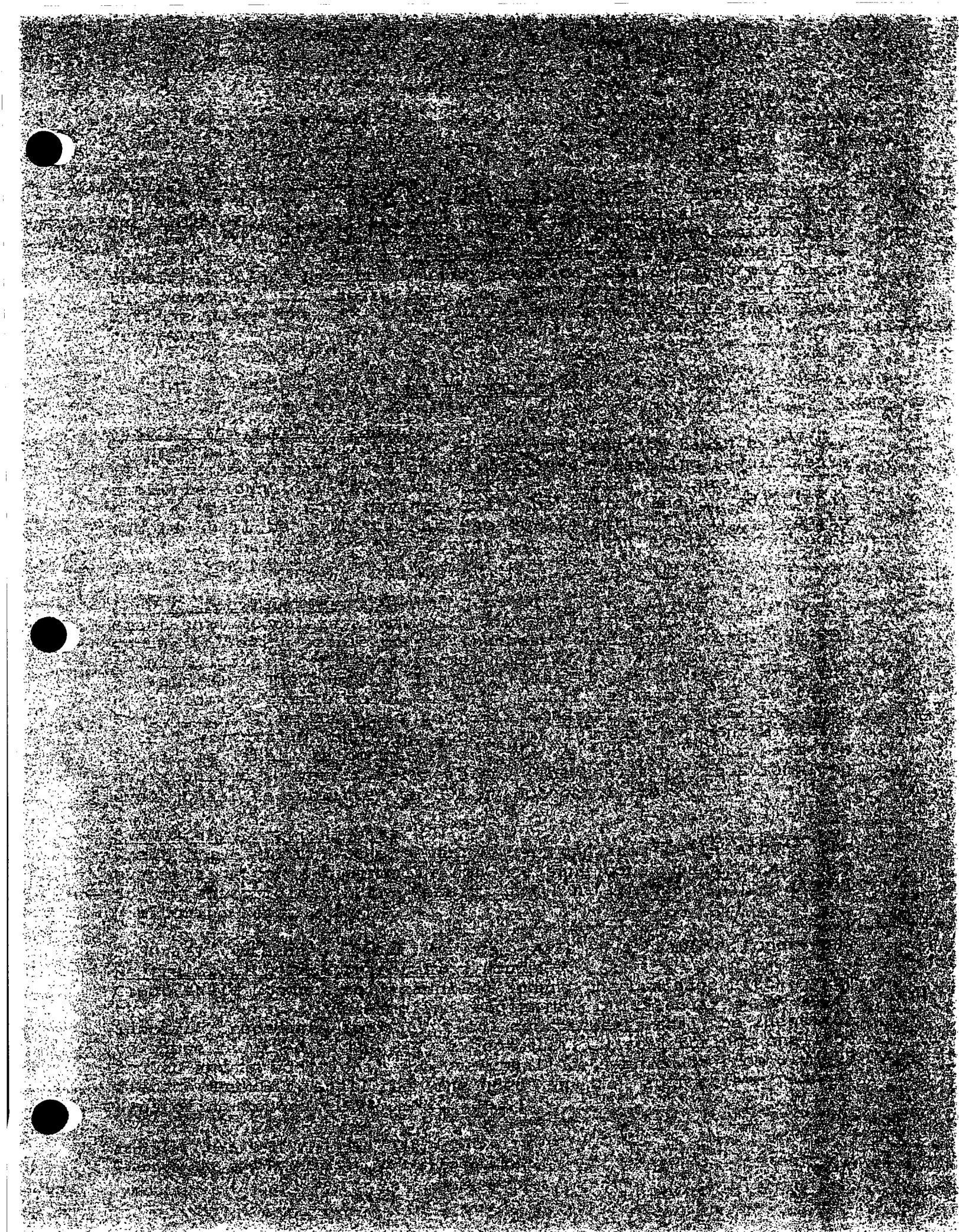
Prepared by: James A. Harris, Jr. VCA as at March 15, 1996

SENT BY:

3-15-96 : 3:37PM :

Reg O NAZ Waste-1

50572202101# 3/ 0





Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

August 2, 1994

Allyn M. Davis  
United States Environmental Protection Agency  
Region VI  
1445 Ross Avenue  
Suite 1200  
Dallas, Texas 75202-2733

Re: Additional RFI Sampling

Dear Mr. Davis:

In the letter from you dated January 7, 1994 (copy enclosed), Giant Refining Company - Ciniza (Giant) received EPA's approval of Giant's recommendation of "No Further Action" on SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Pond; and SWMU #13, the Drainage Ditch. The agency's approval of the "No Further Action" recommendations was accompanied with several additional requirements.

The additional requirements were to repeat the sampling protocol set forth in the approved RFI Sampling Plan (May, 1990) biennially. This additional sampling is intended to monitor potential migration of hazardous constituents from these SWMUs during the duration of their active service.

Giant understands the logic of continued sampling to document potential migration but has some reservations about the frequency of sampling and the true potential for migration of hazardous constituents.

It was determined in the RFI sampling (1990-1992) that migration of hazardous constituents had not occurred in any of the previously mentioned SWMUs and that water saturation had not occurred below five feet. This observation, coupled with the fact that hazardous constituents are not released to the three SWMUs, indicates that future contamination due to migration of hazardous constituents is virtually impossible.

Based on this knowledge, Giant proposes to sample SWMUs #1, #2, and #13, using the protocol set forth in the approved RFI Sampling Plan, every five years, beginning in 1995, with annual reports due on December 31 of the sample year. This sampling will adequately

demonstrate migration, if any, of hazardous constituents. Giant appreciates your prompt attention to this proposal, as this will expedite completion of any responsibilities of Giant to fully characterize and monitor SWMUs #1, #2, and #13.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,



Lynn Shelton  
Senior Environmental Coordinator  
Giant Refining Company

TLS:sp

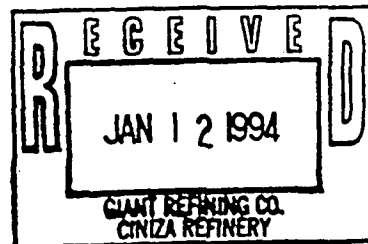
cc w/attachment: David C. Pavlich, Giant  
Kim Bullerdick, Giant  
Rich Mayer, USEPA  
Kathleen Cisneros, NMED



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 07 1994



CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED



**APPROVAL WITH MODIFICATIONS  
RFI PHASE I SUPPLEMENTARY REPORT  
RFI PHASE II REPORT AND THE  
VOLUNTARY CORRECTIVE ACTION PLANS**

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch**

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

**SWMU 6, The Tank Farm**

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area**

The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

#### SWMU 6, The Railroad Rack Lagoon

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

#### Continuation of SWMU 6, The Overflow Ditch

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

#### Continuation of SWMU 6, The Fan Out Area

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

#### SWMU #12, Contact Waste Water Collection System (CWWCS)

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

#### SWMU 9, The Sludge Pits

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 - 19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

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The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

### MODIFICATIONS

#### SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

#### SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

#### SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

#### SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.



Route 3, Box 7  
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87301

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722-3833

August 2, 1994

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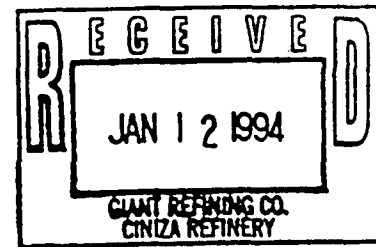
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JAN 07 1994



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*Allyn M. Davis*

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

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Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

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**Continuation of SWMU 6, The Overflow Ditch**

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

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Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

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### MODIFICATIONS

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Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

#### SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

#### SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *LS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

## I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

TABLE 2  
STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- Tank Farm
- \*\* Empty Container Storage
- Old Burn Pit
- Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.



It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

### III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

## 1994 Analytical Costs

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

**TABLE 4**  
**BIENNIAL ANALYTICAL COST**

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>

TABLE 5  
TOTAL COST OF 1994 SAMPLING  
(ESTIMATE)

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR</u> *	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

\* Including Drilling Rig

#### IV. Conclusions

The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

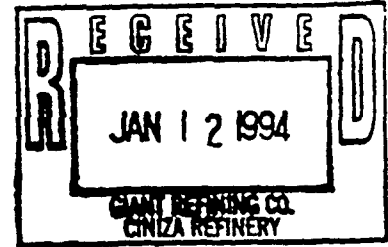
It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 07 1994



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

*Allyn M. Davis*

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

**APPROVAL WITH MODIFICATIONS  
RFI PHASE I SUPPLEMENTARY REPORT  
RFI PHASE II REPORT AND THE  
VOLUNTARY CORRECTIVE ACTION PLANS**

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch**

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

**SWMU 6, The Tank Farm**

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area**

The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

#### SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

### MODIFICATIONS

#### SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

#### SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

#### SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

#### SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).



**SWMU 6, The Railroad Rack Lagoon**

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

**Continuation of SWMU 6, The Overflow Ditch**

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

**Continuation of SWMU 6, The Fan Out Area**

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

**SWMU #12, Contact Waste Water Collection System (CWWCS)**

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

**SWMU 9, The Sludge Pits**

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 - 19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994..

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.

**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I Supplemental and RFI Phase II Reports - Giant  
Refining Co. - NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase I Supplemental Report dated August 21, 1991 and the RFI Phase II Report dated October 21, 1991, with the enclosed modifications. The Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon (submitted November and December 1992, respectfully) are also approved, with the enclosed modifications.

The Annual Monitoring (see enclosure for SWMUs requiring monitoring) Report is due to EPA by December 31, 1994, and each year thereafter. The additional soil sampling results for the Sludge Pits and the Tank Farm are due to EPA by June 1, 1994. If you have any further questions pertaining to the above discussed items, please contact Nancy Morlock or Richard Mayer of my staff at (214) 655-6650.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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APPROVAL OF THE RFI PHASE I SUPPLEMENTARY REPORT, RFI PHASE II  
REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS (CAP), WITH  
MODIFICATIONS, FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Reports and the voluntary CAP for the Sludge Pits and the Railroad Rack Lagoon. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

**General Comment:** EPA agrees with the finding of no further action for the following SWMUs: SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Ponds; and, SWMU #13, the Drainage Ditch. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMUs will be required (see below under modifications).

On SWMU #6, the Tank Farm, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 9 out of 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #9, the Sludge Pits, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, two samples at the 15' interval (the deepest interval sampled) contained semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

EPA agrees with the finding of no further action for SWMU #6, the Railroad Rack Lagoon, Overflow Ditch and Fan Out Area. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMU will be required. Giant has decided to perform voluntary corrective measures (bioremediation of the wastes) on the above mention SWMU and will perform periodic monitoring on the SWMU while bioremediation is occurring. Giant's voluntary bioremediation should reduce the volume and toxicity of the waste contained in the SWMUs while continuing periodic monitoring of the SWMUs (which satisfies EPA's monitoring requirements). Also, EPA included some additional monitoring requirements besides those included by Giant in the CAP (see below under modifications).

Also, EPA will require one administrative control for all SWMUs which EPA has tentatively approved a no further action determination. It is the following: A survey plat of each SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control (for each SWMU), then Giant can submit a Class III permit modification to terminate the RFI/CMS process for a particular SWMU.

## Modifications

**SWMU #1, the Aeration Basin:** Giant shall take soil samples around the Aeration Basin every 2 years, with sampling beginning in calendar year 1994. Sampling requirements shall be identical to what was performed in the previous RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #6, the Tank Farm:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91): number's 21, 22, 23, 25, 26, 27, 30, and 31. Sampling intervals shall be at 16', except for #31, which shall be taken at 20'. Samples shall be analyzed for **BTEX** constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

**SWMU #2, Evaporation Ponds:** Giant shall monitor the seven groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report. WHICH WELLS

**SWMU #13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds:** Giant shall take soil samples around the Drainage Ditch every 2 years, with sampling beginning in calendar year 1994. Sampling procedures and constituents to be analyzed shall be identical to those required in the RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 6-6.5 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #9, Railroad Rack Lagoon:** Giant shall take 5 soil borings within the lagoon after it has stopped receiving wastes and it is practicable to sample. Three of the five borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Also, all six borings required under the CAP closure (Section 5.0) must be sampled at the 5-6', the 10-11' interval, and the 14-15'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

**Continuation of SWMU #6, the Overflow Ditch:** Giant shall take 3 soil borings in the Overflow Ditch after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those

required in the previous RFI. Soil borings shall be taken at the 3-4' interval and at the 6.5-7' interval. Results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU #6, the Fan Out Area: Giant shall take 4 soil borings in the Fan Out Area after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil samples shall be taken at the 3-4' interval and at the 6.5' to 7' interval. Results shall be included in the 1994 Annual Monitoring Report.

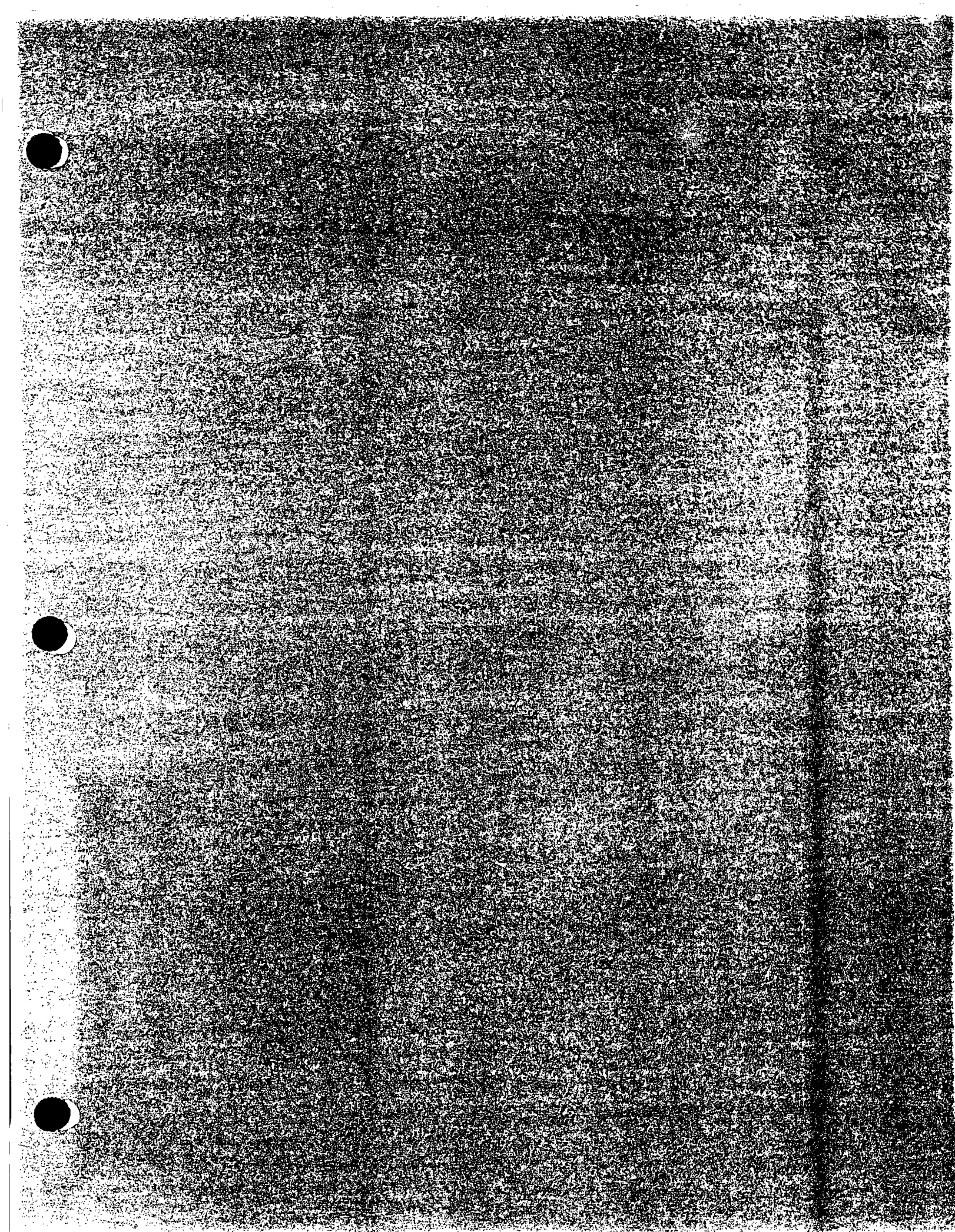
SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative method be used). Results shall be included in the appropriate Annual Monitoring Report.

*SWMU 10*  
~~SWMU #9~~, Sludge Pits: Giant shall take soil borings as close as possible to sampling points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91) 6 and 7. Sampling intervals shall be at 18-19' and 24-25'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

*2 west pit only*  
Before final closure of the West pit under the CAP, all soil borings shall have samples taken at the 18-19' and 24-25' intervals. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Three soil borings shall also be taken (before closure) from the east pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.







Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

September 4, 1992

Milton Simon  
P.O. Box 616  
Florence, AZ 85232

RE: Process Sewer Inspection

Dear Mr. Simon:

Pursuant to our phone conversation this morning, Giant is submitting a drawing of our process wastewater system. In accordance with our approved RFI workplan with the EPA, Giant is required to inspect the two main sections of the process wastewater system (those sections older than 25 years) and may randomly select lateral lines that are representative of our wastewater system. The lines that may be inspected have been highlighted on the drawing.

Giant requests a formal, written proposal for the estimated cost of hydroblasting and video inspection of the process wastewater system. This proposal may be submitted as cost per foot.

Giant also requests verification of your catastrophic insurance coverage and a list of references of firms who have used your video services.

Giant feels that it may be mutually beneficial if you or a representative of your firm could visit our facility to establish if there will be any problems associated with this video inspection.

It is hoped that the video inspection of the wastewater system will be accomplished in late September. Giant appreciates your prompt attention to this proposal.

If you require additional information, please contact me at (505)722-0227.

Sincerely,

A handwritten signature in cursive script that reads "Lynn Shelton".

Lynn Shelton  
Environmental Assistant  
Giant Refining Co. - Ciniza Refinery

TLS:smb



SIMON SEWER MAINTENANCE  
27869 N. Felix Rd.  
Florence, Arizona 85232

Date Sept 15 19 22

Giant Refining Company  
Cinca Refinery

Your P.O. Number 4252

DESCRIPTION

CHARGES

Visual inspection of process  
wastewater lines. 3 assessments + of  
tools and equipment needed to  
complete project. @ \$150.00/hr  
Per hour Total 2 hrs

Jay Simon

Total  
\$ 300.00

Agm Shultz



August 11, 1992

Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

Daniel W. Cook  
Cook Construction Company, Inc.  
506 Carmony Lane, Northeast  
Albuquerque, New Mexico 87107

Re: Process Wastewater Line Inspection

Dear Mr. Cook:

Giant Refining Company - Ciniza (GRC) is required by the EPA to complete the inspection of the remainder of the process wastewater system in 1992.

GRC solicits a proposal from your company to accomplish this task. We would appreciate a per foot cost and an estimate for total cost of the inspection and a time frame in which GRC can reasonably expect this inspection to be accomplished.

Enclosed are two drawings that show the drains to be inspected. Please note that there is a reduced amount of footage to be inspected as compared to 1990, but that there will be considerably more moving and set-up time.

The inspection will involve two main lines and numerous lateral lines off the main lines. The laterals will be 4" or 6" steel lines.

Total footage to be inspected will be approximately:

Lateral	- 4" & 6"	- 2550.0 ft
Main	- 8" & 10"	- 1155.0 ft

Both the U.S. EPA and GRC were pleased with the performance and quality of the inspection performed by your company in 1990. GRC anticipates another successful project with Cook Construction and appreciates your timely attention to this proposal.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton  
Environmental Assistant  
Giant Refining Company

TLS:sp



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

August 11, 1992

Barbara Driscoll  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Driscoll:

Giant Refining Company - Ciniza (GRC) is submitting this quarterly progress report as required by the May 31, 1990 RFI Workplan approval letter and HSWA Permit Condition C.4., Page 11.

GRC finished soil sampling of SWMU's #3, 4, 5, 7, and 11 on May 15, 1992. All samples were sent to Westech Laboratories for analysis. Hard copy of analytical results has been received and tabulated and is currently having statistical analysis done by Mr. Mark Wilson of the University of New Mexico.

The inspection of the remaining process wastewater system (that part not inspected in 1990) is being organized. Please refer to the attached drawings for lines that may be inspected. The lines were identified using the drawings included in the approved RFI Workplan and by using a corrected drawing from a hydroblasting project completed in 1988. Only lines marked in blue may be inspected and will represent what GRC believes will reasonably demonstrate the integrity of the process wastewater system. Some lines may not be inspected due to safety or process considerations.

This inspection is tentatively scheduled to take place in late August, 1992.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering

the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

A handwritten signature in cursive script, appearing to read "John Stokes".

John Stokes  
Refinery Manager  
Ciniza Refinery

JJS/TLS:sp

cc: Kim Bullerdick - Corporate Counsel  
Giant Industries Arizona, Inc.





**GARY E. JOHNSON**  
GOVERNOR

**State of New Mexico**  
**ENVIRONMENT DEPARTMENT**  
**Hazardous & Radioactive Materials Bureau**  
525 Camino De Los Marquez  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-4358  
Fax (505) 827-4389

**MARK E. WEIDLER**  
SECRETARY

**EDGAR T. THORNTON, III**  
DEPUTY SECRETARY

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

August 14, 1995

Mr. David Pavlich  
Health, Safety and Environmental Manager  
Giant Refinery-Ciniza  
Route 3, Box 7  
Gallup, New Mexico 87301

Dear Mr. Pavlich,

**RE: Request to amend Giant's Part A Permit.**

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of the Giant Refining Company (Giant) letters to HRMB dated July 24 and 28, 1995. In the July 24 letter Giant agrees to HRMB's request (dated July 13, 1995) for Giant to request removal from their RCRA Part A Permit of the following items;

- the API separator
- the benzene strippers.

In the July 28 letter Giant adds the hazardous waste drum storage area to the removal request.

The API separator and benzene strippers are part of the process wastewater treatment system and thus are exempt from RCRA permitting requirements. Further, these units are regulated by NMED Oil Conservation Division (OCD). The hazardous waste drum storage area has not been constructed, and Giant has no plans to construct it, thus there is no need for it to be on the Part A Permit.

HRMB hereby approves Giant's request for removal of the aforementioned items from their Part A Permit. Giant must now submit to HRMB within two (2) weeks of receipt of this letter a revised Part A excluding these units.

**GIANT**  
REFINING CO.

July 28, 1995

Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

Mr. Ed Kelley, Director  
Water and Waste Management Division  
New Mexico Environment Department  
525 Camino De Los Marquez  
Santa Fe, New Mexico 87502

Dear Mr. Kelley:

Earlier this week, I sent you a letter (copy attached) at the direction of Benito Garcia of the Hazardous and Radioactive Materials Bureau (HRMB) requesting your approval to remove several listed items from Giant Refining's Part A RCRA permit. Those items are the API separator and the benzene stripping units. In subsequent discussions with HRMB staff, an additional item was identified as being a good candidate for removal from the Part A Permit. This item is a small hazardous waste drum storage area. Since this area was never constructed and Giant does not foresee a need for it in the near future, its removal from the Part A Permit is appropriate.

Therefore, in addition to the items listed in Giant's letter of July 24, 1995, Giant also requests approval for the removal of the hazardous waste container storage area from its Part A Permit. Upon receipt of your approval, Giant will submit an application for permit modification to the HRMB.

Thank you for your assistance in this matter.

Sincerely,

*David C. Pavlich*

David C. Pavlich  
Health, Safety, and Environmental Manager

cc: Roger Anderson, OCD  
Michael Chacon, HRMB  
Ron Kern, HRMB  
Lynn Shelton, Giant

[SRP\WPDOCS\PAV\NHED.728]



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

July 24, 1995

Mr. Ed Kelley, Director  
Water and Waste Management Division  
New Mexico Environment Department  
525 Camino De Los Marquez  
Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the HRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

David C. Pavlich  
Health, Safety, and Environmental Manager



**cc w/enclosure: Lynn Shelton, Giant**

**cc w/o enclosure: Roger Anderson, OCD Bureau Chief  
Michael Chacón, HRMB, RCRA Permits  
Ron Kern, HRMB Program Manager**



GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
**ENVIRONMENT DEPARTMENT**  
Hazardous & Radioactive Materials Bureau  
525 Camino De Los Marquez  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-4358  
Fax (505) 827-4389

MARK E. WEIDLER  
SECRETARY

EDGAR T. THORNTON, III  
DEPUTY SECRETARY

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

July 13, 1995

John Stokes, Refinery Manager  
Giant Refining Company  
Ciniza Refinery  
Route 3, Box 7  
Gallup, New Mexico 87301

Dear Mr. Stokes,

**RE: Part A Permit Revision**

On March 10, 1995, the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) received a copy of the Giant Refining Company-Ciniza (Giant) Part A Permit Modification request dated March 6, 1995, and sent to the Environmental Protection Agency (EPA). Giant is hereby notified that because the Permit Modification request concerns RCRA units, NMED and not EPA has the lead. The modification requested is a 337% increase in both API tank treatment capacity (API) and benzene stripping capacity.

The API and benzene stripping units appear on Giant's Part A Permit. However, they should not have been included on the Part A Permit as they are part of the process wastewater treatment system and are exempt from RCRA regulation. Also, evidence shows that the API and benzene strippers are regulated by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). OCD's Groundwater Discharge Permit #32 (GW 32), covers all discharges by the facility, including the API, benzene strippers and the aeration lagoons into which they discharge.

Required by the OCD is biennial groundwater monitoring which includes all approved RCRA constituents, to the standards of the New Mexico Water Quality Control Commission. Also required is annual monitoring of the API, benzene stripper and aeration lagoon effluents. Although the API and benzene stripper effluents are not monitored for RCRA constituents, the aeration lagoon into which they discharge are monitored for RCRA metals, and volatile and semi-volatile organics.

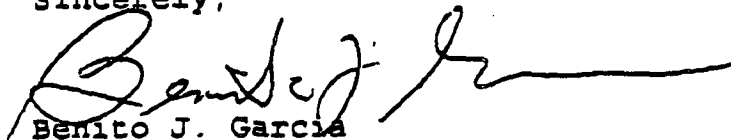
John Stokes  
July 13, 1995  
Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely,



Benito J. Garcia  
Chief, Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD  
Ron Kern, HRMB Program Manager  
Michael Chacón, RCRA Permits  
David Neleigh, EPA  
File-Red 95  
File-Reading

**SWMU No. 13, *Drainage Ditch Between API Ponds and  
Neutralization Tank Evaporator Ponds***

The drainage ditch area was identified as a solid waste management unit (SWMU) and designated as SWMU No. 13 during a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) conducted at the Giant Refining Company – Ciniza Refinery (Ciniza) in the early 1990s. This investigation included soil sampling and analysis, which indicated the absence of organics and the presence of trace metals. Based on the results of soil collected on the perimeter of the pond and beside the ditch, Ciniza recommended no further action (NFA) for this SWMU. In 1994, the U.S. Environmental Protection Agency (EPA) concurred with this recommendation and approved cessation of the investigative process; however, they required soil sample collection around the drainage ditch every five years beginning in 1995, with analysis identical to that required in the RFI. Ciniza submitted a survey plat of the site in July 1995. Ciniza conducted the first sampling event in October 1996 and submitted results to the New Mexico Oil Conservation Division (OCD) in their Quarterly Progress Report for fourth-quarter 1996.

SWMU No. 13 is also regulated by OCD, pursuant to the Clean Water Act (G10-32-Part A). Because the drainage ditch area is a component of the wastewater treatment system, it is exempt from the Hazardous and Solid Waste Amendments. Correspondence from the New Mexico Environment Department (NMED) to Ciniza Refinery confirms that the drainage ditch area falls under the jurisdiction of OCD and is regulated under the facility OCD Discharge Plan (GW-032).

**13.1 Site Description and Operational History**

SWMU No. 13, Drainage Ditch Between API Ponds and Neutralization Tank Evaporator Ponds (Figures 13-1, 13-2, 13-3) consists of the small overflow lagoon, known as Pond No. 10, and its associated drainage ditch. The referenced drainage ditch is a component of the refinery wastewater treatment system. Effluent water from Evaporation Pond No. 10 is conveyed along the ditch and distributed to north area evaporation ponds. SWMU No. 13 consists of a man-made earthen channel measuring approximately 20 feet wide by 120 feet long. Nominal water depth ranges from 1 to 4 feet. Total hydraulic holding capacity is approximately 50,000 gallons. Photographs of the drainage ditch, taken during the site inspection performed by Practical Environmental Services, Inc. (PES) in 1998, are provided in the SWMU No. 13 Summary Report.

This drainage ditch was constructed in 1970s and has been in continuous operation since that time.

## 13.2 Land Use

The drainage ditch located at the evaporation ponds continues in active service conveying wastewater to north area evaporation ponds.

## 13.3 Investigation Activities

Applied Earth Sciences (AES) investigated the Drainage Ditch Between API Ponds and Neutralization Tank Evaporator Ponds in 1991, and in 1996 Giant Refining Company – Ciniza Refinery (Ciniza) investigated the same area. Soil samples from around the perimeter of the drainage ditch site were collected and analyzed during the initial site investigation and a subsequent monitoring assessment. Samples were collected at multiple locations and depths. Angled borings were made during the monitoring assessment to obtain samples from beneath the ditch. No volatile organic compounds (VOCs) or semivolatile organic compounds (SVOCs) were detected in the samples. Trace metals were detected in all of the samples.

### 13.3.1 Investigation #1

During the initial site investigation in 1991, AES collected and analyzed soil samples from four locations and depths of 2 and 4 feet below ground surface. Analysis found no detection of VOCs or SVOCs in any sample. Trace metals were detected in all samples, all of which indicated levels within ambient background concentration.

### 13.3.2 Investigation #2

In 1996, Ciniza collected monitoring samples at three locations at a depth of 6 feet below ground surface. As with the previous investigation, VOCs and SVOCs were not detected in any sample. Trace metals were detected in all samples, all of which indicated levels within ambient background concentration.

## 13.4 Site Conceptual Model

There is no impact on the environmental fate of the land.

## 13.5 Site Assessments

During the week of March 23, 1998, PES performed an on-site inspection. Observations are as follows:

- The referenced drainage ditch was observed in active service conveying wastewater to north area evaporation ponds.
- Ditch sidewalls were visually inspected and found to be intact and stable. No erosion, damage, or sign of containment failure was observed.

- Native shrubs and grasses were observed growing around the perimeter of the ditch. No signs of distress were evident.

- Local soil in the vicinity of the drainage ditch is bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

PES did not perform any sampling or analysis during this site inspection. The inspection was limited only to visual observations. Based on this assessment, PES determined that the NFA proposal recommended by Ciniza and approved by the EPA is appropriate for this site.

#### 13.6 NFA Proposal

Ciniza is proposing that no further action is required for SWMU No. 13 based on the following criterion:

- The SWMU is characterized and managed under another authority, OCD, which adequately addresses RCRA corrective action. (NFA Criterion 4)
- The SWMU has been characterized in accordance with current applicable state regulations. The available data indicate that no significant environmental impact or migration has occurred from the contaminants (i.e., the contaminants pose an acceptable level of risk under current and projected future land use). (NFA Criterion 5)

The following is the basis for this proposal:

- The drainage ditch is located in a geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity, which effectively serves as an aquiclude.
- The soil sampling and analysis conducted during an initial site investigation and subsequent monitoring assessment did not detect any organic contaminants in any sample. Trace metals were detected within ambient background concentration.
- The site was recommended for NFA and approved by the EPA.

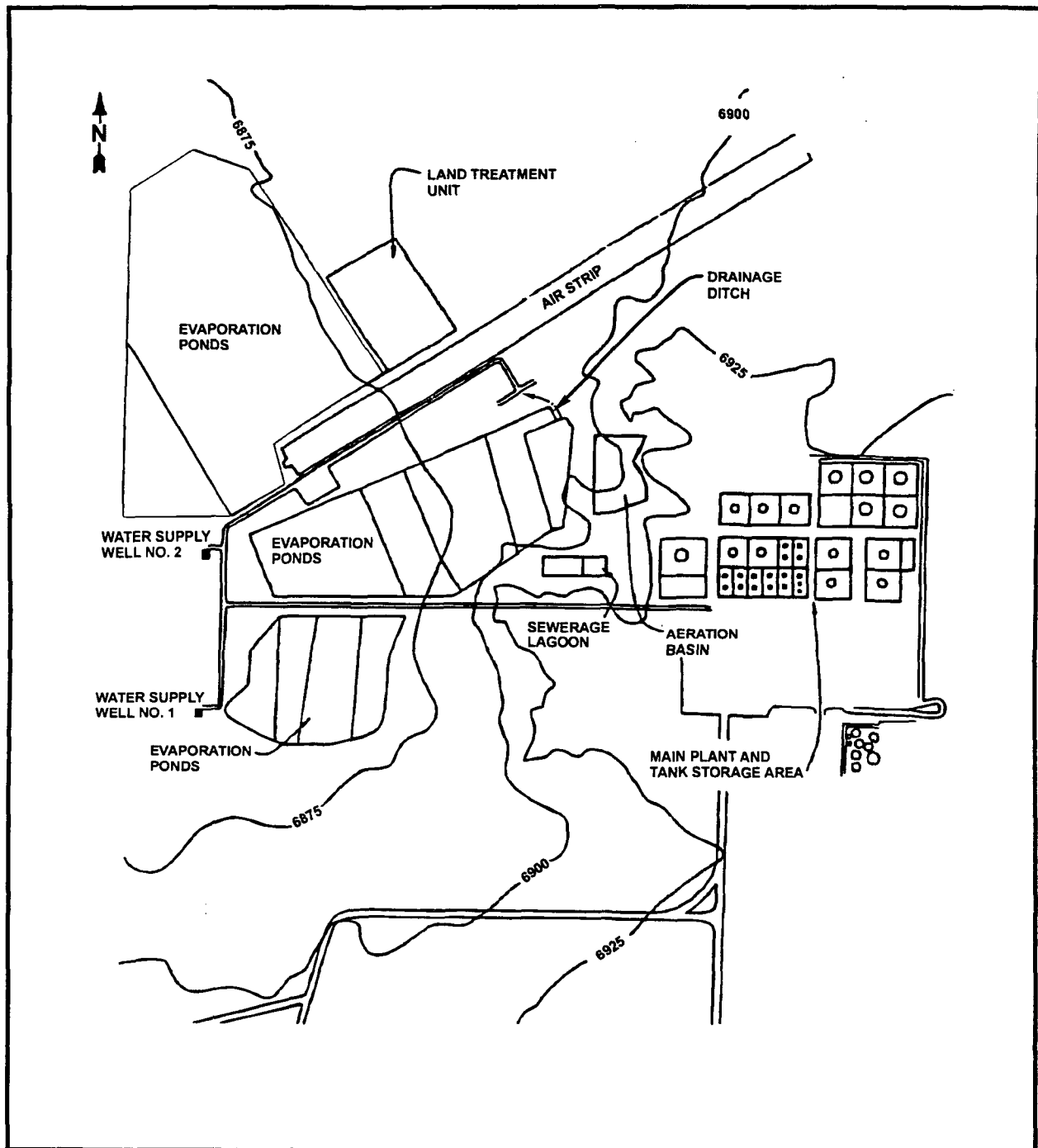


Figure 13-1. SWMU No. 13, Drainage Ditch Site



Figure 13-2. SWMU No. 13, Drainage Ditch Between North and South Ponds





1

2

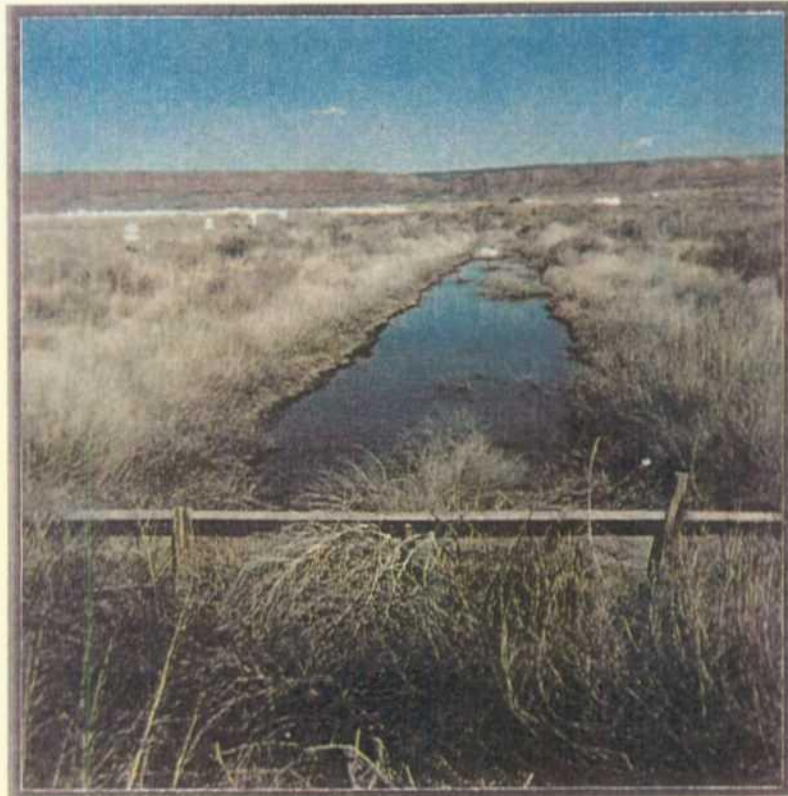
**Figure 13-3. SWMU No. 13, Drainage Ditch Between North and South Ponds**

# SWMU # 13 Summary Report

---

## Drainage Ditch at Evaporation Ponds

Ciniza Refinery  
McKinley County, New Mexico



### Prepared for:

Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

### Prepared by:

Practical Environmental Services, Inc.  
1444 Wazee Street, Suite 225  
Denver, Colorado 80202

Job No. 98-205-03

April 23, 1998

## 1.0 EXECUTIVE SUMMARY

Practical Environmental Services, Inc. (PES) has been retained by Giant-Ciniza Refinery (Ciniza) to perform a visual inspection, data evaluation, and status assessment for the drainage ditch located at the evaporation ponds within the Ciniza Refinery, in McKinley County, New Mexico.

This drainage ditch site was identified as a Solid Waste Management Unit (SWMU), and designated as SWMU #13, during a RCRA Facility Investigation conducted at the refinery in the early 1990's. This investigation included soil sampling and analysis, determined that no significant impact had occurred, and recommended no further action (NFA).

In 1994, the Environmental Protection Agency Region VI Office (EPA) concurred in this finding, approved cessation of the investigative process, and requested follow-up soil monitoring. Monitoring samples were collected and analyzed in 1996, and the results confirmed that no significant impact has occurred.

This summary report for SWMU #13 has been prepared in conjunction with submittal of a Resource Conservation and Recovery Act (RCRA) Part B permit application covering post closure care of the Ciniza Refinery Land Treatment Unit. All investigative activities for SWMU #13 have been completed. This assessment is summarized as follows.

- ⇒ The drainage ditch located at the evaporation ponds continues in active service conveying wastewater to north area evaporation ponds.
- ⇒ Local soil underlying the drainage ditch predominantly consists of bentonitic clays and silts having a very low hydraulic conductivity.
- ⇒ Soil sampling and analysis was conducted during an initial site investigation and subsequent monitoring assessment. No organic contaminants were detected in any sample. Trace metals were detected within ambient background concentration. The site was recommended for NFA and approved by the EPA.
- ⇒ SWMU #13 has been characterized in accordance with current applicable state and federal regulations, and the available data indicate that no significant environmental impact or migration has occurred.

## 2.0 BACKGROUND

During 1987, a RCRA Facility Assessment was conducted at the Ciniza Refinery. This assessment identified various "units of concern" and recommended further evaluation. A RCRA Facility Investigation (RFI) was subsequently conducted and this drainage ditch site was identified as SWMU #13.

Applied Earth Sciences (AES) investigated this drainage ditch site during the early 1990s. Soil samples were collected and analyzed. No organic contaminants were detected in any sample. Trace metals were detected in all samples; all of which indicated levels within the range of ambient background concentration.

As a result of the investigation, AES recommended no further action for this SWMU. Results and recommendations were reported to the EPA in 1991. The EPA approved the NFA finding in 1994, with the added provision that on-going soil monitoring be performed every five years.

### 3.0 SITE LOCATION AND DESCRIPTION

SWMU #13 is located within the Ciniza Refinery's property boundary. This refinery is located on the north side of Interstate 40, approximately 17 miles east of Gallup, New Mexico. Within the refinery, SWMU #13 is located within the evaporation pond area and north of Evaporation Pond No. 2. See Figure No. 1 for location details.

The referenced drainage ditch is a component of the refinery wastewater treatment system. Effluent water from Evaporation Pond No. 10 is conveyed along the ditch and distributed to north area evaporation ponds.

SWMU #13 consists of a man-made earthen channel measuring approximately 20 feet wide by 120 feet long. Nominal water depth ranges from 1 to 4 feet. Total hydraulic holding capacity is approximately 50,000 gallons.

This drainage ditch was constructed in 1970's and has been in continuous operation since that time.

### 4.0 SITE INSPECTION

During the week of March 23, 1998, an on-site inspection was performed. Observations are noted as follows:

- The referenced drainage ditch was observed in active service conveying wastewater to north area evaporation ponds.
- Ditch sidewalls were visually inspected and found to be intact and stable. No erosion, damage, or sign of containment failure was observed.
- Native shrubs and grasses were observed growing around the perimeter of the ditch. No signs of distress were evident.
- Local soil in the vicinity of the drainage ditch presented as bentonitic clays and silts. Similar soil strata from a neighboring SWMU exhibited a hydraulic conductivity of less than  $10^{-7}$  cm/sec.

## 5.0 DATA REVIEW

Soil samples from around the perimeter of the drainage ditch site were collected and analyzed during the initial site investigation and a subsequent monitoring assessment. Samples were collected at multiple locations and depths. Angled borings were made during the monitoring assessment to obtain samples from beneath the ditch.

In 1991, the initial site investigation collected samples from four locations and depths of 2 and 4 feet below ground surface. Analysis found no detection of VOCs or SVOCs in any sample. Trace metals were detected in all samples; all of which indicated levels within ambient background concentration.

In 1996, monitoring samples were collected at three locations at a depth of 6 feet below ground surface. As with the previous investigation, analysis found no detection of VOCs or SVOCs in any sample. Trace metals were detected in all samples; all of which indicated levels within ambient background concentration.

## 6.0 ASSESSMENT

Based on the site inspection and data review, the aeration basins site is assessed as follows.

- The drainage ditch remains in active service conveying and distributing wastewater to north area evaporation ponds.
- The drainage ditch is located in a geologic setting in which the underlying bentonitic soil has a very low hydraulic conductivity which effectively serves as an aquiclude.
- The no further action finding that was recommended by AES and approved by the EPA is appropriate for this site.
- The next soil monitoring event is scheduled for 2001. If this sampling and analysis confirms previous findings, further monitoring is unnecessary and should be discontinued.

## 7.0 PROFESSIONAL ENGINEER'S CERTIFICATION

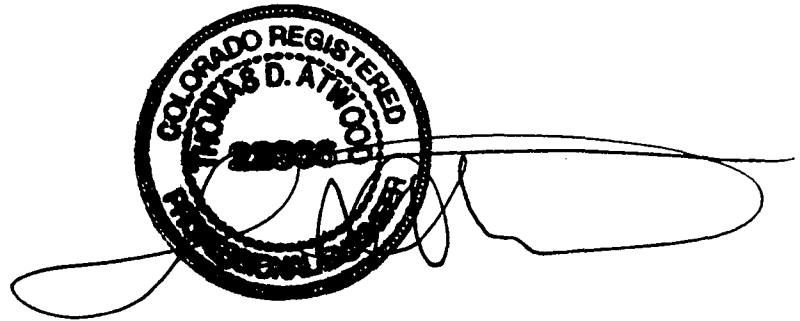
This summary report for SWMU #13 has been prepared under the direct supervision and control of a Registered Professional Engineer.

Client: Ciniza Refinery  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

Job No.: 98-205-03

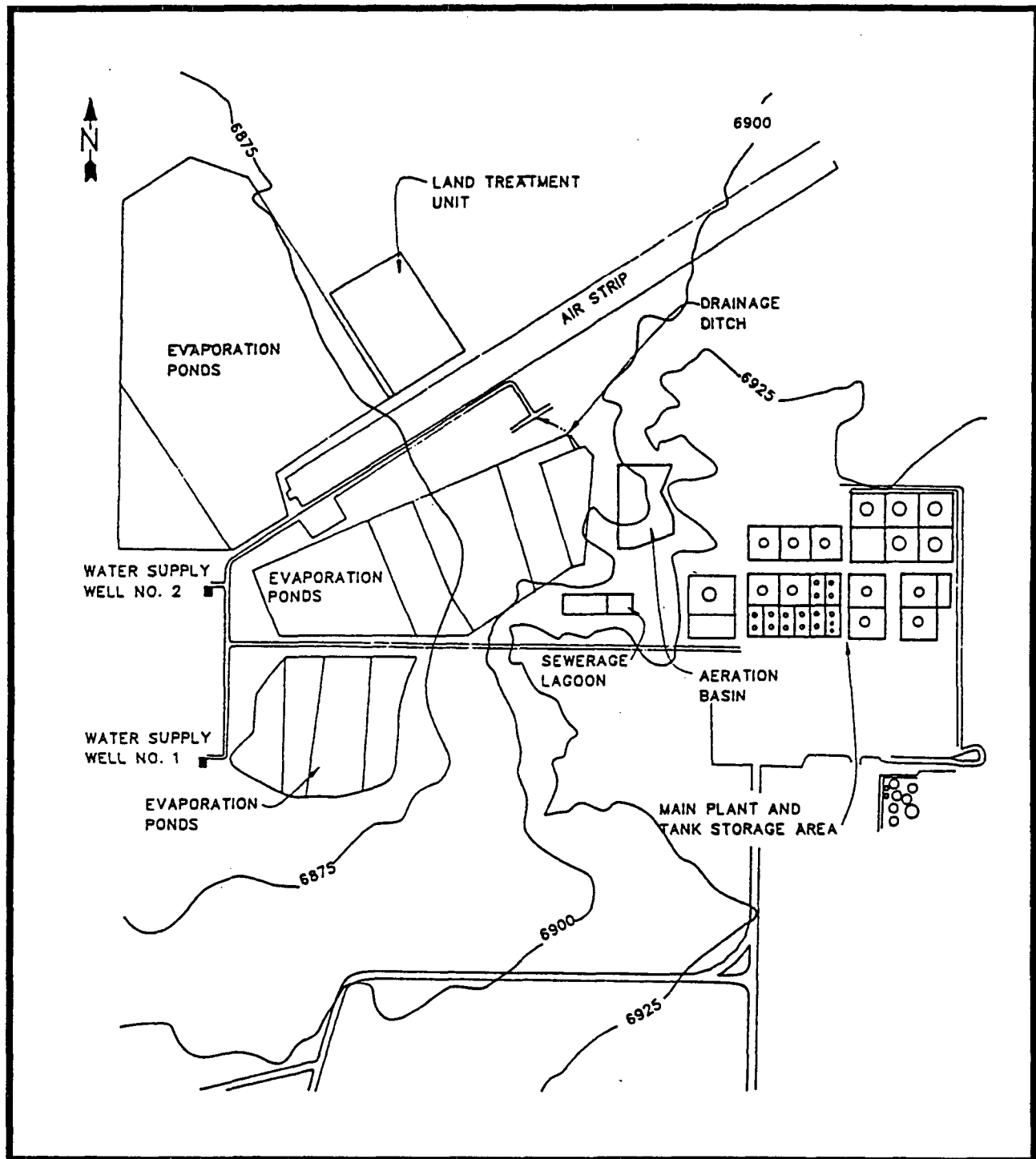
Date: April 23, 1998

Prepared and Certified by:

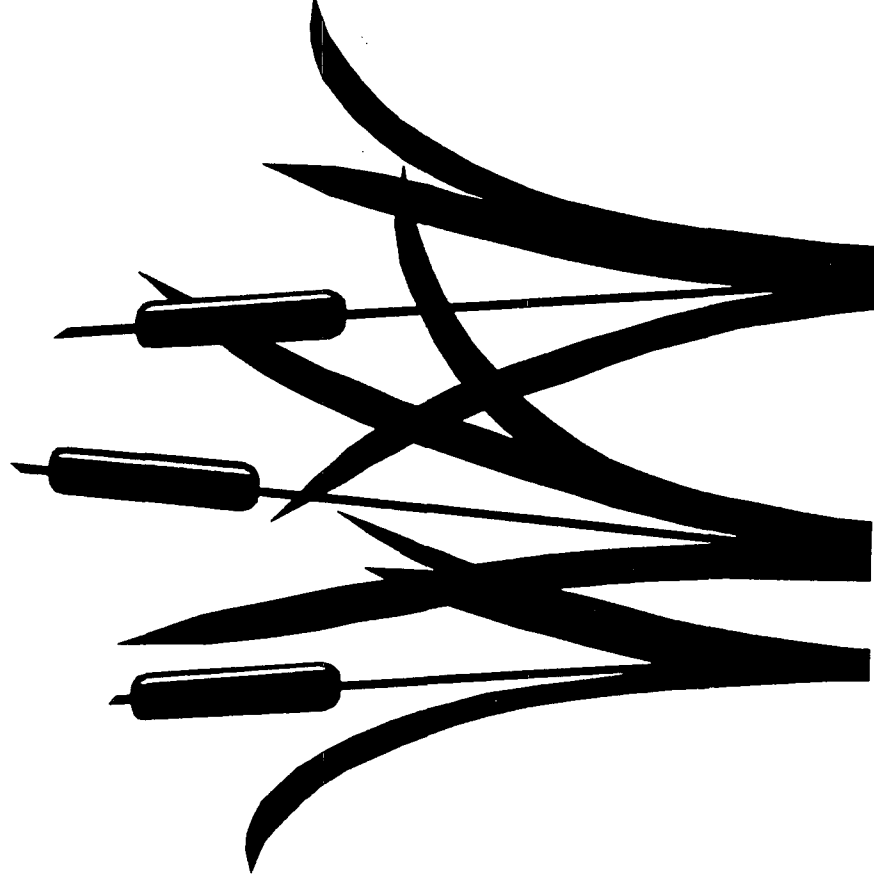


Thomas D. Atwood, P.E.  
Colorado Registration No. 22866

Figure No. 13  
Drainage Ditch Site



# SWMU-13 DRAINAGE DITCH







March 20, 1997

Route 3, Box 7  
Gallup, New Mexico  
87301

505.  
722.3833

Mr. Benito Garcia, Bureau Chief  
New Mexico Environment Department  
Hazardous and Radioactive Materials Bureau  
2044 Galisteo  
P. O. Box 26110  
Santa Fe, New Mexico 87502

**SUBJECT: QUARTERLY PROGRESS REPORT - 4<sup>th</sup> Quarter, 1996 and 1<sup>st</sup> Quarter, 1997**

Dear Mr. Garcia:

Pursuant to Giant's HSWA Permit Condition C.4., Page 11 and the May 31, 1990, RFI Workplan Approval, Giant Refining Company is submitting information for the fourth Quarter of 1996 and the first Quarter of 1997.

**SWMU 6 - Tank Farm / Tank 569 :**

A letter was submitted to Mr. Patricio Sanchez of the Oil Conservation Division (OCD) on November 25, 1996. The office of the HRMB was copied on this correspondence which addressed the borings completed between 8/22/96 and 9/9/96. Submitted with that letter were the following items: Boring Logs for borings 0643 through 0650, Well Installation Diagrams for OW-29 and OW-30, analytical results from soil and groundwater samples, and a site map indicating all borings done to date.

Free product and groundwater recovery from the Tank 569 area has begun. The boring originally identified as B-2 was completed as a well and designated as OW-27. This well is now called RW-1.

Giant has received verbal permission from the owner to do soil borings and sample groundwater on his property. This project is now in the planning stage. Boring Logs and analytical results will be forwarded to your office as soon as they are available.

**SWMU 1 - Aeration Lagoons :**

As reported in the Quarterly Progress Report submitted 9/10/96, several samples taken at the perimeter of the Aeration Lagoons showed the possible presence of some volatile organic compounds. Confirmatory samples were taken on 2/18/97. The analytical results are provided with this report. One sample showed a small amount of ethylbenzene (below NM Groundwater Standards). All other results were Not Detected (ND).


**SWMU 13 - Drainage Ditch :**

As part of the "No Further Action" Approval with Modifications for SWMU -13 (Drainage Ditch), the EPA, in it's 8/24/94 correspondence to Giant, directed that additional sampling be performed every 5 years. The required samples were to be drilled at an angle with soil from the 6 - 6 ½ foot depth sent for analysis. Volatile Organic Compounds, Semi-Volatile Compounds, and metals were analyzed on the three samples taken. Enclosed are the analytical results for the first 5 year sampling event, which was performed 10/23/96. A diagram indicating the sample points is also enclosed. No volatile or semi-volatile compounds were detected. Metal results are comparable (or lower) that those found in the original RFI work.

If you have questions or concerns regarding this report, please do not hesitate to call me at (505) 722-0217 or Dorinda Mancini at (505) 722-0227.

*"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Sincerely

  
David Pavlich, HSE Manager  
Giant Refining Company

cc: Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.  
Dick Platt, General Manager, Ciniza Refinery  
Dorinda Mancini, Environmental Manager, Ciniza Refinery  
Steve Morris, Environmental Specialist, Ciniza Refinery  
Patricio Sanchez, Petroleum Engineer, OCD

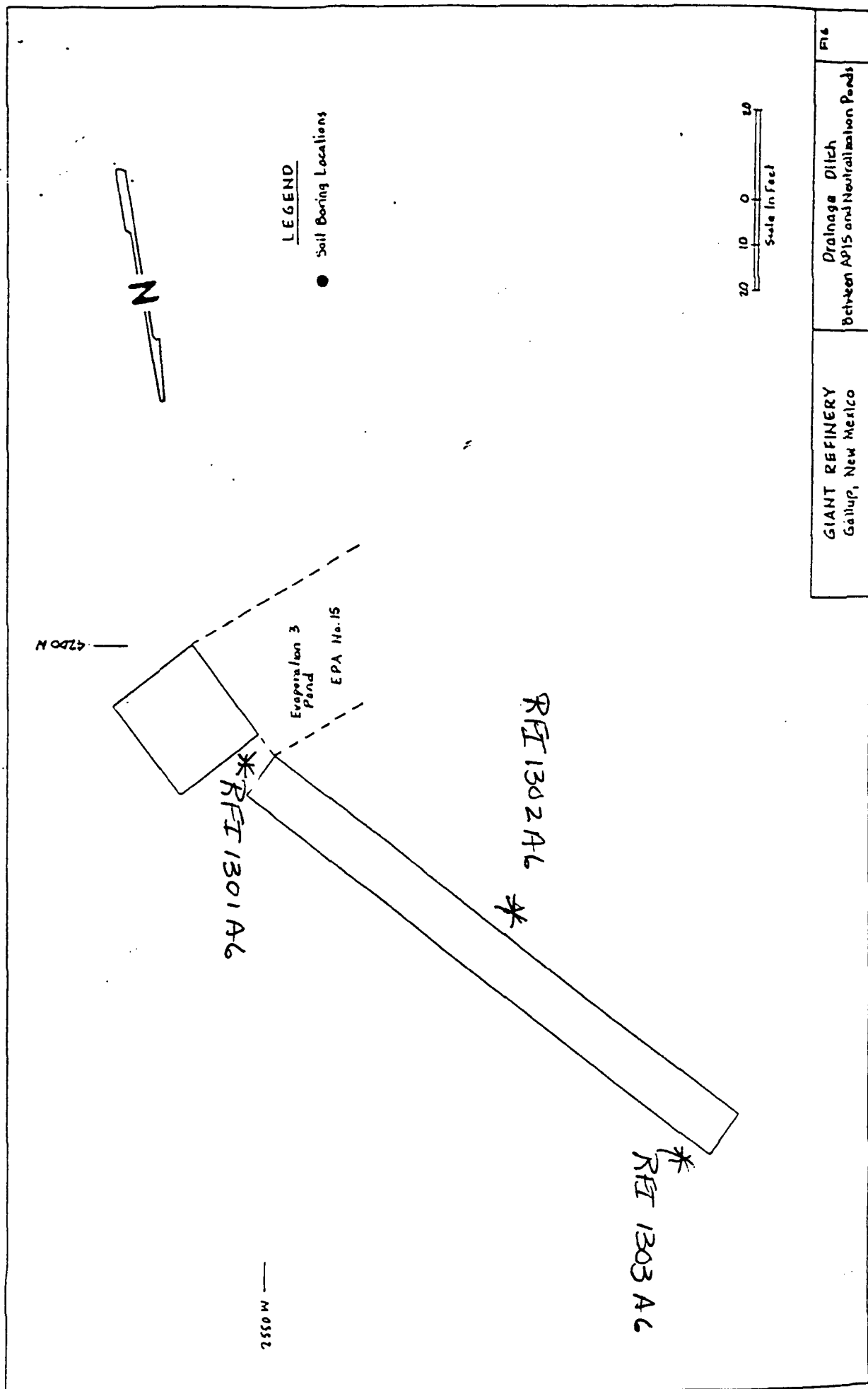
RFI1Q97



# SWMU-13 DRAINAGE DITCH ANALYTICAL RESULTS

RFI QUARTERLY PROGRESS REPORT  
4TH QTR. 96, 1ST QTR 97





RFI	Drainage Ditch Between API's and Neutralization Ponds
GIANT REFINERY Gallup, New Mexico	

## TRACE METAL CONCENTRATION

Client: Giant Refining Company  
Project: Ciniza Refinery  
Sample ID: RFI 1301 A6  
Matrix: Soil  
Condition: Intact  
Lab ID: 0396G02343

Date Reported: 11/14/96  
Date Sampled: 10/24/96  
Date Received: 10/25/96

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	< 0.25	0.25	SW-846-7000
Barium	119	0.50	SW-846 6010
Cadmium	< 0.05	0.05	SW-846 6010
Chromium	4.45	0.50	SW-846 6010
Cobalt	2.25	0.50	SW-846 6010
Copper	2.05	0.50	SW-846 6010
Selenium	< 0.250	0.250	SW-846-7000
Lead	4.60	2.50	SW-846-6010
Mercury	< 0.050	0.050	SW-846 7171A
Nickel	4.05	0.50	SW-846 6010
Antimony	< 0.250	0.250	SW-846 6010
Vanadium	6.90	0.50	SW-846 6010
Zinc	6.40	2.50	SW-846 6010
Beryllium	4.750	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil,  
SW-846, Rev. 1, July 1992.

Reported By: Reviewed By: 

## TRACE METAL CONCENTRATION

Client: Giant Refining Company  
Project: Ciniza Refinery  
Sample ID: RFI 1302 A6  
Matrix: Soil  
Condition: Intact  
Lab ID: 0396G02344

Date Reported: 11/14/96  
Date Sampled: 10/24/96  
Date Received: 10/25/96

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	<0.25	0.25	SW-846-7000
Barium	84.5	0.50	SW-846 6010
Cadmium	<0.05	0.05	SW-846 6010
Chromium	5.15	0.50	SW-846 6010
Cobalt	2.60	0.50	SW-846 6010
Copper	2.30	0.50	SW-846 6010
Selenium	<0.250	0.250	SW-846-7000
Lead	5.55	2.50	Sw-846-6010
Mercury	<0.050	0.050	SW-846 7171A
Nickel	4.60	0.50	SW-846 6010
Antimony	<0.250	0.250	SW-846 6010
Vanadium	8.05	0.50	SW-846 6010
Zinc	7.30	2.50	SW-846 6010
Beryllium	6.00	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil,  
SW-846, Rev. 1, July 1992.

Reported By: Reviewed By: 

## TRACE METAL CONCENTRATION

Client: Giant Refining Company  
Project: Ciniza Refinery  
Sample ID: RFI 1303 A6  
Matrix: Soil  
Condition: Intact  
Lab ID: 0396G02345

Date Reported: 11/14/96  
Date Sampled: 10/24/96  
Date Received: 10/25/96

Parameter	Result (mg/Kg)	Detection Limit (mg/Kg)	Method
Arsenic	<0.25	0.25	SW-846-7000
Barium	93.5	0.50	SW-846 6010
Cadmium	<0.05	0.05	SW-846 6010
Chromium	4.90	0.50	SW-846 6010
Cobalt	2.55	0.50	SW-846 6010
Copper	2.55	0.50	SW-846 6010
Selenium	<0.250	0.250	SW-846-7000
Lead	5.00	2.50	SW-846-6010
Mercury	<0.050	0.050	SW-846 7171A
Nickel	4.50	0.50	SW-846 6010
Antimony	<0.250	0.250	SW-846 6010
Vanadium	7.55	0.50	SW-846 6010
Zinc	7.30	2.50	SW-846 6010
Beryllium	0.590	0.200	SW-846 6010

References: Method 3050: Acid Digestion for Sediments, Sludges, and Soil,  
SW-846, Rev. 1, July 1992.

Reported By: Reviewed By: 

## Quality Control / Quality Assurance

## Spike Analysis / Blank Analysis

## TOTAL METALS

Client: Giant Refining Company  
 Project: Ciniza Refinery  
 Sample Matrix: soil

Date Reported: 11/14/96  
 Date Analyzed: 11/13/96  
 Date Received: 10/25/96

## Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Antimony	0.506	0.500	0.500	101%
Arsenic*	*	*	*	*
Barium	0.55	0.50	0.50	98%
Cadium*	*	*	*	*
Chromium	0.53	0.50	0.50	106%
Lead	0.51	0.500	0.50	102%
Mercury	0.520	0.50	0.500	96%
Selenium	0.022	0.025	0.025	114%
Beryllium	0.52	0.50	0.50	104%
Cobalt	0.52	0.50	0.50	104%
Copper	0.52	0.50	0.50	104%
Nickel	0.50	0.50	0.50	101%
Vanadium	0.53	0.50	0.500	107%
Zinc	0.57	0.50	0.50	88%

## Method Blank Analysis

Parameter	Result	Detection Limit	Units
Antimony	ND	0.25	mg/L
Arsenic	ND	0.25	mg/L
Barium	ND	0.50	mg/L
Cadmium	ND	0.25	mg/L
Chromium	ND	0.50	mg/L
Lead	ND	0.75	mg/L
Mercury	ND	0.05	mg/L
Selenium	ND	0.25	mg/L
Silver	ND	0.50	mg/L
Beryllium	ND	0.20	mg/L
Cobalt	ND	0.50	mg/L
Copper	ND	0.50	mg/L
Nickel	ND	0.5	mg/L
Vanadium	ND	0.50	mg/L

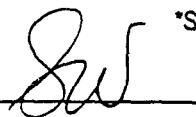
Interferences:

Method 3050: Acid Digestion for Sediments, Sludges, and Soil  
 SW-846, Rev. 1, July 1992.


Comments:

\*Spikes did not recover due to matrix interferences.

Reported by



Reviewed by





## Quality Control / Quality Assurance--

Known Analysis  
TOTAL METALS

Client: Giant Refining Company  
Project: Ciniza Refinery  
Sample Matrix: soil

Date Reported: 11/14/96  
Date Analyzed: 11/13/96  
Date Received: 10/25/96

## Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Antimony	1.06	1.00	106%	mg/L
Arsenic	0.010	0.010	100%	mg/L
Barium	1.07	1.00	107%	mg/L
Cadmium	1.08	1.00	108%	mg/L
Chromium	1.06	1.00	106%	mg/L
Lead	1.03	1.00	103%	mg/L
Mercury	0.004	0.004	103%	mg/L
Selenium	0.010	0.010	100%	mg/L
Silver	0.49	0.50	98%	mg/L
Beryllium	1.00	1.00	100%	mg/L
Cobalt	1.01	1.00	101%	mg/L
Copper	1.04	1.00	104%	mg/L
Nickel	0.99	1.00	99%	mg/L
Vanadium	1.00	1.00	100%	mg/L

## References:

Method 3050: Acid Digestion for Sediments, Sludges, and Soil,  
SW-846, Rev. 1, July 1992.

Reported by



Reviewed by



TABLE -1  
BACKGROUND METALS

Total Metals

<u>Parameter</u>	<u>Analytical Method</u>	<u>Reporting Limit mg/kg</u>
Antimony	6010	6.0
Arsenic	7060	0.5
Barium	6010	1.0
Beryllium	6010	0.2
Cadmium	6010	0.5
Chromium	6010	1.0
Cobalt	6010	1.0
Copper	6010	2.0
Lead	6010	5.0
Mercury	7471	0.2
Nickel	6010	4.0
<del>Potassium</del> <i>not requested</i>	6010	500
Selenium	7740	0.5
Vanadium	6010	1.0
Zinc	6010	2.0

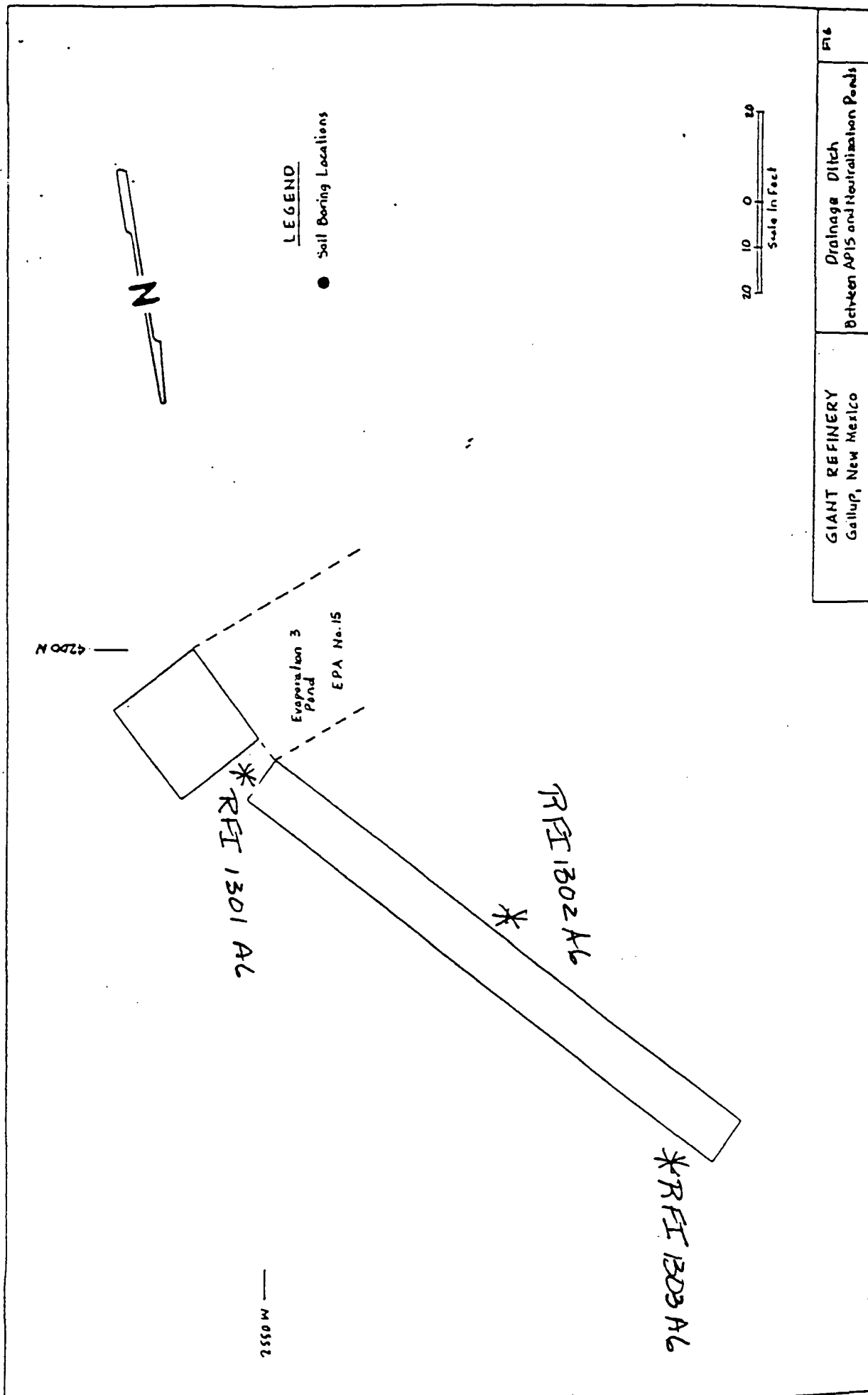


Fig	Drainage Ditch Between APIS and Neutralization Ponds
GIANT REFINERY Gallup, New Mexico	

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1301 A6

Project ID: Ciniza

Lab ID: B969762

0396G02343

Matrix: Soil

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
2,4-Trimethylbenzene	ND	0.2	mg/kg
2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1301 A6

Project ID: Ciniza

Lab ID: B969762

Matrix: Soil

0396G02343

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

Continued

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1301 A6

Project ID: Ciniza

Lab ID: B969762

0396G02343

Matrix: Soil

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

## QUALITY CONTROL - Surrogate Recovery

%

QC Limits

1,2-Dichloroethane-d4

93

70 - 121

Bromofluorobenzene

100

74 - 121

Toluene-d8

104

81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.D.Reviewed CEB

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY  
Sample ID: RFI 1301 A6  
Project ID: Ciniza  
Lab ID: 8969762 0396G02343  
Matrix: Soil

Date Reported: 11/08/96  
Date Sampled: 10/23/96  
Date Received: 10/29/96  
Date Extracted: 11/04/96  
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1301 A6

Project ID: Ciniza

Lab ID: B969762

Matrix: Soil

0396G02343

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
Bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg



EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1301 A6

Project ID: Ciniza

Lab ID: B969762

Matrix: Soil

0396G02343

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Toluene	ND	1.0	mg/kg

## QUALITY CONTROL - Surrogate Recovery

%

QC Limits

2,4,6-Tribromophenol	59	19 - 122
2-Fluorobiphenyl	59	30 - 115
2-Fluorophenol	62	25 - 121
Nitrobenzene-d5	51	23 - 120
Phenol-d6	78	24 - 113
Terphenyl-d14	62	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile  
Organics, Test Methods for Evaluating Solid Wastes, SW-846,  
United States Environmental Protection Agency, November 1990.

Analyst

Reviewed

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY  
Sample ID: RFI 1302 A6  
Project ID: Ciniza  
Lab ID: 8969763 0396G02344  
Matrix: Soil

Date Reported: 11/07/96  
Date Sampled: 10/23/96  
Date Received: 10/29/96  
Date Extracted: 11/04/96  
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1302 A6

Project ID: Ciniza

Lab ID: B969763

0396G02344

Matrix: Soil

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1302 A6

Project ID: Ciniza

Lab ID: B969763

Matrix: Soil

0396G02344

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

## QUALITY CONTROL - Surrogate Recovery

%

QC Limits

1,2-Dichloroethane-d4

91

70 - 121

Bromofluorobenzene

100

74 - 121

Toluene-d8

104

81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst F.D.Reviewed CEB

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1302 A6

Project ID: Ciniza

Lab ID: B969763

Matrix: Soil

0396G02344

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
4-Dinitrotoluene	ND	1.0	mg/kg
6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY  
Sample ID: RFI 1302 A6  
Project ID: Ciniza  
Lab ID: B969763 0396G02344  
Matrix: Soil

Date Reported: 11/08/96  
Date Sampled: 10/23/96  
Date Received: 10/29/96  
Date Extracted: 11/04/96  
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg

Continued

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY  
Sample ID: RFI 1302 A6  
Project ID: Ciniza  
Lab ID: B969763 0396G02344  
Matrix: Soil

Date Reported: 11/08/96  
Date Sampled: 10/23/96  
Date Received: 10/29/96  
Date Extracted: 11/04/96  
Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Tyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	59	19 - 122
2-Fluorobiphenyl	58	30 - 115
2-Fluorophenol	55	25 - 121
Nitrobenzene-d5	49	23 - 120
Phenol-d6	69	24 - 113
Terphenyl-d14	58	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile  
Organics, Test Methods for Evaluating Solid Wastes, SW-846,  
United States Environmental Protection Agency, November 1990.

Analyst



Reviewed



EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

0396G02345

Matrix: Soil

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg



EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

Matrix: Soil

0396G02345

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

EPA METHOD 8260  
VOLATILE ORGANIC COMPOUNDS

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

0396G02345

Matrix: Soil

Date Reported: 11/07/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

## QUALITY CONTROL - Surrogate Recovery

%

## QC Limits

1,2-Dichloroethane-d4

95

70 - 121

Bromofluorobenzene

104

74 - 121

Toluene-d8

116

81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Rev. 1, November 1992.

Analyst E.O.Reviewed CEB

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

Matrix: Soil

0396G02345

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
1-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

Matrix: Soil

0396G02345

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
Continued			
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
Bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg

Continued

EPA METHOD 8270  
HSL SEMI-VOLATILE COMPOUNDS  
BASE/NEUTRAL/ACID EXTRACTABLES

Client: GIANT REFINING COMPANY

Sample ID: RFI 1303 A6

Project ID: Ciniza

Lab ID: B969764

0396G02345

Matrix: Soil

Date Reported: 11/08/96

Date Sampled: 10/23/96

Date Received: 10/29/96

Date Extracted: 11/04/96

Date Analyzed: 11/05/96

Parameter	Result	PQL	Units
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Continued

Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
rene	ND	1.0	mg/kg

## QUALITY CONTROL - Surrogate Recovery

%

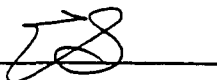
QC Limits

2,4,6-Tribromophenol	62	19 - 122
2-Fluorobiphenyl	59	30 - 115
2-Fluorophenol	58	25 - 121
Nitrobenzene-d5	53	23 - 120
Phenol-d6	72	24 - 113
Terphenyl-d14	64	18 - 137

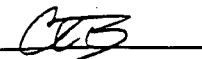
ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile  
Organics, Test Methods for Evaluating Solid Wastes, SW-846,  
United States Environmental Protection Agency, November 1990.

Analyst



Reviewed



LAB QA/QC  
EPA METHOD 8260  
INSTRUMENT BLANKDate Analyzed: 11/04/96  
Lab ID: IBS96309A  
Matrix: Water

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg
Chloroethane	ND	0.2	mg/kg

Continued

LAB QA/QC  
EPA METHOD 8260  
INSTRUMENT BLANKDate Analyzed: 11/04/96  
Lab ID: IBS96309A  
Matrix: Water

Parameter	Result	PQL	Units
Continued			
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

LAB QA/QC  
EPA METHOD 8260  
INSTRUMENT BLANKDate Analyzed: 11/04/96  
Lab ID: IBS96309A  
Matrix: Water

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	89	80 - 120
Bromofluorobenzene	103	74 - 121
Toluene-d8	115	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst E.D.Reviewed CEB



LAB QA/QC  
EPA METHOD 8260  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96309  
Matrix: Soil  
Date Extracted: 11/04/96

Parameter	Result	PQL	Units
1,1,1,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,1-Trichloroethane	ND	0.2	mg/kg
1,1,2,2-Tetrachloroethane	ND	0.2	mg/kg
1,1,2-Trichloroethane	ND	0.2	mg/kg
1,1-Dichloroethane	ND	0.2	mg/kg
1,1-Dichloroethene	ND	0.2	mg/kg
1,1-Dichloropropene	ND	0.2	mg/kg
1,2,3-Trichlorobenzene	ND	0.2	mg/kg
1,2,3-Trichloropropane	ND	0.2	mg/kg
1,2,4-Trichlorobenzene	ND	0.2	mg/kg
1,2,4-Trimethylbenzene	ND	0.2	mg/kg
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.2	mg/kg
1,2-Dibromoethane (EDB)	ND	0.2	mg/kg
1,2-Dichlorobenzene	ND	0.2	mg/kg
1,2-Dichloroethane	ND	0.2	mg/kg
1,2-Dichloropropane	ND	0.2	mg/kg
1,3,5-Trimethylbenzene	ND	0.2	mg/kg
1,3-Dichlorobenzene	ND	0.2	mg/kg
1,3-Dichloropropane	ND	0.2	mg/kg
1,4-Dichlorobenzene	ND	0.2	mg/kg
2,2-Dichloropropane	ND	0.2	mg/kg
2-Butanone (MEK)	ND	2.0	mg/kg
2-Chlorotoluene	ND	0.2	mg/kg
4-Chlorotoluene	ND	0.2	mg/kg
4-Isopropyltoluene	ND	0.2	mg/kg
Benzene	ND	0.2	mg/kg
Bromobenzene	ND	0.2	mg/kg
Bromochloromethane	ND	0.2	mg/kg
Bromodichloromethane	ND	0.2	mg/kg
Bromoform	ND	0.2	mg/kg
Bromomethane	ND	0.2	mg/kg
Carbon Tetrachloride	ND	0.2	mg/kg
Chlorobenzene	ND	0.2	mg/kg

Continued

LAB QA/QC  
EPA METHOD 8260  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96309  
Matrix: Soil  
Date Extracted: 11/04/96

Parameter	Result	PQL	Units
Continued			
Chloroethane	ND	0.2	mg/kg
Chloroform	ND	0.2	mg/kg
Chloromethane	ND	0.2	mg/kg
cis-1,2-Dichloroethene	ND	0.2	mg/kg
cis-1,3-Dichloropropene	ND	0.2	mg/kg
Dibromochloromethane	ND	0.2	mg/kg
Dibromomethane	ND	0.2	mg/kg
Dichlorodifluoromethane	ND	0.2	mg/kg
Ethylbenzene	ND	0.2	mg/kg
Hexachlorobutadiene	ND	0.2	mg/kg
Isopropylbenzene	ND	0.2	mg/kg
m,p-Xylene	ND	0.2	mg/kg
Methylene chloride	ND	1.0	mg/kg
n-Butylbenzene	ND	0.2	mg/kg
n-Propylbenzene	ND	0.2	mg/kg
Naphthalene	ND	0.2	mg/kg
o-Xylene	ND	0.2	mg/kg
sec-Butylbenzene	ND	0.2	mg/kg
Styrene	ND	0.2	mg/kg
tert-Butylbenzene	ND	0.2	mg/kg
Tetrachloroethene (PCE)	ND	0.2	mg/kg
Toluene	ND	0.2	mg/kg
trans-1,2-Dichloroethene	ND	0.2	mg/kg
Trichloroethene (TCE)	ND	0.2	mg/kg
Trichlorofluoromethane	ND	0.2	mg/kg
Vinyl Chloride	ND	0.2	mg/kg
Xylenes (total)	ND	0.2	mg/kg

AB QA/QC  
EPA METHOD 8260  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96309  
Matrix: Soil  
Date Extracted: 11/04/96

Parameter	Result	PQL	Units
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Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	99	80 - 120
Bromofluorobenzene	107	74 - 121
Toluene-d8	111	81 - 117

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst E.D.Reviewed CEB

LAB QA/QC  
EPA METHOD 8270  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96308  
Matrix: Soil  
Date Extracted: 11/05/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	2.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	2.0	mg/kg
Acenaphthene	ND	1.0	mg/kg
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg

LAB QA/QC  
EPA METHOD 8270  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96308  
Matrix: Soil  
Date Extracted: 11/05/96

Parameter	Result	PQL	Units
Continued			
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	2.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg
Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

Continued

LAB QA/QC  
EPA METHOD 8270  
METHOD BLANKDate Analyzed: 11/05/96  
Lab ID: MBS96308  
Matrix: Soil  
Date Extracted: 11/05/96

Parameter	Result	PQL	Units
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Continued

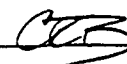
QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	73	19 - 122
2-Fluorobiphenyl	88	30 - 115
2-Fluorophenol	70	25 - 121
Nitrobenzene-d5	75	23 - 120
Phenol-d6	74	24 - 113
Terphenyl-d14	132	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst



Reviewed



## LAB QA/QC

## EPA METHOD 8260

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY

Date Analyzed: 11/05/96

Lab ID: 0596H09764

Matrix: Soil

Date Extracted: 11/04/96

## Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	MS Recovery %	QC Limits Rec.
1,1-Dichloroethene	12.5	0	8.0	64 *	75 .145
Benzene	12.5	0	11	88	71 .120
Chlorobenzene	12.5	0	11	88	76 .127
Toluene	12.5	0	14	112	71 .127
Trichloroethene (TCE)	12.5	0	9.7	78	75 .130

## Duplicate Sample Parameters

Parameter	Spike Added (mg/kg)	MSD Result (mg/kg)	MSD Recovery %	RPD %	QC Limits RPD Rec.
1,1-Dichloroethene	12.5	6.7	54 *	18	22 75 .145
Benzene	12.5	8.8	70 *	22	24 71 .120
Chlorobenzene	12.5	8.7	70 *	23 *	21 76 .127
Toluene	12.5	10	80	33 *	21 71 .127
Trichloroethene (TCE)	12.5	8.1	65 *	18	21 75 .130

Note: Spike Recoveries are calculated using zero for Sample result  
if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 5 out of 10 outside QC limits.

RPD: 2 out of 5 outside QC limits.

Analyst F.D.Reviewed CSB

LAB QA/QC  
EPA METHOD 8270

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE SUMMARY

Date Analyzed: 11/05/96

Lab ID: 0596H09868

Matrix:

Date Extracted: 11/04/96

## Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	MS Recovery %	QC Limits Rec.
1,2,4-Trichlorobenzene	10	0	5.2	52	38 - 107
1,4-Dichlorobenzene	10	0	4.6	46	28 - 104
2,4-Dinitrotoluene	10	0	4.1	41	28 - 89
2-Chlorophenol	20	0	9.8	49	25 - 102
4-Chloro-3-methylphenol	20	0	10	50	26 - 103
4-Nitrophenol	20	0	5.1	26	11 - 114
Acenaphthene	10	0	6.0	60	31 - 137
N-Nitrosodi-n-propylamine	10	0	5.5	55	41 - 126
Pentachlorophenol	20	0	5.6	28	17 - 109
Phenol	20	0	10.5	53	26 - 90
Pyrene	10	0	5.0	50	35 - 142

## Duplicate Sample Parameters

Parameter	Spike Added (mg/kg)	MSD Result (mg/kg)	MSD Recovery %	RPD %	QC Limits RPD Rec.
1,2,4-Trichlorobenzene	10	5.4	54	4	23 38 - 107
1,4-Dichlorobenzene	10	4.5	45	2	27 28 - 104
2,4-Dinitrotoluene	10	4.5	45	9	47 28 - 89
2-Chlorophenol	20	9.9	50	1	50 25 - 102
4-Chloro-3-methylphenol	20	9.6	48	4	33 26 - 103
4-Nitrophenol	20	5.2	26	2	50 11 - 114
Acenaphthene	10	6.0	60	0	19 31 - 137
N-Nitrosodi-n-propylamine	10	5.0	50	10	38 41 - 126
Pentachlorophenol	20	6.2	31	10	47 17 - 109
Phenol	20	10.4	52	1	35 26 - 90
Pyrene	10	4.7	47	6	36 35 - 142

Note: Spike Recoveries are calculated using zero for Sample result  
if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 22 outside QC limits.

RPD: 0 out of 11 outside QC limits.

Analyst



Reviewed





QA/QC  
METHOD 8260  
LAB CONTROL SAMPLEDate Analyzed: 11/05/96  
Lab ID: LCS96309A  
Matrix: Soil  
Date Extracted 11/04/96

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	LCS Result (mg/kg)	LCS Recovery %	QC Limits Rec.
1,1,2-Trichloroethane	2.0	0	2.5	125	70 -130
1,2-Dibromoethane (EDB)	2.0	0	1.9	95	70 -130
1,2-Dichloroethane	2.0	0	2.2	110	70 -130
1,2-Dichloropropane	2.0	0	2.2	110	70 -130
1,4-Dichlorobenzene	2.0	0	2.5	125	70 -130
Benzene	2.0	0	2.3	115	70 -130
Bromoform	2.0	0	2.0	100	70 -130
Carbon Tetrachloride	2.0	0	1.9	95	70 -130
1,3-Dichloropropene	2.0	0	2.1	105	70 -130
Tetrachloroethene (PCE)	2.0	0	2.0	100	70 -130
Trichloroethene (TCE)	2.0	0	1.9	95	70 -130
Vinyl Chloride	2.0	0	1.5	75	70 -130

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
1,2-Dichloroethane-d4	91	70 -130
Bromofluorobenzene	101	74 -121
Toluene-d8	104	81 -117

Spike Recovery: 0 out of 12 outside QC limits.  
Surrogates: Surrogate Recoveries within QC Limits.Analyst E.D.Reviewed CEB

## LAB QA/QC

## EPA METHOD 8270

## BLANK SPIKE / BLANK SPIKE DUPLICATE SUMMARY

Date Analyzed: 11/05/96

Lab ID: BSS96308

Matrix: Soil

Date Extracted: 11/04/96

## Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	BS Recovery %	QC Limits Rec.
1,2,4-Trichlorobenzene	10	0	6.6	66	38 - 107
1,4-Dichlorobenzene	10	0	6.5	65	28 - 104
2,4-Dinitrotoluene	10	0	8.5	85	28 - 89
2-Chlorophenol	20	0	14.4	72	25 - 102
4-Chloro-3-methylphenol	20	0	15.7	79	26 - 103
4-Nitrophenol	20	0	15.8	79	11 - 114
Acenaphthene	10	0	7.4	74	31 - 137
N-Nitrosodi-n-propylamine	10	0	7.3	73	41 - 126
Pentachlorophenol	20	0	13.6	68	17 - 109
Phenol	20	0	12.9	65	26 - 90
Pyrene	10	0	13.6	136	35 - 142

## Duplicate Sample Parameters

Parameter	Spike Added (mg/kg)	BSD Result (mg/kg)	BSD Recovery %	RPD %	QC Limits RPD Rec.
1,2,4-Trichlorobenzene	10	7.0	70	6	23 38 - 107
1,4-Dichlorobenzene	10	6.8	68	5	27 28 - 104
2,4-Dinitrotoluene	10	8.5	85	0	47 28 - 89
2-Chlorophenol	20	15.4	77	7	50 25 - 102
4-Chloro-3-methylphenol	20	17.4	87	10	33 26 - 103
4-Nitrophenol	20	17.4	87	10	50 11 - 114
Acenaphthene	10	8.0	80	8	19 31 - 137
N-Nitrosodi-n-propylamine	10	7.6	76	4	38 41 - 126
Pentachlorophenol	20	15.3	77	12	47 17 - 109
Phenol	20	13.1	66	2	35 26 - 90
Pyrene	10	13.4	134	1	36 35 - 142

Note: Spike Recoveries are calculated using zero for Sample result  
if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 22 outside QC limits.

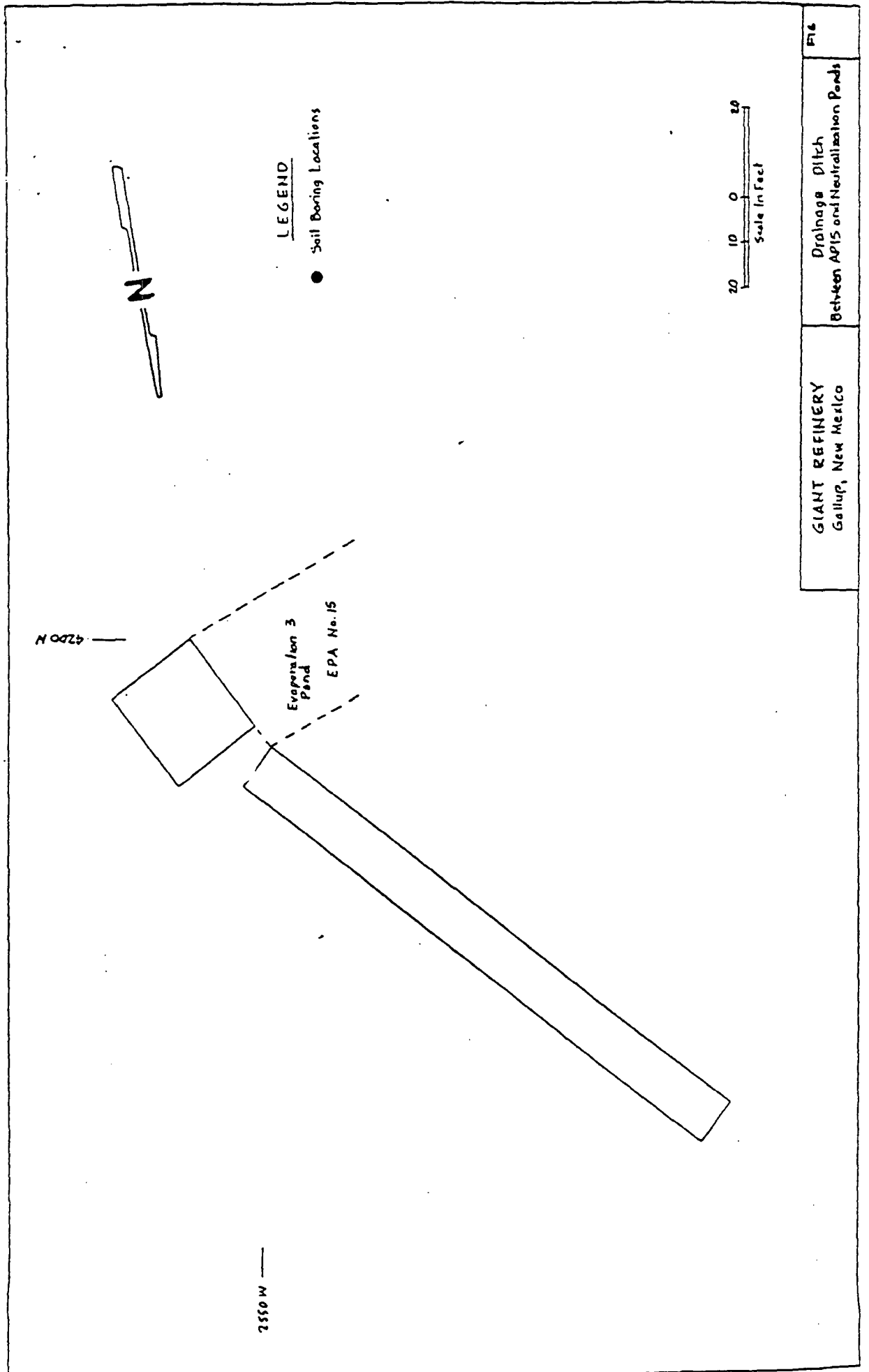
RPD: 0 out of 11 outside QC limits.

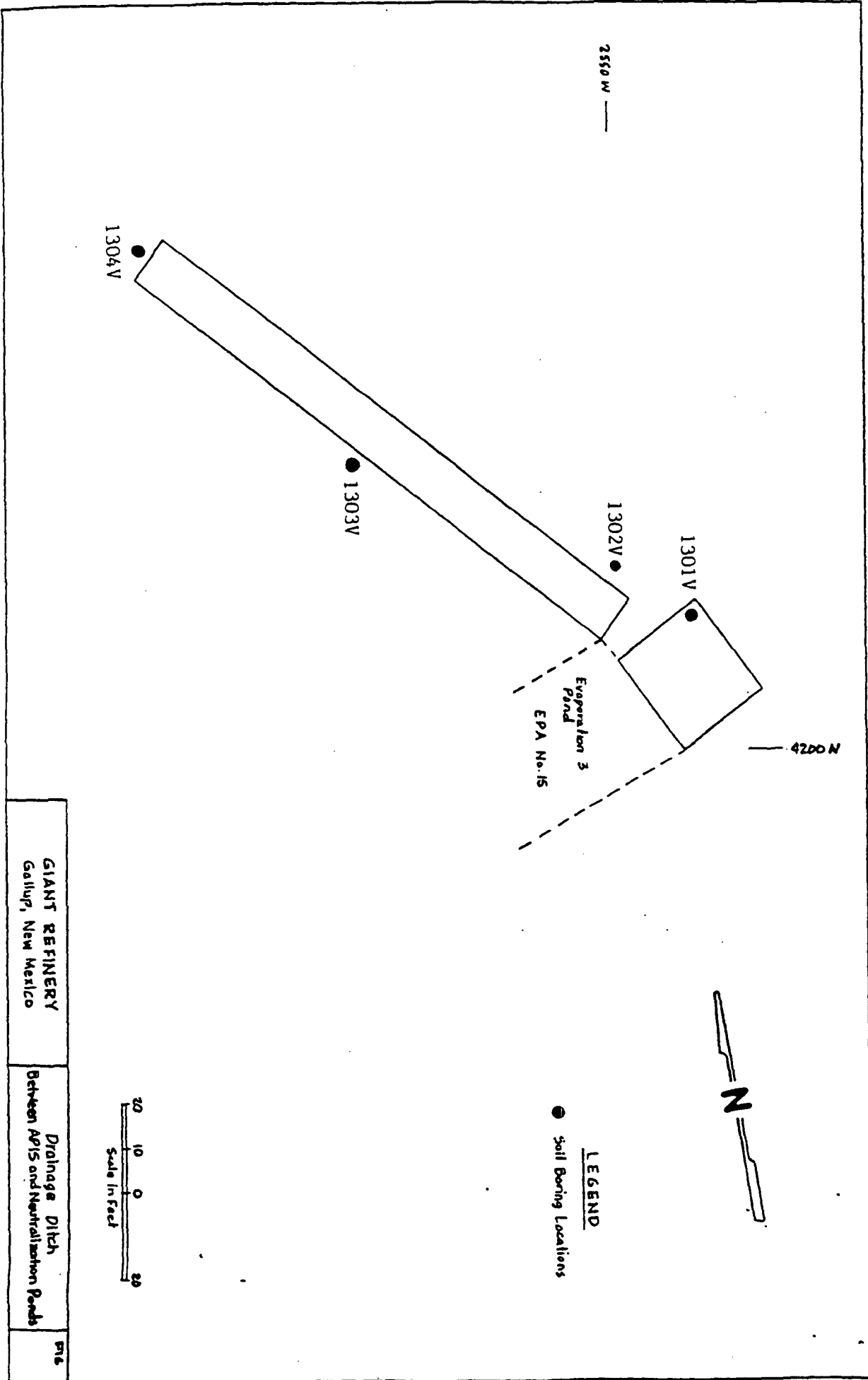
Analyst ESReviewed CTB

## CHAIN OF CUSTODY RECORD

Inter-Mou. ....

[illegible]









GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
**ENVIRONMENT DEPARTMENT**  
Hazardous & Radioactive Materials Bureau  
525 Camino De Los Marquez  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-4358  
Fax (505) 827-4389

MARK E. WEIDLER  
SECRETARY  
EDGAR T. THORNTON, III  
DEPUTY SECRETARY

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

July 13, 1995

John Stokes, Refinery Manager  
Giant Refining Company  
Ciniza Refinery  
Route 3, Box 7  
Gallup, New Mexico 87301

Dear Mr. Stokes,

**RE: Part A Permit Revision**

On March 10, 1995, the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) received a copy of the Giant Refining Company-Ciniza (Giant) Part A Permit Modification request dated March 6, 1995, and sent to the Environmental Protection Agency (EPA). Giant is hereby notified that because the Permit Modification request concerns RCRA units, NMED and not EPA has the lead. The modification requested is a 337% increase in both API tank treatment capacity (API) and benzene stripping capacity.

The API and benzene stripping units appear on Giant's Part A Permit. However, they should not have been included on the Part A Permit as they are part of the process wastewater treatment system and are exempt from RCRA regulation. Also, evidence shows that the API and benzene strippers are regulated by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD). OCD's Groundwater Discharge Permit #32 (GW 32), covers all discharges by the facility, including the API, benzene strippers and the aeration lagoons into which they discharge.

Required by the OCD is biennial groundwater monitoring which includes all approved RCRA constituents, to the standards of the New Mexico Water Quality Control Commission. Also required is annual monitoring of the API, benzene stripper and aeration lagoon effluents. Although the API and benzene stripper effluents are not monitored for RCRA constituents, the aeration lagoon into which they discharge are monitored for RCRA metals, and volatile and semi-volatile organics.

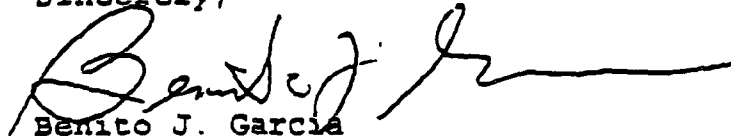
John Stokes  
July 13, 1995  
Page 2 of 2

Further, Giant has submitted to OCD a modification request identical to the March 6, 1995 request for modification of their RCRA Part A Permit. As per OCD's March 15, 1995 letter to Giant, approval of this modification request is conditional upon Giant's submittal of a closure plan for the existing API. This is analogous to RCRA requirements and further demonstrates that OCD requirements for the API and benzene strippers are protective of human health and the environment.

Therefore, HRMB requests that Giant submit a request for removal of the aforementioned units from Giant's Part A Permit to the Director of NMED Water and Waste Management Division (WWD) for his approval. If the Director approves the request, Giant will be required to submit a revised Part A Permit which excludes the API oil/water separator and the benzene strippers.

If there are any questions on this matter, you may contact Mr. Michael Chacón at (505) 827-4308.

Sincerely,



Benito J. Garcia

Chief, Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD  
Ron Kern, HRMB Program Manager  
Michael Chacón, RCRA Permits  
David Neleigh, EPA  
File-Red 95  
File-Reading





Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

July 24, 1995

Mr. Ed Kelley, Director  
Water and Waste Management Division  
New Mexico Environment Department  
525 Camino De Los Marquez  
Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the HRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

David C. Pavlich  
Health, Safety, and Environmental Manager

**cc w/enclosure: Lynn Shelton, Giant**

**cc w/o enclosure: Roger Anderson, OCD Bureau Chief  
Michael Chacón, HRMB, RCRA Permits  
Ron Kern, HRMB Program Manager**



July 28, 1995

Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

Mr. Ed Kelley, Director  
Water and Waste Management Division  
New Mexico Environment Department  
525 Camino De Los Marquez  
Santa Fe, New Mexico 87502

Dear Mr. Kelley:

Earlier this week, I sent you a letter (copy attached) at the direction of Benito Garcia of the Hazardous and Radioactive Materials Bureau (HRMB) requesting your approval to remove several listed items from Giant Refining's Part A RCRA permit. Those items are the API separator and the benzene stripping units. In subsequent discussions with HRMB staff, an additional item was identified as being a good candidate for removal from the Part A Permit. This item is a small hazardous waste drum storage area. Since this area was never constructed and Giant does not foresee a need for it in the near future, its removal from the Part A Permit is appropriate.

Therefore, in addition to the items listed in Giant's letter of July 24, 1995, Giant also requests approval for the removal of the hazardous waste container storage area from its Part A Permit. Upon receipt of your approval, Giant will submit an application for permit modification to the HRMB.

Thank you for your assistance in this matter.

Sincerely,

David C. Pavlich  
Health, Safety, and Environmental Manager

cc: Roger Anderson, OCD  
Michael Chacon, HRMB  
Ron Kern, HRMB  
Lynn Shelton, Giant

[SRP\WPDOCS\PAV\NMED.728]



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

July 24, 1995

Mr. Ed Kelley, Director  
Water and Waste Management Division  
New Mexico Environment Department  
525 Camino De Los Marquez  
Santa Fe, New Mexico 87502

Dear Mr. Kelley,

Giant Refining recently requested a modification to its Part A RCRA Permit. In reviewing this modification request, the Hazardous & Radioactive Materials Bureau (HRMB) staff determined that several items listed on Giant's Part A Permit (the API separator and benzene stripping units) should not have been included in the permit since they are part of a process wastewater treatment system and are regulated by the Oil Conservation Division.

Therefore, at the request of the HRMB, Giant hereby requests removal of the abovementioned API separator and benzene stripping units from its Part A Permit. Upon your approval of this request, Giant will submit to the HRMB a revised Part A Permit excluding these units.

Enclosed with this letter is a copy of HRMB Chief Benito Garcia's letter detailing the HRMB staff's findings and his request that Giant seek removal of these units from its Part A Permit.

Should you or your staff have any questions regarding the above, please do not hesitate to contact me or Mr. Lynn Shelton at (505) 722-3833. Thank you for your assistance in this matter.

Sincerely,

David C. Pavlich  
Health, Safety, and Environmental Manager



**GARY E. JOHNSON**  
GOVERNOR

*State of New Mexico*  
**ENVIRONMENT DEPARTMENT**  
*Hazardous & Radioactive Materials Bureau*  
525 Camino De Los Marquez  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-4358  
Fax (505) 827-4389

**MARK E. WEIDLER**  
SECRETARY

**EDGAR T. THORNTON, III**  
DEPUTY SECRETARY

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

August 14, 1995

Mr. David Pavlich  
Health, Safety and Environmental Manager  
Giant Refinery-Ciniza  
Route 3, Box 7  
Gallup, New Mexico 87301

Dear Mr. Pavlich,

**RE: Request to amend Giant's Part A Permit.**

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of the Giant Refining Company (Giant) letters to HRMB dated July 24 and 28, 1995. In the July 24 letter Giant agrees to HRMB's request (dated July 13, 1995) for Giant to request removal from their RCRA Part A Permit of the following items;

- the API separator
- the benzene strippers.

In the July 28 letter Giant adds the hazardous waste drum storage area to the removal request.

The API separator and benzene strippers are part of the process wastewater treatment system and thus are exempt from RCRA permitting requirements. Further, these units are regulated by NMED Oil Conservation Division (OCD). The hazardous waste drum storage area has not been constructed, and Giant has no plans to construct it, thus there is no need for it to be on the Part A Permit.

HRMB hereby approves Giant's request for removal of the aforementioned items from their Part A Permit. Giant must now submit to HRMB within two (2) weeks of receipt of this letter a revised Part A excluding these units.

## FACSIMILE TRANSMITTAL



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1448 ROSS AVENUE  
DALLAS, TEXAS 75202-2733

MULTIMEDIA PERMITTING AND PLANNING DIVISION

NEW MEXICO AND FEDERAL FACILITIES SECTION

PLEASE PRINT IN BLACK INK ONLY

TO: Ed Horst, Environmental Manager - Giant Refining Company, Cimiza

MACHINE NUMBER: 505.722.0210

VERIFICATION NUMBER: 505.722.0227

FROM: James A. Harris, Jr., RCRA Facility Manager/Geologist

PHONE: (214) 665-8302

Mail Codes: 6PD-N

OFFICE: New Mexico/Federal Facilities Section

PAGES, INCLUDING COVER SHEET

3

DATE: March 15, 1996

PLEASE NUMBER ALL PAGES

## INFORMATION FOR SENDING FACSIMILE MESSAGES

EQUIPMENT:

FACSIMILE NUMBER:

VERIFICATION NUMBER:

PANAFAX UF-766

(214) 665-6762

(214) 665-6766

## COMMENTS

Ed,

Here's what I have been using to track Giant, Cimiza's corrective action program. Please review and let's discuss it next week. Have a good one.

Thank,

James

1: The Aeration Basin (1)	Phase II	soil and groundwater sampling every five years	RFI PHII RPT APP 1/94 w/modifications; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
2: The Evaporation Ponds (2)	"	"	Survey and closure certification must be submitted prior to initiating Class III Permit Mod process
12: Contact Waste Water Collection System (CWACS)	"	Inspection every 5 years beginning 1996	
13: The Drainage Ditch between APIS Evaporation Ponds and the Neutralization Tank Evaporation Ponds (14)	"	soil and groundwater sampling every five years	Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
3: Empty Container Storage Area (5)	Phase III		"
4: Old Burn Pit (8)	"		
5: Landfill Areas (7)	"	a Voluntary Corrective Action (VCA) Plan to cap the "Landfill Areas" was submitted in March 1993.	EPA approved the VCA Plan on January 5, 1994 but required that additional soil borings be completed prior to Giant proceeding with the capping activities
7: Fire Training Area (4)	"	Under VCA	
11: Secondary Oil Skimmer (11)	"	Under VCA	discolored soil is the natural color; there is no hydrocarbon staining or odors detected; reference to "black fill" sand is actually "back fill"

Prepared by: James A. Harris, Jr. VADPW as of March 13, 1996

BWMU TRACKING LIST - GIANT REFINERY EPA ID: MMD000333211, Gallup, NM			
BWMU # now using 5/90 RFI WKPLN Designation; BSWA In ( ).	PHASE/GROUP	STATUS	COMMENTS/NOTES
6: The Tank Farm - Leaded Gasoline Tanks (3)	Phase I		Additional sampling for extent of contamination and confirmation sampling is required; completed first quarter '95
9: The Drainage Ditch near the Inactive Land Farm (10 & 13)	"		Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
8: The Railroad Rack Lagoon (6)	"	under voluntary corrective action	monitoring requirements submitted w/quarterly status reports; notify EPA when final closure has been initiated; Survey Plat submitted; closure certification must be submitted prior to initiating Class III Permit Mod process
8: The Overflow Ditch (associated w/Railroad Rack Lagoon) (6)	"	"	"
8: The Fan Out Area (associated w/Railroad Rack Lagoon) (6)	"	"	"
10: The Sludge Pits (9)	"	"	monitoring requirements submitted w/quarterly status reports; notify EPA when final closure has been initiated



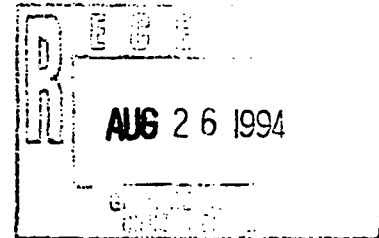




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

August 24, 1994



Mr. Lynn Shelton  
Senior Environmental Coordinator  
Giant Refining Company  
Route 3, Box 7  
Gallup, NM 87301

Dear Mr. Shelton:

The Environmental Protection Agency (EPA) has reviewed your letter dated August 2, 1994, concerning additional RFI sampling requirements at solid waste management unit (SWMU) #1, the Aeration Basin; #2, the Evaporation Pond; and #13, the Drainage Ditch. In your letter, you propose to conduct soil and groundwater sampling every five years as opposed to the biennial sampling requirement detailed in the EPA's January 7, 1994 letter.

The EPA has reassessed your Phase II RFI Report and hereby approves your request to sample SWMUs 1, 2, and 13 every five years. Sampling shall begin in 1995 and reports shall be submitted to the EPA by December 31 of each sample year. As a reminder, a survey plat must be completed for SWMUs 1, 2, and 13 and submitted to the EPA for review and approval. Giant shall also initiate a Class 3 permit modification to terminate the RFI/Corrective Measures Study process for these SWMUs within three months of receipt of this letter.

Please contact Nancy R. Morlock of my staff at (214) 665-6650 if you have any questions or require additional information.

Sincerely yours,

William K. Honker, P.E., Chief  
RCRA Permits Branch

cc: Ms. Kathleen Sisneros, Director  
Water and Waste Management Division  
New Mexico Environment Department





Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

August 2, 1994

Allyn M. Davis  
United States Environmental Protection Agency  
Region VI  
1445 Ross Avenue  
Suite 1200  
Dallas, Texas 75202-2733

Re: Additional RFI Sampling

Dear Mr. Davis:

In the letter from you dated January 7, 1994 (copy enclosed), Giant Refining Company - Ciniza (Giant) received EPA's approval of Giant's recommendation of "No Further Action" on SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Pond; and SWMU #13, the Drainage Ditch. The agency's approval of the "No Further Action" recommendations was accompanied with several additional requirements.

The additional requirements were to repeat the sampling protocol set forth in the approved RFI Sampling Plan (May, 1990) biennially. This additional sampling is intended to monitor potential migration of hazardous constituents from these SWMUs during the duration of their active service.

Giant understands the logic of continued sampling to document potential migration but has some reservations about the frequency of sampling and the true potential for migration of hazardous constituents.

It was determined in the RFI sampling (1990-1992) that migration of hazardous constituents had not occurred in any of the previously mentioned SWMUs and that water saturation had not occurred below five feet. This observation, coupled with the fact that hazardous constituents are not released to the three SWMUs, indicates that future contamination due to migration of hazardous constituents is virtually impossible.

Based on this knowledge, Giant proposes to sample SWMUs #1, #2, and #13, using the protocol set forth in the approved RFI Sampling Plan, every five years, beginning in 1995, with annual reports due on December 31 of the sample year. This sampling will adequately

demonstrate migration, if any, of hazardous constituents. Giant appreciates your prompt attention to this proposal, as this will expedite completion of any responsibilities of Giant to fully characterize and monitor SWMUs #1, #2, and #13.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,



Lynn Shelton  
Senior Environmental Coordinator  
Giant Refining Company

TLS:sp

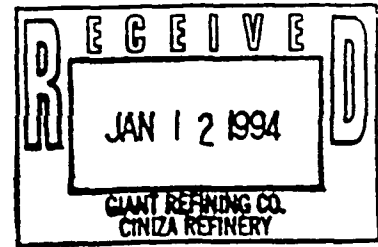
cc w/attachment: David C. Pavlich, Giant  
Kim Bullerdick, Giant  
Rich Mayer, USEPA  
Kathleen Cisneros, NMED



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 07 1994



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

*Allyn M. Davis*

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED

**APPROVAL WITH MODIFICATIONS  
RFI PHASE I SUPPLEMENTARY REPORT  
RFI PHASE II REPORT AND THE  
VOLUNTARY CORRECTIVE ACTION PLANS**

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch**

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

**SWMU 6, The Tank Farm**

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area**

The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.

SWMU 6, The Railroad Rack Lagoon

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

Continuation of SWMU 6, The Overflow Ditch

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU 6, The Fan Out Area

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

SWMU #12, Contact Waste Water Collection System (CWWCS)

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

SWMU 9, The Sludge Pits

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 - 19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

#### SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

### MODIFICATIONS

#### SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

#### SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

#### SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

#### SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds *no longer exist*

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).



RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.



Route 3, Box 7  
Gallup, New Mexico  
87301

505  
722-3833

June 28, 1994

Rich Mayer  
U.S. Environmental Protection Agency  
Region VI  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Mr. Mayer:

Pursuant to requirements of the HSWA Permit, Condition C.4., Page 11 and the May 31, 1990 RFI Workplan approval, Giant Refining Company - Ciniza (Giant) submits the Quarterly Progress Report for the second quarter of 1994.

Giant has completed piping modifications to the "Railroad Rack Lagoon" (SWMU #8) system and is presently evacuating the remaining water from the lagoon and disposing of it in the process wastewater system. As soon as it is feasible, Giant will sample the SWMU as required and begin bioremediation activities.

Giant is soliciting proposals for the survey requirement of SWMUs #1, 3, 8, 9 and 13.

Giant is also developing a scope and estimate of expense to further characterize SWMUs #4, 5, 6, 7, 10, and 11 and expects to complete that sampling during the third quarter of 1994.

If you require additional information, please contact Lynn Shelton, of my staff, at (505) 722-0227.

"I certify under penalty of law that this document and all attachments were prepared under my direction to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,

  
John Stokes  
Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel  
Giant Industries Arizona, Inc.

David Pavlich, Health/Safety and Environmental Manger  
Giant Refining Company

INTEROFFICE  
MEMORANDUM

**GIANT**

DATE: February 3, 1994

TO: David Pavlich  
Kim Bullerdick

FROM: Lynn Shelton *JS*

SUBJECT: RCRA Facility Investigation - Additional Requirements

I. Introduction

Giant Refining Company - Ciniza (Giant) performed a RCRA Facility Investigation (RFI) in three phases (I, II, and III) over three years (1990, 1991, and 1992).

Using the analytical results of those three sampling events, Giant submitted four corrective action plans and eight "No Further Action" proposals to Region VI, United States Environmental Protection Agency (EPA).

Correspondence from the EPA (1-7-94) indicated approval of the corrective action plans (with additional requirements) for three Solid Waste Management Units (SWMUs), for RFI reports Phase I, II, and III and assigns a deadline for submittals of additional data.

The additional sampling and reporting requirements, some of which are redundant and unnecessary, are the focus of this correspondence. In the following pages, the scope and cost of the additional sampling requirements will be presented.

Some explanation of a potential problem is in order. The SWMU identification numbering sequence is inconsistent. In discussing the draft letters with Rich Mayer, of Region VI EPA, the discrepancy in reference to the SWMU numbers was mentioned. Mr. Mayer responded that the correct SWMU numbers were taken from the HSWA Permit (Section C, Corrective Actions for Continuing Releases, 5.(a)(1)). Giant had used the numbering sequence from the approved RFI Workplan (revised May 17, 1990). As shown in Table 1, there are discrepancies in all three sequences. Giant should propose to use the numbering sequence identified in the revised RFI Workplan to avoid confusion with the numbering sequence of SWMUs and sample numbers already reported.

Table 2 presents an overview of the status of the SWMUs.

**TABLE 1**  
**SWMU IDENTIFICATION**

<b>RFI WORKPLAN</b>	<b>HSWA</b>	<b>EPA LETTER</b>	<b>SWMU</b>
1	1	1	Aeration Basin
2	2	2	Evaporation Ponds
3	5	5	Empty Container Storage
4	8	8	Burn Pit
5	7	7	Four Landfills
6	3	6	Tank Farm
7	4	4	Fire Training Area
8	6	8	Railroad Rack Lagoon
9	10 & 13	-	Inactive Land Treatment
10	9	9	Two Sludge Pits
11	11	11	Secondary Oil Skimmer
12	14	13	Wastewater Collection
13	14	13	Drainage Ditch

TABLE 2

STATUS - INDIVIDUAL SWMU

Caps:

- \* Railrack Lagoon
- \* Sludge Pits
- \* Fire Training Area
- \* Landfills

No Further Action:

- \*\* Aeration Basin
- \*\* Evaporation Ponds
- \*\* Drainage Ditch
- \*\* Tank Farm
- \*\* Empty Container Storage
- \*\* Old Burn Pit
- \*\* Secondary Oil Skimmer
- \*\*\* Inactive Land Treatment

- \* Accepted by EPA with Additional Requirements
- \*\* "No Further Action" Approved by USEPA
- \*\*\* Not Addressed in Correspondence

## II. Discussion

A discussion of additional requirements, by SWMU, follows. Included, as Figures 1 to 12, are drawings of the SWMUs with individual sample points.

### SWMU #1 - Aeration Lagoon

EPA approved Giant's proposal for "No Further Action". Although Giant demonstrated that no significant migration of hazardous constituents had taken place, EPA requires biennial sampling that duplicates the original RFI sampling. This is redundant and expensive. Giant should propose either a five year sampling rotation or a phased-in plan (of six sample locations, sample two biennially until all samples are taken, then start again). These sampling plans will diminish the costs considerably and still provide documentation that migration has not occurred.

EPA also requires a survey plat of the SWMU. Giant agrees that this is a reasonable requirement.

### SWMU #2 - Evaporation Ponds

EPA has also approved Giant's proposal for "No Further Action" of this SWMU. EPA requires that Giant sample the seven groundwater wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10) biennially for the same constituents as monitored for in the RFI sampling event. Giant may wish to propose a five year sampling rotation.

### SWMU #3 - Empty Container Storage Area

EPA approved Giant's proposal for "No Further Action" for the SWMU, requiring only that Giant provide a survey plat.

### SWMU #4 - Old Burn Pit

EPA does not approve Giant's proposal for "No Further Action". Three borings at six and ten feet will be required to characterize constituent migration in this SWMU.

### SWMU #5 - Landfill Areas

EPA requires that additional borings, at eleven, sixteen and twenty feet to fully characterize contamination.

#### SWMU #6 - Tank Farm

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. EPA requires seven additional borings to sixteen feet and one additional boring to twenty feet to fully characterize contamination. When Giant performed supplemental sampling of this SWMU in 1991, it was anticipated that further sampling would be required.

#### SWMU #7 - Fire Training

EPA does not approve Giant's proposal for "No Further Action" for this SWMU. Two additional angle borings to seven and eleven vertical feet are required. Additional sampling was anticipated when this SWMU was sampled in 1992, although I question why we now have to analyze for the Skinner List constituents. Samples from this SWMU were originally analyzed for TPH and oil & grease only.

#### SWMU #8 - Railroad Rack Lagoon

EPA has approved Giant's corrective action plan for this SWMU, with additional requirements. After piping modifications at the railroad loading rack are complete and the railroad rack lagoon no longer receives waste, sampling is required within the footprint of the lagoon (five borings) and around the periphery of the lagoon (six borings). Sampling is also required in the overflow ditch (three borings to seven feet) and the fan out area (four borings to seven feet). Some sampling will be required during remediation of the lagoon to document completion of the corrective action plan.

A survey plat of the SWMU, after remediation, must be submitted to the EPA.

#### SWMU #9 - Inactive Land Treatment Area

Although Giant had provided data and proposed no further action, this SWMU was not addressed in the correspondence with the EPA. It needs to be determined if EPA accepts our proposal or has additional requirements.

#### SWMU #10 - Sludge Pits

EPA is requiring additional sampling to 25' in this SWMU (seven borings) to fully characterize any contamination. Monitoring will be required during remediation to document completion of the corrective action plan.



It is reasonable to expect that EPA will require a survey plat of this SWMU after closure.

SWMU #11 - Secondary Oil Skimmer

EPA does not approve Giant's proposal for "No Further Action" and is requiring additional sampling to ten feet (two borings). This is a reasonable request.

SWMU #12 - Contact Wastewater System

Although onerous, the requirement to inspect the wastewater system every five years is acceptable in that we were not sure if we could get any kind of "Buy In" from EPA. Costs of monitoring this SWMU are therefore significantly less than anticipated.

SWMU #13 - Drainage Ditch

Although EPA approves Giant's proposal of "No Further Action", additional requirements have been added. Complete resampling is required biennially. This is redundant and expensive. Even though this SWMU continues to be exposed to wastewater, Giant does not believe there is a significant possibility of migration. Giant should propose a five year sampling schedule or a "Phased-In" rotation of sampling.

A survey plat will be required for this SWMU.

### III. Estimation of Expenses

Not normally a consideration of the regulatory community, expense is an indicator to industry of the scope and complexity of regulatory requirements. In providing a cost estimate, we are able to judge the economic impact for our company and determine the extent to which we are willing to contest the requirements issued to us.

The following tables (Tables 3, 4, and 5) illustrate the estimated costs per SWMU (for 1994 and biennially).

Table 3

## 1994 Analytical Costs

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
4	6	8240	1,800
		8270	2,970
		Metals	2,250
		pH	60
5	21	8240	6,300
		8270	10,395
		Metals	4,830
6	8	BTEX	1,000
7	4	TPH	200
		Oil & Grease	200
8	50	8240	15,000
		8270	24,750
10	18	8240	5,400
		8270	8,910
		Metals	4,140
11	4	8240	1,200
		8270	1,980
13	12	8240	3,600
		8270	5,940

Total Analytical Cost  
1994 Only

\$119,245

**TABLE 4**  
**BIENNIAL ANALYTICAL COST**

<u>SWMU #</u>	<u>SAMPLES REQUIRED</u>	<u>ANALYSIS</u>	<u>COST</u>
1	30	8240	\$ 9,000
		8270	14,850
		Metals	6,900
2	7	8240	1,750
		8270	2,765
		Metals	1,435
		pH	70
13	12	8240	8,600
		8270	5,940
Total Biennial Analytical Cost			<u>\$46,310</u>

TABLE 5  
TOTAL COST OF 1994 SAMPLING  
(ESTIMATE)

<u>SWMU #</u>	<u>ANALYTICAL COST</u>	<u>LABOR *</u>	<u>COST</u>
1	\$ 30,750	\$12,600	\$ 43,350
2	6,020	1,100	7,120
4	7,080	3,000	10,080
5	21,525	14,000	35,525
6	1,000	13,200	14,200
7	400	2,200	2,600
8	39,750	21,400	61,160
10	18,450	22,500	40,950
11	3,180	2,000	5,180
13	9,540	2,600	12,140
	<u>\$119,245</u>	<u>\$94,600</u>	<u>\$213,845</u>

\* Including Drilling Rig

#### IV. Conclusions

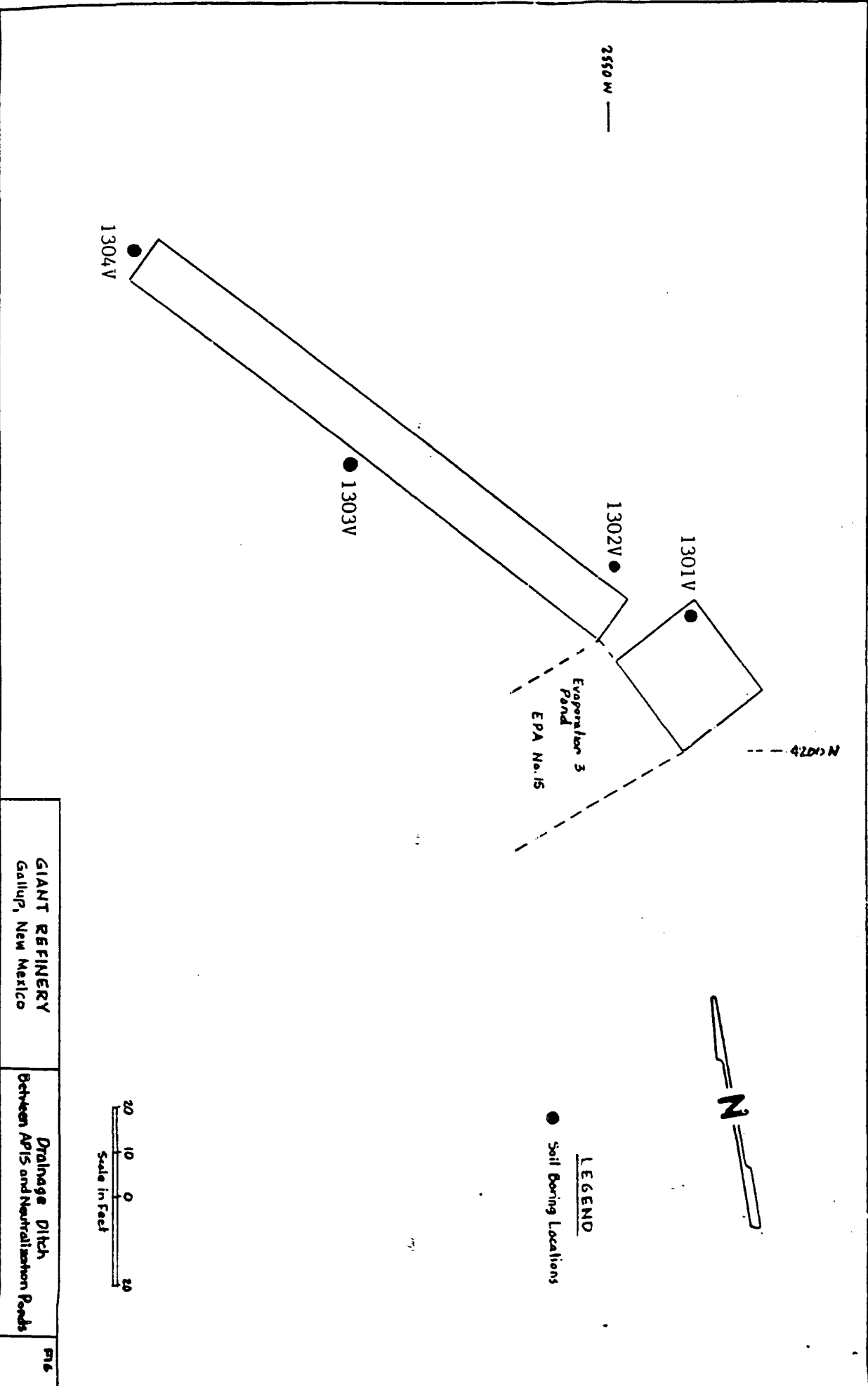
The additional requirements to fully characterize SWMUs #4, 5, 6, 7, 8, 10 and 11 are reasonable. Although expensive, full characterization of potential pollution is the thrust of an RFI project and is Giant's objective.

The biennial sampling requirements for SWMUs #1, 2, and 13 are, in effect, a repeat of the original RFI project every two years. This is redundant, expensive and, in my opinion, unwarranted. In completing the original RFI work, it was demonstrated that SWMUs #1, 2, and 13 pose no threat to human health or the environment. Additional sampling is probably justified, because these SWMUs continue to handle wastewater, but on a smaller scale. I recommend that we propose to do additional sampling every five years on one-third of the sample points, or something of that magnitude. This should be enough sampling to document that there is no contamination.

It is important that we act now to minimize sampling requirements in that we can reasonably assume that as other SWMUs are characterized, additional long term sampling requirements for those SWMUs will be requested. This could be an expensive task that provides minimal protection to the environment.

The actual sampling process should be fairly straight forward. Sampling protocol will be identical to past projects and can be accomplished by refinery personnel. The sampling process needs to be modified to using a drilling rig to take core samples in place of backhoe and hand auger. This change is due to the increased depths of samples, the sheer number of samples to be collected, analyzed and reported during 1994, and the requirement to use more appropriate soil boring logs. Using a drilling contractor will provide the necessary speed of sampling and the lithologic observations necessary to complete this project in a timely and efficient manner.

It is in the best interest of Giant that we develop the proper response to these new requirements. I recommend that we carefully analyze our options in this matter and schedule a meeting with the RCRA staff at EPA to discuss this issue.



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I Supplemental and RFI Phase II Reports - Giant  
Refining Co. - NMD000333211

Dear Mr. Stokes:

We hereby approve your Phase I Supplemental Report dated August 21, 1991 and the RFI Phase II Report dated October 21, 1991, with the enclosed modifications. The Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon (submitted November and December 1992, respectfully) are also approved, with the enclosed modifications.

The Annual Monitoring (see enclosure for SWMUs requiring monitoring) Report is due to EPA by December 31, 1994, and each year thereafter. The additional soil sampling results for the Sludge Pits and the Tank Farm are due to EPA by June 1, 1994. If you have any further questions pertaining to the above discussed items, please contact Nancy Morlock or Richard Mayer of my staff at (214) 655-6650.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division

Enclosure

cc: Kathleen Sisneros, NMED

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APPROVAL OF THE RFI PHASE I SUPPLEMENTARY REPORT, RFI PHASE II  
REPORT AND THE VOLUNTARY CORRECTIVE ACTION PLANS (CAP), WITH  
MODIFICATIONS, FOR GIANT REFINING COMPANY

Below are EPA's general comments and modifications pertaining to Giant's RFI Reports and the voluntary CAP for the Sludge Pits and the Railroad Rack Lagoon. Under general comments, there is a discussion describing the RFI status of each SWMU and the remaining RFI process/requirements for each SWMU. The modifications consist of SWMU specific monitoring or investigations required by EPA.

**General Comment:** EPA agrees with the finding of no further action for the following SWMUs: SWMU #1, the Aeration Basin; SWMU #2, the Evaporation Ponds; and, SWMU #13, the Drainage Ditch. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMUs will be required (see below under modifications).

On SWMU #6, the Tank Farm, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, 9 out of 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

On SWMU #9, the Sludge Pits, EPA disagrees with Giant on their recommendation of no further action. After reviewing the results, two samples at the 15' interval (the deepest interval sampled) contained semivolatiles. Therefore, EPA is requiring deeper sampling at specified points (see below under modifications).

EPA agrees with the finding of no further action for SWMU #6, the Railroad Rack Lagoon, Overflow Ditch and Fan Out Area. Even though EPA is not requiring further investigations/remediation (no further action determination), periodic monitoring of the above mentioned SWMU will be required. Giant has decided to perform voluntary corrective measures (bioremediation of the wastes) on the above mentioned SWMU and will perform periodic monitoring on the SWMU while bioremediation is occurring. Giant's voluntary bioremediation should reduce the volume and toxicity of the waste contained in the SWMUs while continuing periodic monitoring of the SWMUs (which satisfies EPA's monitoring requirements). Also, EPA included some additional monitoring requirements besides those included by Giant in the CAP (see below under modifications).

Also, EPA will require one administrative control for all SWMUs which EPA has tentatively approved a no further action determination. It is the following: A survey plat of each SWMU, according to the procedures required in 40 CFR 264.116. Once Giant has sent documentation to EPA verifying completion of the administrative control (for each SWMU), then Giant can submit a Class III permit modification to terminate the RFI/CMS process for a particular SWMU.



### Modifications

**SWMU #1, the Aeration Basin:** Giant shall take soil samples around the Aeration Basin every 2 years, with sampling beginning in calendar year 1994. Sampling requirements shall be identical to what was performed in the previous RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #6, the Tank Farm:** Giant shall take soil borings as close as possible to the following sample points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91): number's 21, 22, 23, 25, 26, 27, 30, and 31. Sampling intervals shall be at 16', except for #31, which shall be taken at 20'. Samples shall be analyzed for **BTEX** constituents. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

**SWMU #2, Evaporation Ponds:** Giant shall monitor the seven groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

WHICH WELLS

**SWMU #13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds:** Giant shall take soil samples around the Drainage Ditch every 2 years, with sampling beginning in calendar year 1994. Sampling procedures and constituents to be analyzed shall be identical to those required in the RFI, except, that all soil borings shall be angled and that an additional interval be sampled at the 6-6.5 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

**SWMU #8, Railroad Rack Lagoon:** Giant shall take 5 soil borings within the lagoon after it has stopped receiving wastes and it is practicable to sample. Three of the five borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Also, all six borings required under the CAP closure (Section 5.0) must be sampled at the 5-6', the 10-11' interval, and the 14-15'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

**Continuation of SWMU #6, the Overflow Ditch:** Giant shall take 3 soil borings in the Overflow Ditch after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those

required in the previous RFI. Soil borings shall be taken at the 3-4' interval and at the 6.5-7' interval. Results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU #6, the Fan Out Area: Giant shall take 4 soil borings in the Fan Out Area after closure (stop receiving liquid wastes) of the Railroad Rack Lagoon. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Soil samples shall be taken at the 3-4' interval and at the 6.5' to 7' interval. Results shall be included in the 1994 Annual Monitoring Report.

SWMU #12, Contact Waste Water Collection System (CWWCS): Giant shall perform an inspection of the CWWCS every five years (the next inspection will be in 1996) and shall be identical to the one performed in the RFI (if better technological equipment is developed, then Giant may request that an alternative method be used). Results shall be included in the appropriate Annual Monitoring Report.

~~SWMU #9~~ <sup>SWMU 10</sup>, Sludge Pits: Giant shall take soil borings as close as possible to sampling points (numbers are from previous RFI sampling points, done 5/6 & 5/7/91) 6 and 7. Sampling intervals shall be at 18-19' and 24-25'. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Note: If the intervals sampled are obviously contaminated, then deeper intervals should be sampled until vertical contamination is delineated. The results of this sampling event shall be due to EPA by June 1, 1994.

<sup>2</sup> <sup>west pit only</sup>  
Before final closure of the West pit under the CAP, all soil borings shall have samples taken at the 18-19' and 24-25' intervals. Sampling procedures and constituents to be analyzed shall be identical to those required in the previous RFI. Three soil borings shall also be taken (before closure) from the east pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Soil Boring Logs: EPA has included an example of a soil boring log which they would like Giant to use in all future borings.



S/MU 413

PHASE II, RFI 1991  
GIANT REFINING  
CINIZA

METALS

SAMPLE POINT NUMBER	01	01	02	02	03	03	04	04	04	02
SAMPLE POINT DEPTH	V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	V2.0	V3.5	V3.5	E2.0
PARAMETER	UNITS									
Antimony	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3	<0.05
Arsenic	ng/kg	<3	<3	<3	<3	<3	<3	<3	<3	<0.005
Barium	ng/kg	281	287	244	377	244	310	266	250	262
Beryllium	ng/kg	2.4	3.6	4.3	3.2	4.1	4.3	4.3	4.6	4.9
Cadmium	ng/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	ng/kg	4.5	5.2	6.0	5.1	5.2	5.3	7.1	6.4	6.5
Cobalt	ng/kg	4.4	5.5	5.1	5.0	5.0	5.1	5.9	5.3	5.2
Copper	ng/kg	4.6	4.1	4.4	5.4	5.3	4.9	5.5	4.9	5.1
Lead	ng/kg	10	10	12	10	11	12	10	9	11
Mercury	ng/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	ng/kg	8.5	8.9	9.0	9.2	10.9	8.9	11.3	9.6	9.1
Potassium	ng/kg	1080	1200	1720	1190	1680	1270	1830	2370	2190
Selenium	ng/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Vanadium	ng/kg	10.0	11.5	12.3	9.3	12.1	12.0	10.0	12.2	12.6
Zinc	ng/kg	9.7	12.4	14.3	13.0	14.6	12.6	15.1	15.3	14.1

PHASE II, RFI 1991  
GIANT REFINING  
CINIZA

SAMPLE POINT NUMBER  
SAMPLE POINT DEPTH

[illegible][illegible]

PHASE II, RFI 1991  
GIANT REFINING  
CINIZA

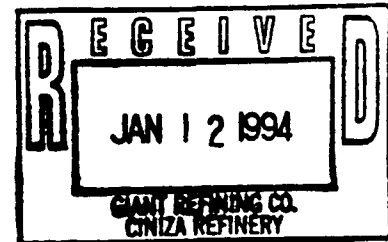
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JAN 07 1994



**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

Mr. John J. Stokes, Manager  
Giant Refining Company  
Route 3, Box 7  
Gallup, New Mexico 87301

RE: RFI Phase I and Phase II Supplemental Reports and  
Voluntary Corrective Action Plan  
Giant Refining Co.  
NMD000333211

Dear Mr. Stokes:

The Environmental Protection Agency (EPA) hereby approves your RCRA Facility Investigation (RFI) Phase I Supplemental Report, dated October 21, 1991, with the enclosed list of modifications. Your Corrective Action Plans (CAPs) for the Sludge Pits and the Railroad Rack Lagoon, submitted in November and December, 1992, respectfully, are also approved with the enclosed list of modifications.

The EPA is requiring that additional monitoring be completed at several sites. An annual report detailing the monitoring results shall be submitted to the EPA by December 31, 1994, and each year thereafter. The EPA is also requiring that additional soil sampling be completed at the Sludge Pits and the Tank Farm. Sampling results shall be submitted to the EPA by October 1, 1994. Further information concerning the additional monitoring and sampling requirements may be found in the attached list of modifications.

If you have any further questions or need additional information, please contact Nancy Morlock at (214) 655-6650 or Richard Mayer at (214) 655-7442.

Sincerely yours,

Allyn M. Davis, Director  
Hazardous Waste Management Division (6H)

Enclosure

cc: Kathleen Sisneros, NMED



**APPROVAL WITH MODIFICATIONS  
RFI PHASE I SUPPLEMENTARY REPORT  
RFI PHASE II REPORT AND THE  
VOLUNTARY CORRECTIVE ACTION PLANS**

The Environmental Protection Agency (EPA) has completed a technical review of Giant Refining's RCRA Facility Investigation (RFI) Phase I Supplementary Report; RFI Phase II Report; and voluntary Corrective Action Plan (CAP) for the Sludge Pits and Railroad Rack Lagoon. The subject reports are hereby approved with the following comments and modifications.

**GENERAL COMMENTS**

**SWMU 1, The Aeration Basin; SWMU 2, The Evaporation Pond; and SWMU 13, The Drainage Ditch**

The EPA agrees with the finding of no further action for Solid Waste Management Units (SWMUs) 1, 2 and 13. The EPA is, however, requiring periodic monitoring of these SWMUs (see below under Modifications). However, this approval is contingent upon the completion of a survey plat for these SWMUs. The survey plats shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit copies of the completed survey plats to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for these SWMUs.

**SWMU 6, The Tank Farm**

The EPA disagrees with Giant on their recommendation of no further action. Sampling results indicate that 9 of the 13 samples taken at the 11 foot interval (the deepest interval sampled) contained elevated levels of BTEX constituents. One sample at the 16 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

**SWMU 8, The Railroad Rack Lagoon, Overflow Ditch and Fan Out Area**

The EPA agrees with the finding of no further action for this SWMU. The EPA understands that Giant has elected to perform voluntary corrective measures at this unit which will include bioremediation of the wastes with periodic soil and waste monitoring. Giant's voluntary bioremediation should reduce the volume and toxicity of the wastes while continuing to periodically monitor the SWMU. The EPA will, however, require that additional monitoring be completed (see below under Modifications). The EPA is also requiring that a survey plat be completed for this SWMU. The survey plat shall be completed in accordance with the requirements set forth in 40 CFR 264.116. Giant shall submit a copy of the completed survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for this SWMU.



#### SWMU 9, The Sludge Pits

The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

### MODIFICATIONS

#### SWMU 1, The Aeration Basin

Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

#### SWMU 6, The Tank Farm

Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

#### SWMU 2, Evaporation Ponds

Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

#### SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds

Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

#### **SWMU 6, The Railroad Rack Lagoon**

Giant shall take 5 soil borings within the lagoon after it has ceased receiving wastes. Three (3) of the five (5) borings must be sampled at the 0-1 foot interval. All borings must be sampled at the 5-6 foot interval, the 10-11 foot interval, and the 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the 1994 Annual Monitoring Report.

Additionally, all six (6) borings required under the CAP closure (Section 5.0) must be sampled at the 5-6, 10-11, and 14-15 foot interval. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Sampling results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Railroad Rack Lagoon has been initiated.

#### **Continuation of SWMU 6, The Overflow Ditch**

Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

#### **Continuation of SWMU 6, The Fan Out Area**

Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

#### **SWMU #12, Contact Waste Water Collection System (CWWCS)**

Giant shall perform an inspection of the CWWCS every five years beginning in calendar year 1996. The inspection shall be identical to the one performed in the previous RFI. If better technological equipment is developed, Giant may request that an alternative method be used. Results shall be included in the appropriate Annual Monitoring Report.

#### **SWMU 9, The Sludge Pits**

Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 - 19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

RFI. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to the EPA by October 1, 1994.

Before final closure of the West Pit under the CAP, all soil borings shall be sampled at the 18.0 - 19.0 and 24.0 - 25.0 foot intervals. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Four (4) soil borings shall also be completed (before closure) in the East Pit using the same requirements specified for the West Pit borings. Results shall be included in the appropriate Annual Monitoring Report.

Monitoring requirements under the voluntary CAP shall be submitted to EPA in the appropriate quarterly progress report. Giant shall notify the EPA when final closure of the Sludge Pits has been initiated.

*Soil Boring Logs:* The EPA has included an example of a soil boring log to be used for all future borings.