GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

BRUCE
FYI

August 21, 1991

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

RECEIVED
AUG 29 1991
NM ENVIRONMENT DEPARTMENT
OFFICE OF THE SECRETARY

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

Claud Rosendale
Environmental Manager
Ciniza Refinery

SEP 4 1991

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

RCRA FACILITY INVESTIGATION
PHASE I - SUPPLEMENTAL
GIANT REFINING COMPANY
GALLUP, NEW MEXICO
AUGUST 21, 1991

PHASE I SUPPLEMENTAL RFI

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SECTION 1.0

INTRODUCTION

INTRODUCTION

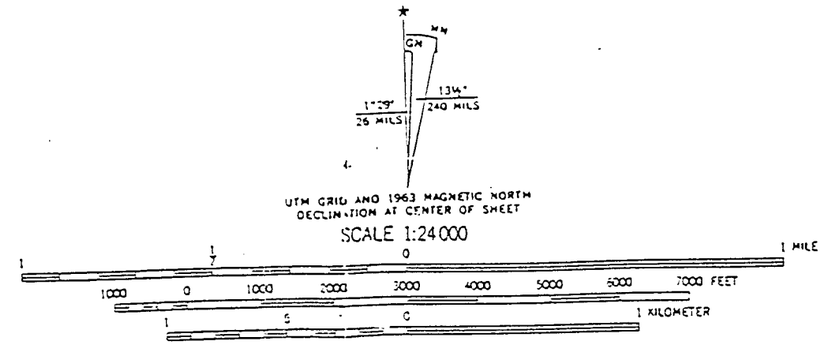
PHASE I SUPPLEMENTAL

This document outlines the specific activities that have been conducted for the Phase I Supplemental requirements for Giant Refining Company. All sampling, analytical and statistical calculations have been completed with the results incorporated in this report.

After review of the initial Phase I sampling data, it was determined that additional sampling would be conducted for SWMU's #6, #8, and #10. All samples were collected by using a backhoe to dig to the start of each sample interval. The hand auger was then used for the sample collection of each six (6) inch interval. All equipment was decontaminated between samples as required by the generic sampling plan. Thirteen additional samples were collected from SWMU #6 to various depths. Nine (9) samples were collected to a depth of eleven (11) to eleven and one half ($11\frac{1}{2}$) feet on May 6 and 7, 1991. After review of this data, three (3) additional samples were collected around Tank #569 on June 18, 1991. Samples were collected at eleven (11), fifteen (15), and sixteen (16) feet respectively for the three (3) borings. Two additional samples were collected from SWMU #8 on May 6 to a depth of seven (7) to seven and one half ($7\frac{1}{2}$) feet. Two additional samples were collected from SWMU #10 on May 8 and 9, 1991. Both samples were collected at the fifteen (15) foot interval. PID readings were taken at the eighteen (18) foot intervals from both borings. An additional boring was made with PID reading taken at both the fifteen (15) and eighteen (18) foot intervals.

All samples were sent to Analytical Technologies, Inc. (ATI) in Mesa, Arizona for final testing. Some of the samples were farmed out to other ATI laboratories to meet required completion dates. All samples were analyzed as required by the generic sampling plan. Section 6 has the analytical data in a tabulated summary form and Section 7 includes copies of all original analytical data.

The statistical analysis and results are included in Section 5. This section outlines the methodology used in determining the background values for the metals and the actual comparisons of the background values to the sample results.

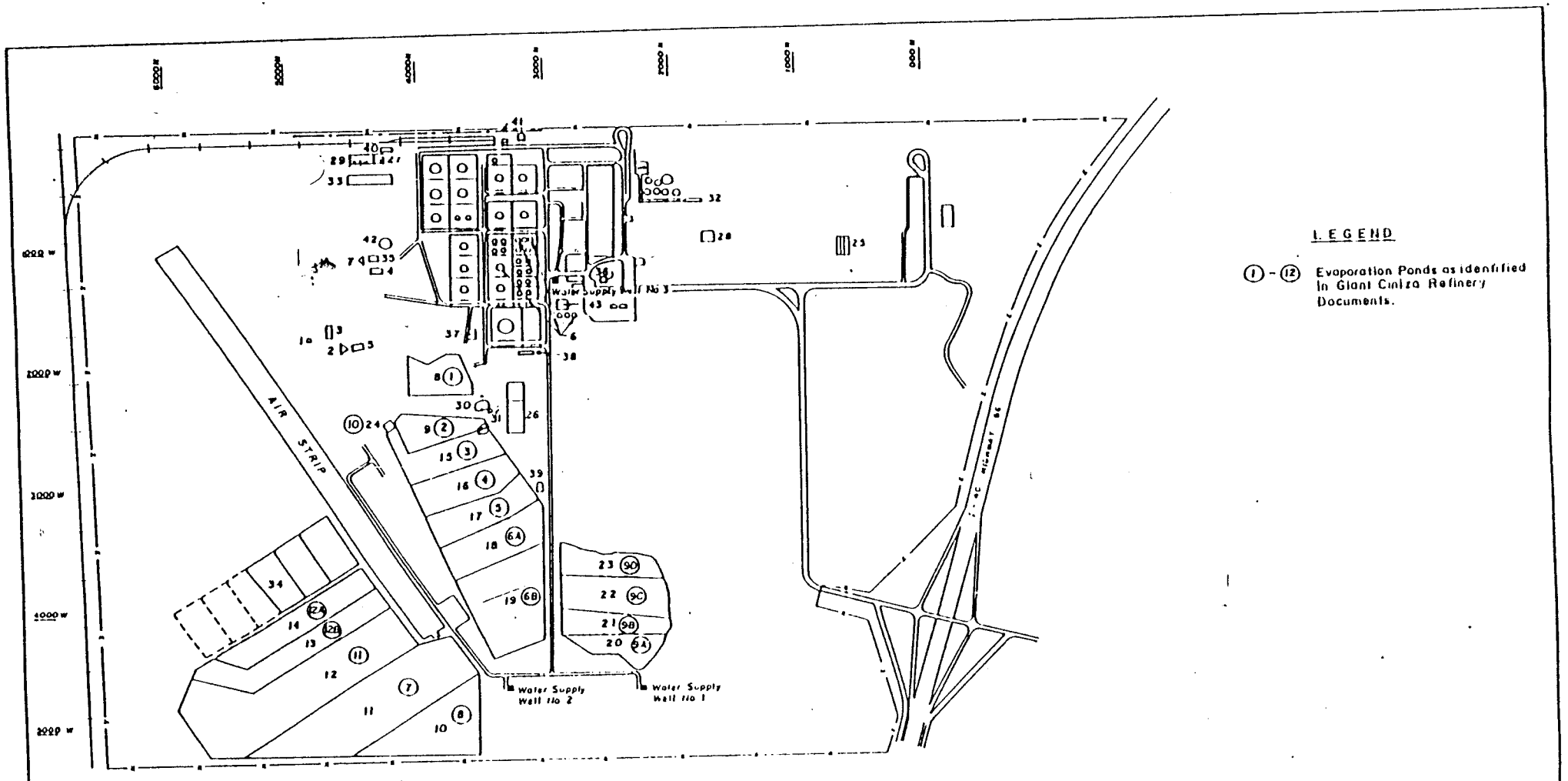


Geoscience Consultants, Ltd.

FIGURE 1-1

GENERAL LOCATION MAP, CINIZA REFINERY AREA

CLIENT:	GIANT
DATE:	OCTOBER, 1985
DRAWN BY:	JCH
CHECKED BY:	
REVISED:	
SCALE:	1:24,000



1. Landfill
2. Landfill
3. Landfill
4. Landfill
5. Landfill
6. Tank Farm
7. Burn Pit
8. Aeration Basin
9. Evaporation Pond
10. Evaporation Pond
11. Evaporation Pond
12. Evaporation Pond
13. Evaporation Pond
14. Evaporation Pond
15. Evaporation Pond
16. Evaporation Pond
17. Evaporation Pond
18. Evaporation Pond
19. Evaporation Pond
20. Evaporation Pond
21. Evaporation Pond
22. Evaporation Pond
23. Evaporation Pond
24. Drainage Ditch
25. Sewage Lagoon
26. Sewage Lagoon
27. Sewage Lagoon
28. Sewage Lagoon
29. Railroad Rack Lagoon
30. Sludge Pit
31. Sludge Pit
32. Asphalt Pit
33. Inactive Land Treatment
34. Active Land Treatment
35. Inactive Container Storage
36. Active Container Storage
37. API Separator
38. Neutralization Tank
39. Secondary Oil Skimmer
40. Underground Storage Tanks
41. Drainage From Process Area
42. Fire Training Area
43. Empty Container Storage

Applied Earth Sciences	NAME	GIANT REFINERY Gallup, New Mexico	SITE MAP	FIGURE
FILE No 5202 — MADE BY: R.G. DATE: 5-15-89 — CHECKED BY: DATE:				1

SAMPLE NUMBERING SYSTEM

A unique system was developed for numbering all samples collected during the RCRA Facility Investigation. This numbering system when compared with maps of boring locations assures the ability to pinpoint the exact location of each sample. A description of this sample numbering process is as follows:

Note #	1	2	3	4	5
Sample #	RFI	01	04	V	9.0

Note #1 = Sampling event title
Note #2 = SWMU number
Note #3 = Specific boring number in each SWMU
Note #4 = Type sample
V = Vertical
A = Angle
D = Duplicate
E = Equipment rinse
Note #5 = Beginning depth of sample interval

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 be 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.

Claud Rosendale, Environmental Manager Date

Section 2.0

Quarterly Progress Reports

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

February 12, 1991

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

RE: RFI Quarterly Progress Report and Phase II Sampling Schedule
Giant Refining Company
Permit No. NMD000333211

Dear Mr. Mayer:

The draft report for the Phase I RFI sampling at the Ciniza Refinery was submitted to your office on November 27,1990. Since that time there has not been any implementation of additional phases of the RFI. However, Giant has received proposals and approved a contractor for the analytical work required on Phase II of the project. Giant has awarded the analytical contract to Analytical Technologies, Inc. (ATI) of Tempe, Arizona. ATI has laboratories in San Diego, Ca., Renton,Wa., Pensacola, Fl., Fort Collins, Co. and Tempe, Az.. They also have an extensive list of laboratory certification including EPA's CLP program (see attached).

Giant Refining Company is submitting the following sampling schedule for Phase II of the RFI for your review and approval:

SWMU #2 - Groundwater

May 6, 1991: pump MW-4, OW-1, OW-5 and OW-7.
May 7, 1991: sample MW-4, OW-1, OW-5 and OW-7, pump OW-9 and OW-10 (split samples with the New Mexico Oil Conservation Division [OCD]).
May 8, 1991: sample OW-9 and OW-10 and other wells as required by OCD.
May 9-10,1991: Reserved for OCD audit for groundwater discharge plan renewal.

The groundwater samples will be sent to ATI and analyzed for pH, skinner list constituents and background metals.

SWMU #13 - Soil

May 13, 1991: Samples will be collected at two (2) intervals from four (4) vertical borings. The samples will be sent to ATI and analyzed for skinner list constituents and background metals.

SWMU #2 - Soil

May 14-17,1991: Samples will be collected at three (3) intervals from twelve (12) vertical borings and six (6) angle borings. The samples will be sent to ATI and analyzed for pH, skinner list constituents, and background metals.

SWMU #1 - Soil

May 20-22,1991: Samples will be collected at four (4) intervals from four (4) vertical borings and two (2) angle borings. The samples will be sent to ATI and analyzed for EPA 8240 and 8270 priority pollutants and background metals.

Sampling days and specified locations may vary depending on weather, required sampling times, etc.. However, attempts will be made to stay as close to the proposed schedule as possible. Samples must be collected by 2:30 p.m. each day to allow for Federal Express shipment.

Approval of this schedule will allow compliance with the draft report in October and the final report in December.

The attached RFI Workplan approval letter from your office indicates seven (7) groundwater samples will be collected. SWMU #2 of the workplan only list six (6) wells; MW-4, OW-1, OW-5, OW-7, OW-9 and OW-10. Please verify the sampling requirements for six (6) or seven (7) wells. If seven (7) are required, please indicate the seventh well number.

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

Sincerely,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

cc w/o attachments: Elizabeth Gordon - New Mexico Environmental Improvement Division
David Boyer - New Mexico Oil Conservation Division

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 be 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.

Name: Claud Rosendale/Claud Rosendale Date: 2-12-91

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

June 20, 1991

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:

Giant Refining Company 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.

All soil and ground water samples required by Phase II of the RFI have been collected and sent to the laboratory for analysis. This included Solid Waste Management Units #1, #2 and #13.

The Phase I supplemental sampling requested by your March 19, 1991 memo and outlined in the Phase I Final Report has also been completed. The initial results were reviewed and as a result of elevated volatile concentrations, Giant collected additional samples around Tank 569.

The reports for the supplemental sampling of Phase I and Phase II draft report will be submitted as scheduled.

"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,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

cc: John Stokes - Refinery Manager, Giant Refining Company
Kim Bullerdick - General Counsel
Giant Industries Arizona, Inc.

A Division of Giant Industries, Inc.

Section 3.0

Project Notifications

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

March 25, 1991

Barbara Garrett
Legal Department
Gallup Independent
P.O. Box 1210
Gallup, New Mexico 87305

RE: PUBLIC NOTICE

Dear Ms. Garrett:

Please print the enclosed public notice in the Gallup Independent at the earliest possible date. The purchase order number is 01784.

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

Sincerely,

Claud Rosendale
Environmental Manager
Ciniza Refinery

Enclosures

CCR/sp

A Division of Giant Industries, Inc.

PUBLIC NOTICE FOR GIANT REFINING COMPANY'S
RCRA FACILITY INVESTIGATION

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

LOCATION: I-40 Exit 39
Jamestown, New Mexico 87347
Sections 28 and 33
Township 15 North
Range 15 West
New Mexico Prime Meridian

The RCRA Facility Investigation consist of collecting soil and water samples from various locations around the facility and analyzing them for specific parameters to determine if contamination exists. This investigation has been divided into three phases. The EPA approved workplan for the investigation and the report submitted to the EPA for Phase I of the investigation is available for public review at the Gallup Public Library, 115 West Hill, Gallup, New Mexico. Phase II of the RFI Workplan will begin on April 29, 1991. All comments should be addressed to:

Ciniza Refinery
Attn: Claud Rosendale
Route 3 Box 7
Gallup, New Mexico 87301

Affidavit of Publication

STATE OF NEW MEXICO,
) ss
COUNTY OF McKINLEY

Barbara Garrett being duly sworn upon oath, deposes and says:

As Legal Clerk of the Gallup Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico, and in the City of Gallup, therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for One (1) Time, the first publication being on the 28th day of March, 19 91 the second publication being on the _____ day of _____, 19 _____ the third publication on the _____ day of _____, 19 _____

and the last publication being on the _____ day of _____, 19 _____

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

Barbara Garrett
Affiant.

Sworn and subscribed to before me this 1st day of April, A.D., 19 91

Linda Kay Delano
Notary Public.

My commission expires
8-29-93

LEGAL NOTICE
JAMESTOWN, MCKINLEY COUNTY, NEW MEXICO

PUBLIC NOTICE FOR GIANT REFINING COMPANY'S RCRA FACILITY INVESTIGATION

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

LOCATION:
I-40 Exit 39
Jamestown, New Mexico 87347
Sections 28 and 33
Township 15 North
Range 15 West
New Mexico Prime Meridian

The RCRA Facility Investigation consist of collecting soil and water samples from various locations around the facility and analyzing them for specific parameters to determine if contamination exists. This investigation has been divided into three phases. The EPA approved workplan for the investigation and the report submitted to the EPA for Phase I of the investigation is available for public review at the Gallup Public Library, 115 West Hill, Gallup, New Mexico. Phase II of the RFI Workplan will begin on April 20, 1991. All comments should be addressed to:

Ciniza Refinery
Attn: Claud Rosendale
Route 3 Box 7
Gallup, New Mexico 87301

Legal #6711 published in the Independent March 28, 1991.

Section 4.0

Sample Collection Data

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

April 17, 1991

Elizabeth Proffitt
Analytical Technologies, Inc.
9830 South 51st Street
Suite B-113
Phoenix, Arizona 85044

RE: Sample Bottle Request

Dear Ms. Proffitt:

Giant Refining Company's, Ciniza Refinery, will begin the 1991 RCRA Facility Investigation sampling on April 29, 1991. There have been some slight modifications and additions to the original analytical requests. Please review the following requests and attachments and have the sample bottles delivered to the Ciniza Refinery on the dates requested for each phase.

PHASE II Groundwater Sampling - SWMU #2

A. 12-5-1990 Request Section II.C
Please send sample bottles for water samples to include:

1. 7 wells (MW-4, OW-1, OW-2, OW-5, OW-7, OW-9 and OW-10)
2. 1 duplicate well sample
3. 2 equipment blanks
4. 2 trip blanks

Each of these samples should be analyzed for:
1. pH
2. Skinner List (See Table 4)
3. Background Metals (See Table 1)

B. Oil Conservation Division Sampling
Send sample bottles for water samples (possibly contaminated with hydrocarbons) for:

1. 3 wells (OW-16, OW-25 and OW-26)
2. 1 trip blank

Each of these samples should be analyzed for:
1. General Inorganics (See Table 5)
2. Dissolved Metals (See Table 6)
3. Aromatic Volatile Organics (See Table 7)
4. Halogenated Volatile Organics (See Table 8)
5. Appendix IX Semivolatiles Organics (See Table 9)

A Division of Giant Industries, Inc.

Deliver the sample bottles for items A and B, to the Ciniza Refinery with an April 25, 1991 arrival date.

C. Phase I Supplemental Sampling

1. SWMU #6
   Send sample bottles for soils to include:

   a) 10 soils
   b) 1 duplicate (soil)
   c) 1 equipment blank (liquid)
   d) 2 trip blank (liquid)

   Each of these samples should be analyzed for:
   a) 8 samples to be analyzed for BTEX (Method 8020)
   b) 1 sample to be analyzed for BTEX (Method 8020) and Lead (Method 6010)
   c) 1 sample to be analyzed for BTEX (Method 8020), Lead and Nickel (Method 6010)

2. SWMU #8
   Send sample bottles for soils to include:

   a) 2 soils
   b) 1 duplicate (soil)
   c) ~~1 trip blank (liquid)~~

   Each of these samples should be analyzed for:
   a) Priority Pollutants - Method 8270 (See Table 4)

3. SWMU #10
   Send sample bottles for soils to include:

   a) 3 soils
   b) 1 duplicate (soil)
   c) 1 equipment blank (liquid)
   d) 1 trip blank (liquid)

   Each of these samples should be analyzed for:
   a) Priority Pollutants - Method 8240 (See Table 2)
   b) Priority Pollutants - Method 8270 (See Table 3)
   c) Metals - Chromium, Copper, Lead, Zinc - Method 6010

   Assure that all sample bottles for item C are delivered to Ciniza no later than May 2, 1991.

D. Phase II RFI Soil Samples

1. SWMU #2
   Send sample bottles for soil samples to include:

   a) 54 soils

b) 3 duplicates (soils)
c) 2 equipment blanks (liquids)
d) 3 trip blanks (liquids)

Each of these samples should be analyzed for:
a) pH
b) Skinner List (See Table 4)
c) Background Metals (See Table 1)

2. SWMU #13
Send sample bottles for soil samples to include:

a) 8 soils
b) 1 duplicate (soil)
c) 1 equipment blank (liquid)
d) 1 trip blank (liquid)

Each of these samples should be analyzed for:
a) Skinner List (See Table 4)

3. SWMU #1
Send sample bottles for soil samples to include:

a) 24 soils
b) 2 duplicates (soils)
c) 2 equipment blanks (liquids)
d) 3 trip blanks (liquids)

Each of the samples should be analyzed for:
a) Priority Pollutants - Method 8240 (See Table 2)
b) Priority Pollutants - Method 8270 (See Table 3)
c) Background Metals (See Table 1)

Assure that all sample bottles for item D are delivered to Ciniza no later than May 8, 1991.

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

Sincerely,

Claud Rosendale

Claud Rosendale
Environmental Manager
Ciniza Refinery

enclosures

TABLE -1
BACKGROUND METALS

Total Metals

Parameter	Analytical Method	Reporting Limit mg/kg
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
Potassium	6010	500
Selenium	7740	0.5
Vanadium	6010	1.0
Zinc	6010	2.0

TABLE-2
PRIORITY POLLUTANT VOLATILES

Method 8240

Parameter	Reporting Limits ug/kg
Acetone	5,000
Acrolein	10,000
Acrylonitrile	10,000
Benzene	500
Bromodichloromethane	500
Bromoform	500
Bromomethane(methyl bromide)	1,000
Carbon disulfide	500
Carbon tetrachloride	500
Chlorobenzene	500
Chlorodibromoethane	500
Chloroethane	1,000
2-Chloroethylvinyl ether	1,000
Chloroform	500
Chloromethane	1,000
Dibromomethane	500
1,4 - Dichloro-2-butane	-
trans-1,4-Dichloro-2-butene	500
Dichlorodifluoromethane	2,000
1,1-Dichloroethane	500
1,2-Dichloroethane	500
1,1-Dichloroethylene	500
trans-1,2-Dichloroethylene	500
1,2-Dichloropropane	500
cis-1,3-Dichloropropene	500
trans-1,3-Dichloropropene	500
Ethanol	10,000
Ethyl benzene	500
Ethyl methacrylate	1,000
2-Hexanone	1,000
Iodomethane	500
Methylene Chloride	500
Methyl ethyl ketone (2-Butanone)	1,000
Methyl isobutyl ketone (4-methyl-2-pentanone)	1,000
Styrene	500
1,1,2,2,-Tetrachloroethane	500
Tetrachloroethylene	500
Toluene	500
1,1,1-Trichloroethane	500
1,1,2-Trichloroethane	500
Trichloroethylene	500
Trichlorofluoromethane	500
1,2,3-Trichloropropane	500
Vinyl acetate	1,000
Vinyl chloride	1,000
Xylenes	500

TABLE-3
PRIORITY POLLUTANT SEMIVOLATILES

Method 8270

Parameter	Reporting Limits ug/kg
Acenaphthene	5,000
Acenaphthylene	5,000
Acetophenone	5,000
4-Aminobiphenyl	-
Aniline	5,000
Anthracene	5,000
Benzidine	50,000
Benzoic Acid	5,000
Benzo(a)anthracene	5,000
Benzo(b)fluoranthene	5,000
Benzo(k)fluoranthene	5,000
Benzo(g,h,i)perylene	5,000
Benzo(a)pyrene	5,000
Benzyl alcohol	5,000
Bis(2-chloroethoxy)methane	5,000
Bis(2-chloroethyl)ether	5,000
Bis(2-chloroisopropyl)ether [bis(2-chloro-1 methylethyl)ether]	5,000
Bis(2-ethylhexyl)phthalate	5,000
4-Bromophenyl phenyl ether	5,000
Butyl benzyl phthalate	5,000
4-Chloroaniline	5,000
4-Chloro-3-methylphenol	5,000
1-Chloronaphthane	5,000
2-Chloronaphthane	5,000
2-Chlorophenol	5,000
4-Chlorophenyl phenyl ether	5,000
Chrysene	5,000
Dibenzo(a,j)acridine	-
Dibenzo(a,h) anthracene	5,000
Dibenzo furans(tetrachloro, pentachloro, hexachloro)	-
Di-n-butylphthalate	5,000
1,2-Dichlorobenzene	5,000
1,3-Dichlorobenzene	5,000
1,4-Dichlorobenzene	5,000
3,3-Dichlorobenzidine	10,000
2,4-Dichlorophenol	5,000
2,6-Dichlorophenol	5,000
Diethyl phthalate	5,000
p(Dimethylamino)azobenzene	5,000
7,12-Dimethylbenz(a)anthracene	5,000
aa-Demethylphenethylamine	5,000
2,4-Dimethylphenol	5,000
Dimethyl phthalate	5,000
4,6-Dinitro-2-methylphenol	25,000
2,4-Dinitrophenol	25,000
2,4-Dinitrotoluene	5,000

TABLE-3 Continued

2,6-Dintrotoluene	5,000
Di-n-octyl phthalate	5,000
Diphenylamine	5,000
1,2-Diphenylhydrazine	5,000
Ethyl methanesulfonate	5,000
Fluoranthene	5,000
Flourene	5,000
Hexachlorobenzene	5,000
Hexachloro-13-butadiene	5,000
Hexachlorocyclopentadiene	5,000
Hexachloroethane	5,000
Indeno(1,2,3-cd)pyrene	5,000
Isophorene	5,000
3-Methylcholanthrene	5,000
Methyl methanesulfonate	5,000
2-Methylnaphthalene	5,000
2-Methylphenol	5,000
3-Methylphenol	5,000
4-Methylphenol	5,000
Naphthalene	5,000
1-Naphthylamine	5,000
2-Naphthylamine	5,000
2-Nitroaniline	25,000
3-Nitroaniline	25,000
4-Nitroaniline	25,000
Nitrobenzene	5,000
2-Nitrophenol	5,000
4-Nitrophenol	25,000
N-Nitrosodimethylamine	5,000
N-Nitroso-di-n-butylamine	5,000
N-Nitroso-di-n-propylamine	5,000
N-Nitrosopiperidine	5,000
N-Nitrosodiphenylamine	5,000
Pentachlorobenzene	5,000
Pentachloronitrobenzene	25,000
Pentachlorophenol	25,000
Phenacetin	5,000
Phenanthrene	5,000
Phenol	5,000
2-Picoline	5,000
Pronamide	5,000
Pyrene	5,000
1,2,4,5-Tetrachlorobenzene	5,000
2,3,4,6-Tetrachlorophenol	25,000
1,2,4-Trichlorobenzene	5,000
2,4,5-Trichlorophenol	25,000
2,4,6-Trichlorophenol	5,000

TABLE-4
SKINNER LIST

METHOD 8240

Parameter	Reporting Limit (ug/kg)
Benzene	500
Carbon disulfide	500
Chlorobenzene	500
2-Chloroethylvinyl ether	1,000
1,2-Dibromomethane	1,000
1,2-Dichloroethane	500
1,4-Dioxane	50,000
Ethyl Benzene	500
Methyl ethyl ketone (2-butanone)	1,000
Styrene	500
Toluene	500
Xylenes	500

METHOD 8270

Anthracene	5,000
Benzenethiol	-
Benzo(a)anthracene	5,000
Benzo(b)fluoranthene	5,000
Benzo(k)fluoranthene	5,000
Benzo(a)pyrene	5,000
Bis(2-ethylhexyl)phthalate	5,000
Butyl benzyl phthalate	5,000
Chrysene	5,000
Dibenzo(a,X)acridine	-
Dibenzo(a,h)anthracene	5,000
Di-n-butylphthalate	5,000
1,2-Dichlorobenzene	5,000
1,3-Dichlorobenzene	5,000
1,4-Dichlorobenzene	5,000
Diethyl phthalate	5,000
7,12-Dimethylbenz(a)anthrancene	5,000
2,4-Dimethylphenol	5,000
Dimethyl phthalate	5,000
2,4-Dinitrophenol	25,000
Di-n-octyl phthalate	5,000
Fluoranthene	5,000
Indene	5,000
Methylchrysene	-
1-Methylnaphthalene	5,000
2-Methylphenol	5,000
3-Methylphenol	5,000
4-Methylphenol	5,000
Naphthalene	5,000
4-Nitrophenol	25,000
Phenanthrene	5,000

TABLE-4 Continued

Phenol	5,000
Pyrene	5,000
Pyridine	10,000
Quinoline	25,000

Table 5

GIANT REFINING GALLUP, NEW MEXICO

General Inorganics

Parameter	Units	Reporting Limit
Alkalinity, Total as CaCO3 at pH 4.5	mg/L	5.0
Alkalinity, Bicarb. as CaCO3 at pH 4.5	mg/L	5.0
Alkalinity, Carb. as CaCO3at pH 8.3	mg/L	5.0
Alkalinity, Hydrox. as CaCO3	mg/L	5.0
Chloride	mg/L	3.0
pH	units	--
Phenolics	mg/L	0.010
Sulfate	mg/L	5.0
Specific Conductance at 25 deg.C	umhos/c	1.0
Total Dissolved Solids	mg/L	10.0

Table 6

GIANT REFINING GALLUP, NEW MEXICO

METALS
DISSOLVED METALS

Parameter	Units	Reporting Limit
Arsenic	mg/L	0.0050
Barium	mg/L	0.010
Cadmium	mg/L	0.0050
Calcium	mg/L	0.20 (?)
Chromium	mg/L	0.010
Lead	mg/L	0.010
Manganese	mg/L	0.010
Selenium	mg/L	0.0050
Silver	mg/L	0.010
Sodium	mg/L	5.0

Table 7

GIANT REFINING GALLUP, NEW MEXICO

AROMATIC VOLATILE ORGANICS

Parameter	Units	Reporting Limit
Benzene	ug/L	0.50
Toluene	ug/L	0.50
Chlorobenzene	ug/L	0.50
Ethyl benzene	ug/L	0.50
Total xylenes	ug/L	1.0
1,3-Dichlorobenzene	ug/L	0.50
1,4-Dichlorobenzene	ug/L	0.50
1,2-Dichlorobenzene	ug/L	0.50

Table 8

GIANT REFINING GALLUP, NEW MEXICO

Halogenated Volatile Organics

Parameter	Units	Reporting Limit
Chloromethane	ug/L	5.0
Bromomethane	ug/L	5.0
Vinyl chloride	ug/L	1.0
Chloroethane	ug/L	5.0
Methylene chloride	ug/L	5.0
1,1-Dichloroethene	ug/L	0.50
1,1-Dichloroethane	ug/L	0.50
1,2-Dichloroethane	ug/L	1.0
trans-1,2-Dichloroethene	ug/L	0.50
Chloroform	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	0.50
1,1,1-Trichloroethane	ug/L	0.50
Carbon tetrachloride	ug/L	1.0
Bromodichloromethane	ug/L	1.0
1,2-Dichloropropane	ug/L	5.0
Bromoform	ug/L	1.0
1,1,2,2-Tetrachloroethane	ug/L	0.50
Tetrachloroethene	ug/L	2.0
Chlorobenzene		

Table 9

GIANT REFINING GALLUP, NEW MEXICO

APPENDIX IX SEMIVOLATILE ORGANICS

Parameter	nits	Reporting Limit
Acenaphthene	ug/L	10
Acenaphthylene	ug/L	10
Acetophenone	ug/L	10
2-Acetylaminofluorene	ug/L	10
4-Aminobiphenyl	ug/L	10
Aniline	ug/L	10
Anthracene	ug/L	10
Aramite	ug/L	10
Benzo(a)anthracene	ug/L	10
Benzo(b)fluoranthene	ug/L	10
Benzo(k)flouranthene	ug/L	10
Benzo(g,h,i)perylene	ug/L	10
Benzo(a)pyrene	ug/L	10
Benzyl alcohol	ug/L	10
bis(2-Chloroethoxy)-methane	ug/L	10
bis(2-Chloroethyl)ether	ug/L	10
bis(2-Chloroisopropyl) ether	ug/L	10
bis(2-Ethylhexyl) phthalate	ug/L	10
4-Bromophenyl phenyl ether	ug/L	10
Butyl benzyl phthalate	ug/L	10
2sec-Butyl-4,6-dinitro-phenol (Dinoseb)	ug/L	10
4-Chloroaniline	ug/L	10
4-Chloro-3-methylphenol	ug/L	10
2-Chloronaphthalene	ug/L	10
2-Chlorophenol	ug/L	10
4-Chlorophenyl phenyl ether	ug/L	10
o-Cresol	ug/L	10
m & p-Cresol(s)	ug/L	10
Chrysene	ug/L	10
Dibenz(a,h)anthracene	ug/L	10
Dibenzofuran	ug/L	10
Di-n-butyl phthalate	ug/L	10
1,2-Dichlorobenzene	ug/L	10
1,3-Dichlorobenzene	ug/L	10
1,4-Dichlorobenzene	ug/L	10

Table 9 cont.

GIANT REFINING GALLUP, NEW MEXICO

APPENDIX IX SEMIVOLATILE ORGANICS

Parameter	Units	Reporting Limit
3,3'-Dichlorobenzidine	ug/L	20
2,4-Dichlorophenol	ug/L	10
2,6-Dichlorophenol	ug/L	10
Diethyl phthalate	ug/L	10
Dimethoate	ug/L	10
p-Dimethylaminoazobenzene	ug/L	10
7,12-Dimethylbenz-anthracene	ug/L	10
3,3'-Dimethylbenzidine	ug/L	10
a,a-Dimethylphen-ethylamine	ug/L	10
2,4-Dimethylphenol	ug/L	10
Dimethyl phthalate	ug/L	10
1,3-Dinitrobenzene	ug/L	10
4,6-Dinitro-2-methylphenol	ug/L	10
4,6-Dinitro-o-cresol	ug/L	50
2,4-Dinitrophenol	ug/L	50
2,4-Dinitrotoluene	ug/L	10
2,6-Dinitrotoluene	ug/L	10
Di-n-octyl phthalate	ug/L	10
Diphenylamine	ug/L	10
Disulfoton	ug/L	50
bis(2-Ethylhexyl) phthalate	ug/L	10
Ethyl methanesulfonate	ug/L	10
Famphur	ug/L	--
Flouranthene	ug/L	10
Flourene	ug/L	10
Hexachlorobenzene	ug/L	10
Hexachlorobutadiene	ug/L	10
Hexachlororcyclopentadiene	ug/L	10
Hexachloroethane	ug/L	--
Hexachlorophene	ug/L	10
Hexachloropropene	ug/L	10
Indeno(1,2,3-c,d)pyrene	ug/L	10
Isophorone	ug/L	20
Isosafrole	ug/L	10
Methapyrilene	ug/L	10
3-Methylcholanthrene	ug/L	10
Methyl methanesulfonate	ug/L	10
2-Methylnaphthalen	ug/L	50
Methyl parathion	ug/L	10
2-Methylphenol	ug/L	10
3/4-Methylphenol	ug/L	10
Methyl methacrylate	ug/L	10
Napthalene	ug/L	10

Table 9 Cont.

GIANT REFINING GALLUP, NEW MEXICO

APPENDIX IX SEMIVOLATILE ORGANICS

Parameter	Units	Reporting Limit
1,4-Naphthaquinone	ug/L	10
1-Naphthylamine	ug/L	10
2-Naphthylamine	ug/L	10
2-Nitroaniline	ug/L	50
3-Nitroaniline	ug/L	50
4-Nitroaniline	ug/L	50
Nitrobenzene	ug/L	10
2-Nitrophenol	ug/L	10
4-Nitrophenol	ug/L	50
4-Nitroquinoline-1-oxide	ug/L	--
N-Nitroso-di-n-butylamine	ug/L	10
N-Nitrosodiethylamine	ug/L	10
N-Nitrosodimethylamine	ug/L	10
N-Nitrosodiphenylamine	ug/L	10
N-Nitroso-di-n-propylamine	ug/L	10
N-Nitrosomethylethylamine	ug/L	10
N-Nitrosomorpholine	ug/L	10
N-Nitrosopiperidine	ug/L	10
5-Nitro-o-toluidine	ug/L	10
N-Nitrosopyrrolidine	ug/L	10
Parathion	ug/L	50
Pentachlorobenzene	ug/L	10
Pentachlorethane	ug/L	10
Pentachloronitrobenzene	ug/L	50
Pentachlorophenol	ug/L	50
Phenacetin	ug/L	10
Phenanthrene	ug/L	10
Phenol	ug/L	10
4-Phenylenediamine	ug/L	--
Phorate	ug/L	100
2-Picoline	ug/L	10
Pronamide	ug/L	10
Pyrene	ug/L	10
Pyridine	ug/L	20
Safrole	ug/L	10
Sulfotepp	ug/L	50
1,2,4,5-Tetrachlorobenzene	ug/L	10
2,3,4,6-Tetrachlorophenol	ug/L	50
Thionazin	ug/L	50

Table 9 Cont.

GIANT REFINING GALLUP, NEW MEXICO

APPENDIX IX SEMIVOLATILE ORGANICS

Parameter	Units	Reporting Limit
sym-Trinitrobenzene	ug/L	10
2-Toluidine	ug/L	10
1,2,4-Trichlorobenzene	ug/L	10
2,4,5-Trichlorophenol	ug/L	50
0,0,0-Triethylphosphorothioate	ug/L	10
2,4,6-Trichlorophenol	ug/L	10
1,3,5-Trinitrobenzene	ug/L	10
Ethyl methacrylate	ug/L	10

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

July 9, 1990

Rich Mayer
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Status Report for Giant Refinery RFI

Dear Mr. Mayer:

The RCRA Facility Investigation Phase I sampling for Giant Refining Company's Ciniza Refinery was completed on July 5, 1990. All soil samples for SWMU's #6, #8, #9, and #10 have been collected and received at the contract laboratory. The only liquid required for this phase of the sampling was from the railroad rack lagoon if drainage was occurring. However, no drainage was occurring, therefore no sample was collected at this time. A sample may be collected from the lagoon at a later date to assure possible transfer of this liquid to the facility API Separator.

All sample points and corresponding sample numbers are specified on the attachments. A description of the sample numbering process is as follows:

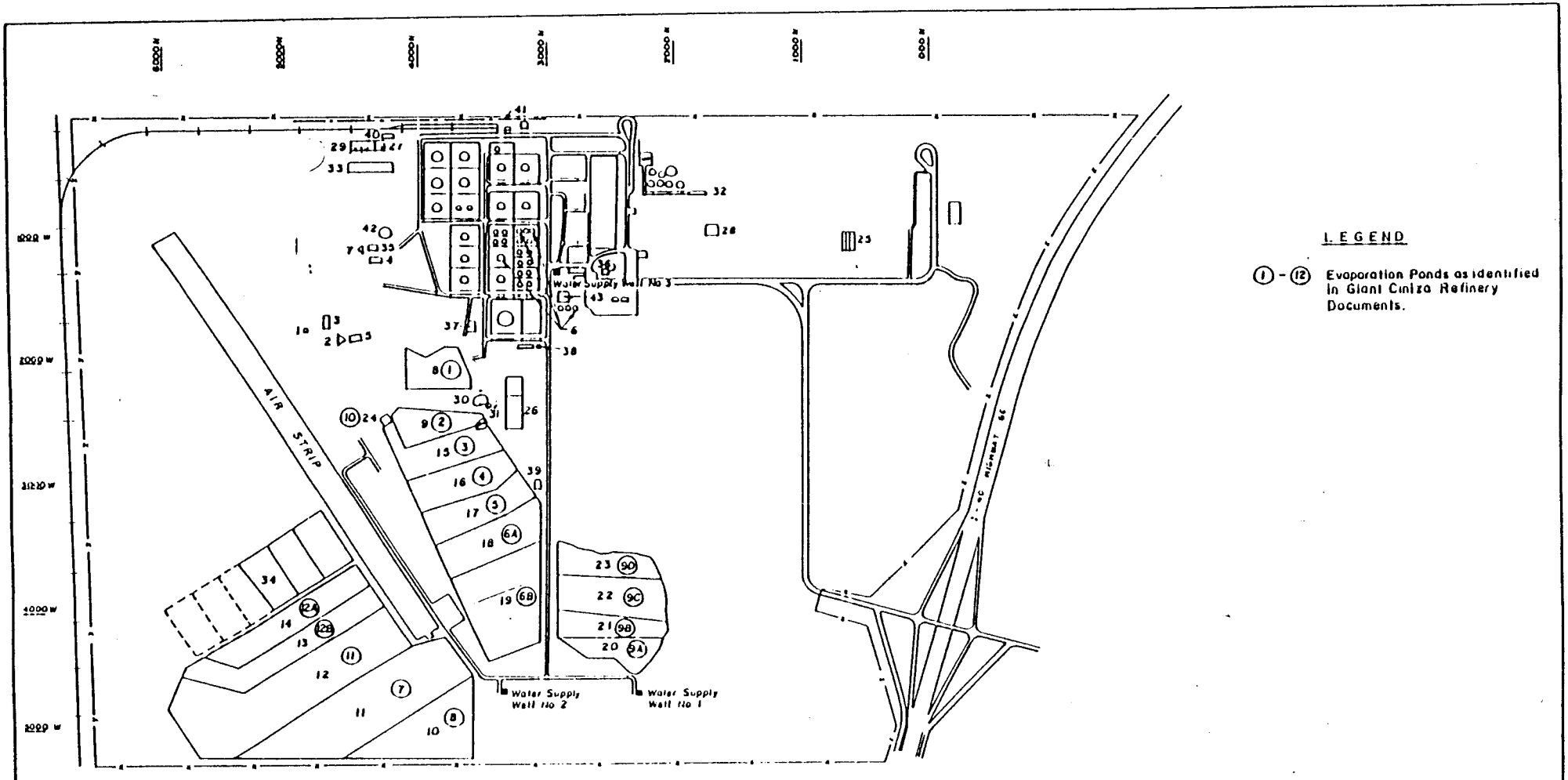
1	2	3	4	5
RFI	08	06	V	0.0

#1 = Sampling event
#2 = SWMU number
#3 = Specific sample hole number in each SWMU
#4 = Type sample
  V = Vertical
  A = Angle
  D = Duplicate
  E = Equipment rinse
#5 = Beginning depth of sample interval

The draft report will follow as required by the approved schedule.

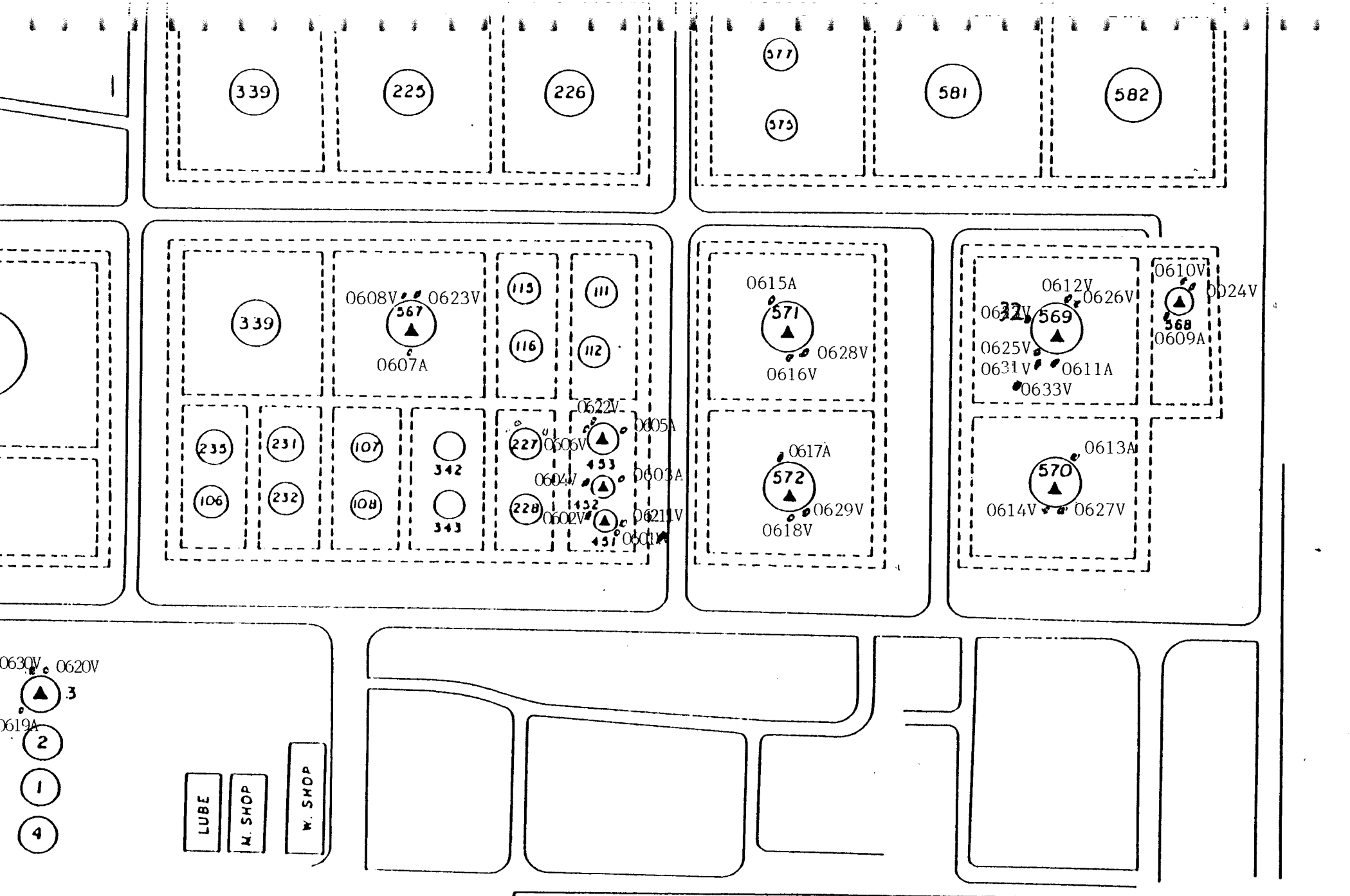
Claud Rosendale
Environmental Manager
Ciniza Refinery

cc: w/attachments:
John Stokes - Refinery Manager; Giant Refining Co.
Kim Bullerdick- Corporate Counsel; Giant Ind. Inc.

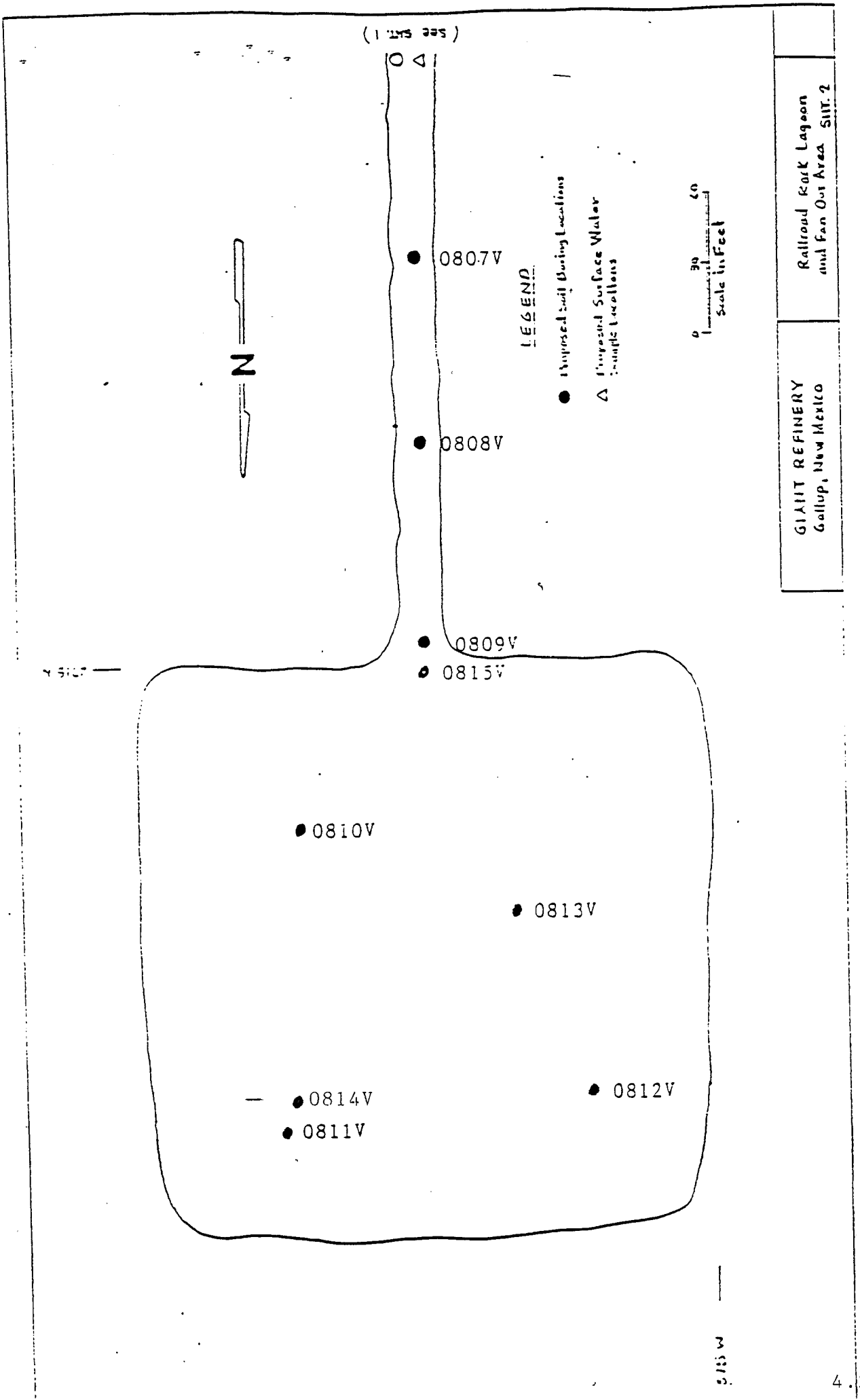


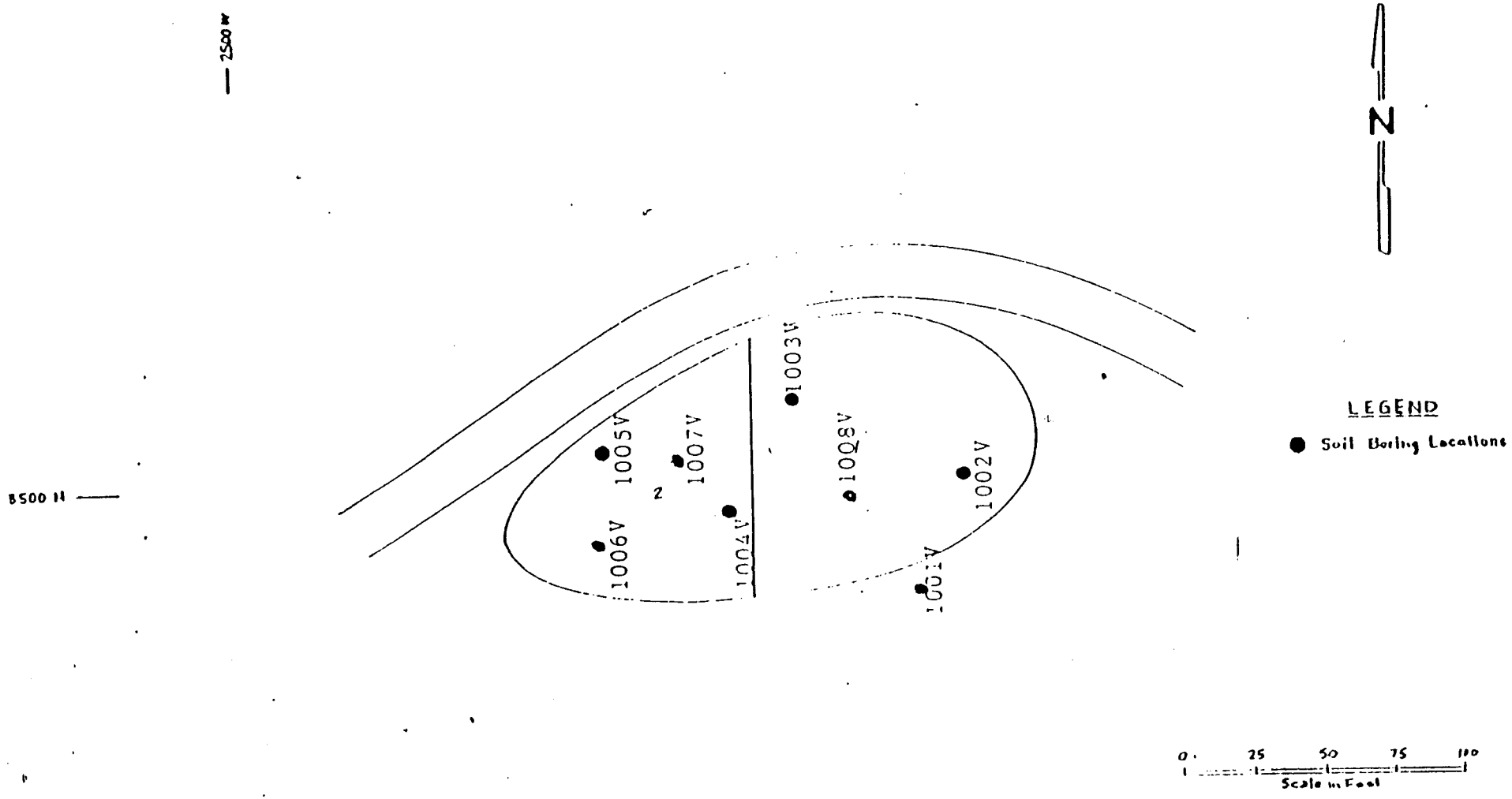
1. Landfill
2. Landfill
3. Landfill
4. Landfill
5. Landfill
6. Tank Farm
7. Burn Pit
8. Aeration Basin
9. Evaporation Pond
10. Evaporation Pond
11. Evaporation Pond
12. Evaporation Pond
13. Evaporation Pond
14. Evaporation Pond
15. Evaporation Pond
16. Evaporation Pond
17. Evaporation Pond
18. Evaporation Pond
19. Evaporation Pond
20. Evaporation Pond
21. Evaporation Pond
22. Evaporation Pond
23. Evaporation Pond
24. Drainage Ditch
25. Sewage Lagoon
26. Sewage Lagoon
27. Sewage Lagoon
28. Sewage Lagoon
29. Railroad Rack Lagoon
30. Sludge Pit
31. Sludge Pit
32. Asphalt Pit
33. Inactive Land Treatment
34. Active Land Treatment
35. Inactive Container Storage
36. Active Container Storage
37. API Separator
38. Neutralization Tank
39. Secondary Oil Skimmer
40. Underground Storage Tanks
41. Drainage From Process Area
42. Fire Training Area
43. Empty Container Storage

Applied Earth Sciences		NAME		FIGURE
FILE No 5202	MADE BY: R.G. DATE: 5-15-89 CHECKED BY: DATE:	GIANT REFINERY Gallup, New Mexico	SITE MAP	1



Applied Earth Sciences			NAME
FILE No 5202	MADE BY. R.G	DATE: 12-6-89	GIANT REFINERY
	CHECKED BY:	DATE.	Gallup, New Mexico


(See Sht. 1)
0807V
0808V
0809V
0815V
0810V
0813V
0814V
0811V
0812V
N
LEGEND
Proposed Soil Boring Locations
Proposed Surface Water Sample Locations
0
30
60
Scale in Feet
Railroad Rock Lagoon and Fan Out Area Sht. 2
GIANT REFINERY
Gallup, New Mexico



GIANT REFINERY Gallup, New Mexico	Sludge Pits	Fi

TABLE 2

May 6, 1991

Field Equipment Checklist
Soil and Sludge Sampling

ITEM	REMARKS
✓ PID Meter	✓ Calibrated
✓ Site Specific SWMU Work Plan	
✓ Generic Sampling Plan	
✓ Site Map With Sample Locations	
✓ Sample Bottles	
✓ Ice Chests	
✓ Trip Blanks	
✓ Methanol	
✓ Deionized Water	
✓ Squeeze Bottles	
✓ Personal Protective Equipment	
✓ Chain of Custody and Sample Record Forms	
✓ Plastic Bags (To provide clean surfaces)	
✓ Disposable Gloves	
✓ Paper Towels	
✓ Tape (For labels and dispenser)	
✓ Sharpie, Pens, Pencils	
✓ Blue Ice or Ice	
✓ Zip-Lock Bags, 1 Gallon	

TABLE 2

5-7-91

Field Equipment Checklist
Soil and Sludge Sampling

ITEM	REMARKS
✓ PID Meter	✓ Calibrated
✓ Site Specific SWMU Work Plan	
✓ Generic Sampling Plan	
✓ Site Map With Sample Locations	
✓ Sample Bottles	
✓ Ice Chests	
✓ Trip Blanks	
✓ Methanol	
✓ Deionized Water	
✓ Squeeze Bottles	
✓ Personal Protective Equipment	
✓ Chain of Custody and Sample Record Forms	
✓ Plastic Bags (To provide clean surfaces)	
✓ Disposable Gloves	
✓ Paper Towels	
✓ Tape (For labels and dispenser)	
✓ Sharpie, Pens, Pencils	
✓ Blue Ice or Ice	
✓ Zip-Lock Bags, 1 Gallon	

TABLE 2

Field Equipment Checklist
Soil and Sludge Sampling

5-5-91

ITEM	REMARKS
✓ PID Meter	✓ Calibrated
✓ Site Specific SWMU Work Plan	
✓ Generic Sampling Plan	
✓ Site Map With Sample Locations	
✓ Sample Bottles	
✓ Ice Chests	
✓ Trip Blanks	
✓ Methanol	
✓ Deionized Water	
✓ Squeeze Bottles	
✓ Personal Protective Equipment	
✓ Chain of Custody and Sample Record Forms	
✓ Plastic Bags (To provide clean surfaces)	
✓ Disposable Gloves	
✓ Paper Towels	
✓ Tape (For labels and dispenser)	
✓ Sharpie, Pens, Pencils	
✓ Blue Ice or Ice	
✓ Zip-Lock Bags, 1 Gallon	

SWMU # 10

6-18-91

TABLE 2

Field Equipment Checklist
Soil and Sludge Sampling

ITEM	REMARKS
✓ PID Meter	____ Calibrated
____ Site Specific SWMU Work Plan	
✓ Generic Sampling Plan	
✓ Site Map With Sample Locations	
✓ Sample Bottles	
✓ Ice Chests	
✓ Trip Blanks	
✓ Methanol	
✓ Deionized Water	
✓ Squeeze Bottles	
✓ Personal Protective Equipment	
✓ Chain of Custody and Sample Record Forms	
✓ Plastic Bags (To provide clean surfaces)	
✓ Disposable Gloves	
✓ Paper Towels	
✓ Tape (For labels and dispenser)	
✓ Sharpie, Pens, Pencils	
✓ Blue Ice or Ice	
✓ Zip-Lock Bags, 1 Gallon	

INSTRUMENT	DATE	TIME	STD	READING	STD	READING	STD	READING	OPERATOR
HNU	5-6	8:15	54	55	54	54			[illegible]

INSTRUMENT	DATE	TIME	STD	READING	STD	READING	STD	READING	OPERATOR
HNU	5-7	810	54	52	54	52			[illegible]

INSTRUMENT	DATE	TIME	STD	READING	STD	READING	STD	READING	OPERATOR
HNU	5-8	1000	54	54	54	54			[illegible]

INSTRUMENT	DATE	TIME	STD	READING	STD	READING	STD	READING	OPERATOR
HNU	1-18	8:15	54	56	54	56			[illegible]

DATA MANAGEMENT

Sample Location: SWMU #6 TK 451 Sample Date: 5-7-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0621V11.0 Sample Time/Description: 10:20 AM SAND + ROCK WITH SOME CLAY, VERY WET

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, NW WIND 5-10 MPH

General Field Observations: VERY ROCKY @ SAMPLE DEPTH. PID - 10

Boring Lithology: 4' MIXED SAND + CLAY, 2' RED CLAY WITH GRAY MARBLEING, 5' MIXED SAND + ROCK WITH SOME RED CLAY

DATA MANAGEMENT

Sample Location: SWMU #6 TK 453 Sample Date: 5-7-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0622VII.0 Sample Time/Description: 11:05 SANDY CLAY, MOIST

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, 15 MPH W-NW WIND

General Field Observations: PID - 8

Boring Lithology: MIXED SOIL TO 2'. BROKEN SANDSTONE + CLAY TO 4'. MIXED CLAY AND SAND TO 11'. MOIST.

DATA MANAGEMENT

Sample Location: SWMU #6 TK 567 Sample Date: 5-8-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0623V11.0 Sample Time/Description: 8:20 AM SAND/CLAY W/SOME SMALL ROCKS. PICKED OUT LARGE ROCKS.

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, SLIGHT BREEZE.

General Field Observations: PID - 31

Boring Lithology: MIXED SURFACE SOIL TO 6'. SOLID RED CLAY TO 8'. 8'-11' MIXED CLAY, SAND AND PEA GRAVEL.

DATA MANAGEMENT

Sample Location: SWMU#6 TNK 568 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0624V11.0 Sample Time/Description: 10:00 AM

Sample No. 0624D11.0 Sample Time/Description: 10:00 AM

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: PARTLY CLOUDY, 10 MPH E WIND, DRY

General Field Observations: PID – 1.3

Boring Lithology: SANDY CLAY TO 18", RED CLAY TO FULL DEPTH

DATA MANAGEMENT

Sample Location: SWMU #6 TK 569 Sample Date: 5-7-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0625 V11.0 Sample Time/Description: 9:20 AM SANDY, CLAY - DAMM BTEX

Sample No. 0625 V11.0 Sample Time/Description: 9:20 AM SANDY CLAY METALS

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, 5mph N WIND

General Field Observations: PID - 45

Boring Lithology: 2' MIXED SOIL. SANDY CLAY TO 11'.

DATA MANAGEMENT

Sample Location: SWMU #6 TK 569 Sample Date: 5-7-91

Sample Type: SOIL + WATER

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0626V11.0 Sample Time/Description: 8:50 AM RED CLAY - DAMP

Sample No. 0625 11.0 Sample Time/Description: 9:00 AM EQUIPMENT WASH

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, 5mpH N WIND.

General Field Observations: PID - 28

Boring Lithology: MIXED SOIL TO 5'6". RED CLAY TO 11'.

DATA MANAGEMENT

Sample Location: SWMU #6 TK 570 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0627V11.0 Sample Time/Description: 10:45 AM RED CLAY

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: PARTLY CLOUDY, DRY, 10 mph E WIND

General Field Observations: PID - 23

Boring Lithology: MIXED SOIL TO 7'. RED-GRAY CLAY TO 11'. EB

DATA MANAGEMENT

Sample Location: SWMU #6 TK 571 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ.

Sampling Method: AUGER

Sample No. 0628 V11.0 Sample Time/Description: 11:40 AM DARK SAND

Sample No. 0628 V11.0 Sample Time/Description: 11:40 AM (METALS) DARK SAND

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: PARTLY CLOUDY, DRY, 5MPH SE WIND

General Field Observations: PID -

Boring Lithology: MIXED SOIL FOR 6-7', RED CLAY TO 9½', SAND TO 11'

DATA MANAGEMENT

Sample Location: SWMU #6 TK572 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0629V11.0 Sample Time/Description: 11:15 Am DARK SAND

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: PARTLY CLOUDY, DRY, 5MPH SE WIND

General Field Observations: PID - 7

Boring Lithology: MIXED SOIL TO 8'. RED CLAY 8'-10'. SAND 10'-11'.

DATA MANAGEMENT

Sample Location: SWMU #6 MKTG TK 3 Sample Date: 5-7-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 0630V11.0 Sample Time/Description: 11:45AM TIGHT MOIST CLAY

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND

Weather Conditions: CLEAR, DRY, 10-15 MPH NW WINDS

General Field Observations: PID - 12

Boring Lithology: 2' RED CLAY. 2' MIXED SOIL. TIGHT MOIST CLAY TO 11'.

DATA MANAGEMENT

Sample Location: SWMU #6 Sample Date: 6-18-91

Sample Type: SOIL

Team Leader: G. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS

Sampling Method: AUGER

Sample No. 0631V16.0 Sample Time/Description: 8:45AM SOIL

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND INSIDE DIKE OF TK 569

Weather Conditions: CLEAR, DRY, SSE BREEZE @ 5mpH

General Field Observations: _____

Boring Lithology: 0-4' MIXED SAND & CLAY, 4-7' ALTERNATE LAYERS OF CLAY AND SAND, DISTINCT COLORATION CHANGES, 7-14' - RED CLAY, 14-16' RED CLAY WITH SOME LIGHTER DISCOLORATION.

DATA MANAGEMENT

Sample Location: ~~[illegible]~~ SWMW #6 Sample Date: 6-18-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON

Sampling Method: AUGER

Sample No. 0632 V11.0 Sample Time/Description: 12:40 PM SOIL

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND INSIDE DIKE OF TK 569

Weather Conditions: CLEAR to PARTLY CLOUDY, DRY, EAST WIND 10-15 MPH

General Field Observations: _____

Boring Lithology: 0-6' CLAY/SAND MIXTURE 6'-11' - RED CLAY

DATA MANAGEMENT

Sample Location: SWMU #6 Sample Date: 6-18-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS

Sampling Method: AUGER

Sample No. 0633V15.0 Sample Time/Description: 10:50 AM SOIL

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: BARE GROUND INSIDE DYKE OF TK 569

Weather Conditions: PARTLY CLOUDY, DRY, E-SE BREEZE 5-10 mph

General Field Observations: _____

Boring Lithology: 0-6' CLAY/SAND MIX. 6-10' - RED CLAY W/ TRACE OF SAND. 10-15' RED/GRAY CLAY W/ TRACE OF SAND

DATA MANAGEMENT

Sample Location: SWMU #9 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. RFI 0814V70 Sample Time/Description: 8:40 AM DAMP, DARK BROWN SOIL

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, OPEN BARE GROUND SURROUNDED BY 2' BRUSH + WEEDS

Weather Conditions: CLEAR, DRY, 10 MPH EAST BREEZE, 45°

General Field Observations: PID - .2

Boring Lithology: SOIL WAS CONSISTENT TO TOTAL DEPTH

DATA MANAGEMENT

Sample Location: SWMU #8 Sample Date: 5-6-91

Sample Type: SOIL

Team Leader: C. ROSENDALE

Sample Personnel: L. SHELTON, J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. RFI0815V7.0 Sample Time/Description: 9:00 AM BROWN CLAY, DAMP

Sample No. RFI0815B7.0 Sample Time/Description: 9:00 AM BROWN CLAY, DAMP

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT, OPEN BARE GROUND SURROUNDED BY 2' BRUSH + WEEDS

Weather Conditions: PARTLY CLOUDY, 10MPH E WIND, DRY, 45°

General Field Observations: PID - Ø

Boring Lithology: BROWN/GRAY-BLACK MARBLING TO 2'. 1' SOLID BROWN. GRAY/BROWN MARBLING TO 7' DEPTH

DATA MANAGEMENT

Sample Location: SWMU #10 Sample Date: 5-8-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 1006V15.0 Sample Time/Description: 1:10 PM MOIST RED CLAY PID - Ø

Sample No. 1006D15.0 Sample Time/Description: 1:10 PM MOIST RED CLAY PID - 1.2

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT GROUND, SOME SCATTERED VEGETATION 6" HIGH

Weather Conditions: CLEAR, DRY, 5 mpH SW WIND

General Field Observations: SLUDGE DEPOSITS SEEM TO BE RANDOM.

Top 4' dug out with tractor bucket then the backhoe was used to dig to 18'

PID @ 18' - Ø

Boring Lithology: 0'-4' - RED CLAY + SAND 4'-10' - OIL + GREASE / DIRT MIXTURE. 10'-11' CLAY + SAND. 11'-18' RED CLAY.

DATA MANAGEMENT

Sample Location: SWMU #10 Sample Date: 5-9-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 1007 V15.0 Sample Time/Description: 9:10 AM RED CLAY w/ SOME PID - 5 BLACK SPOTS

Sample No. 1007E15.0 Sample Time/Description: 9:25 AM EQUIPMENT WASH

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT GROUND, SOME SCATTERED VEGETATION 6" HIGH

Weather Conditions: CLOUDY, DRY, SE WIND 10 mph

General Field Observations: SOME BLACK SPOTTING @ 15'. MAY BE A TRACE OF CONTAMINATION CARRIED FROM ABOVE.

The top 4' was dug with the tractor bucket then the backhoe was used to dig to 18'

PID @ 18' - Ø

Boring Lithology: 0-4' CLAY/SAND MIX. 4-5' BLACK HYDROCARBON/SOIL LAYER. 5-10' GREY/RED CLAY MIXTURE. 10-15' RED CLAY. 15' - TRACE OF BLACK SPOTTING. 15'-18' RED CLAY.

No Sample

DATA MANAGEMENT

Sample Location: SWMU #10 Sample Date: 5-8-91

Sample Type: VISUAL SOIL (AND PID)

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 1008V15.0 Sample Time/Description: VISUAL PID = Ø 2:00 PM MOIST RED CLAY

Sample No. 1008V18.0 Sample Time/Description: VISUAL - PID - Ø 2:40 PM MOIST RED CLAY

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: FLAT GROUND, SCATTERED VEGETATION 6" HIGH

Weather Conditions: CLEAR, DRY, 15 MPH SW WIND

General Field Observations: Dug to 15' with backhoe and 15' to 18' with the hand auger.

PID @ 18' - Ø

Boring Lithology: 0-6' - MIXED CLAY + SAND. 6'-10' GRAY MIXED CLAY W/TRC OF HYDROCARBONS, 10'-15' RED CLAY

TCLP Mixture

DATA MANAGEMENT

Sample Location: SWMU #10 Sample Date: 5-9-91

Sample Type: SOIL

Team Leader: L. SHELTON

Sample Personnel: J. GOSS, M. BARNEY, T. GOLTZ

Sampling Method: AUGER

Sample No. 1007V6.0 Sample Time/Description: 9:00 Am LAYERED SOIL

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Sample No. _____ Sample Time/Description: _____

Surface Terrain: OPEN GROUND

Weather Conditions: CLOUDY, DRY, 5 mph South wind

General Field Observations: SAMPLE IS A COMPOSITE OF 5' OF LAYERED DISCOLORED SOIL THAT IS REPRESENTATIVE OF THE WORST CONTAMINATION IN SLUDGE PIT.

Boring Lithology: N/A

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-9-91 PAGE 1 OF 1

PROJECT MANAGER:

COMPANY: GIANT REFINING CO
ADDRESS: Rt 3 Box 7
GALLUP, NM 87301

BILL TO:
COMPANY: SAME
ADDRESS:

Lynn Shelton
SAMPLERS: (Signature)

(505) 722-0227
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)		(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE		Pesticides/PCB (608/8080)	Herbicides (615/8150)			Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)				SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)		The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)			NUMBER OF CONTAINERS
RFI 1007V6.0	5-9-91	9:50AM	SOIL															X	X											X			3

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NO:	TOTAL NO. OF CONTAINERS	
PROJECT NAME: PHASE 1 RFI	CHAIN OF CUSTODY SEALS	
P.O. NO. 01908	INTACT?	
SHIPPED VIA: FED EXPRESS	RECEIVED GOOD COND./COLD	
SAMPLE DISPOSAL INSTRUCTIONS	LAB NUMBER	
☒ ATI ☐ RETURN		

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:
TCLP for ALL

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time: 10:00AM	Signature: Time:	Signature: Time:
Printed Name: Lynn Shelton Date 5-10-91	Printed Name: Date	Printed Name: Date
Company: GIANT REFINING CO	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

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4.50

Analytical**Technologies,**Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-7-91 PAGE 1 OF 2

PROJECT MANAGER: Elizabeth Pfaffitz

COMPANY: Giant Refining Co.
ADDRESS: Rt 3 Box 7
Gallup, NM 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: (505) 722 0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)		(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE		Pesticides/PCB (608/8080)	Herbicides (615/8150)			Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)			SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)		The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Lead	Total Nickel		NUMBER OF CONTAINERS
RFI0621V11.0	5-7	9:20	Soil						X																								1
RFI0622V11.0	5-7	11:05	Soil						X																								1
RFI0623V11.0	5-7	8:20	Soil						X																								1
RFI0624V11.0	9-6	1000	Soil						X																								1
RFI0624D11.0	9-6	1000	Soil						X																								1
RFI0625V11.0	5-7	9:20	Soil						X																					X			2
RFI0626V11.0	5-7	9:50	Soil						X																								1
RFI0627V11.0	9-6	1045	Soil						X																								1
Trip Blank	—	—	Water						X																								1

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Phase I RFI	
P.O. NO. 01908	
SHIPPED VIA: Fed Exp	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI	☐ RETURN

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Clarence Randolph Time: 12:00	Signature: Time:	Signature: Time:
Printed Name: Clarence Randolph Date 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

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4.51

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-7-91 PAGE 2 OF 2

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt. 3 Box 7
Gallup NM 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: (505) 722-0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Lead	Total Nickel	NUMBER OF CONTAINERS
BFT0628V11.0	5-6	1140	Soil					X															X	X	2
BFT0629V11.0	5-6	1110	Soil					X																	1
BFT0630V11.0	5-7	1145	Soil					X																	1
BFT0625E11.0	[illegible]	[illegible]	Water					X																	

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Phase I RFT	
P.O. NO. 01908	
SHIPPED VIA: ~~01908~~ FED EXP	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Claud Rosendale Time: 12:00	Signature: Time:	Signature: Time:
Printed Name: Claud Rosendale Date 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

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4.52

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Phoenix, Arizona

Chain of Custody

DATE 6-18-91 PAGE 1 OF 1

PROJECT MANAGER: CLAUD ROSENDALE

COMPANY: GIANT REFINING
ADDRESS: Rt 3 BOX 7
GALLUP, NM 87301

BILL TO:
COMPANY: SAME
ADDRESS:

Lynn Shelton
SAMPLERS: (Signature)

(505) 722-0227
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	NUMBER OF CONTAINERS
REF 0631 V16.0	6-18-91	8:45 Am	SOIL					X															1
REF 0632 V11.0	6-18-91	12:40 pm	SOIL					X															1
REF 0633 V15.0	6-18-91	10:50 Am	SOIL					X															1
~~REF 06~~	~~6-18-91~~		~~SOIL~~																				

PROJECT INFORMATION	
PROJECT NO:	
PROJECT NAME: PHASE I, REF	
P.O. NO. 01908	
SHIPPED VIA: FED EXPRESS	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time:	Signature: Time:	Signature: Time:
Printed Name: LYNN SHELTON Date	Printed Name: Date	Printed Name: Date
Company: GIANT REFINING	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

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Phoenix, Arizona

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DATE 5-6-91 PAGE 1 OF 1

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt. 3 Box 7
Gallup, N.M. 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: (505) 722-0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240) See Attached	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	NUMBER OF CONTAINERS
RFI0814V7.0	5-6	0840	Soil											X	X								1
														X									
RFI0815V7.0	5-6	0900	Soil											X									1
RFI0815D7.0	5-6	0900	Soil											X									1

PROJECT INFORMATION	
PROJECT NO:	
PROJECT NAME: Phase I RFI	
P.O. NO. 01908	
SHIPPED VIA: Fed. Exp	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:
See Attachment for specific Analysis

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: Cloud Rosendale 1200	Signature: Time:	Signature: Time:
Printed Name: Date Cloud Rosendale 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC.• Pink - ORIGINATOR

4.54

TABLE-4
SKINNER LIST

METHOD 8240

Parameter	Reporting Limit (ug/kg)
Benzene	500
Carbon disulfide	500
Chlorobenzene	500
2-Chloroethylvinyl ether	1,000
1,2-Dibromomethane	1,000
1,2-Dichloroethane	500
1,4-Dioxane	50,000
Ethyl Benzene	500
Methyl ethyl ketone (2-butanone)	1,000
Styrene	500
Toluene	500
Xylenes	500

METHOD 8270

Anthracene	5,000
Benzenethiol	-
Benzo(a)anthracene	5,000
Benzo(b)fluoranthene	5,000
Benzo(k)fluoranthene	5,000
Benzo(a)pyrene	5,000
Bis(2-ethylhexyl)phthalate	5,000
Butyl benzyl phthalate	5,000
Chrysene	5,000
Dibenzo(a,j)acridine	-
Dibenzo(a,h)anthracene	5,000
Di-n-butylphthalate	5,000
1,2-Dichlorobenzene	5,000
1,3-Dichlorobenzene	5,000
1,4-Dichlorobenzene	5,000
Diethyl phthalate	5,000
7,12-Dimethylbenz(a)anthrancene	5,000
2,4-Dimethylphenol	5,000
Dimethyl phthalate	5,000
2,4-Dinitrophenol	25,000
Di-n-octyl phthalate	5,000
Fluoranthene	5,000
Indene	5,000
Methylchrysene	-
1-Methylnaphthalene	5,000
2-Methylphenol	5,000
3-Methylphenol	5,000
4-Methylphenol	5,000
Naphthalene	5,000
4-Nitrophenol	25,000
Phenanthrene	5,000

TABLE-4 Continued

	5,000
Phenol	5,000
Pyrene	10,000
Pyridine	25,000
Quinoline	

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE _____ PAGE 1 OF 1

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt 3 Box 7
Gallup, N.M. 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: (505) 722-0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270) Full Table	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Metals (Cr, Cu, Pb, Zn)	NUMBER OF CONTAINERS
RFI1006V15.0	5-8-91	1:10pm	Soil											X	X								X	3
RFI1006D15.0	5-8-91	1:10	Soil											X	X								X	3
RFI1007V15.0	5-9-91	9:10	Soil											X	X								X	3
RFI1007E15.0	5-9-91	9:25	Water											X	X								X	4
Trip blank			Water												X									1

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Plot RFI	
P.O. NO. 01908	
SHIPPED VIA: Fed Ex	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments: See attachments for analytical parameters

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time: 11:00 AM	Signature: Time:	Signature: Time:
Printed Name: Lynn Shelton Date: 5-9-91	Printed Name: Date	Printed Name: Date
Company:	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC.• Pink - ORIGINATOR

4.57

TABLE-2
PRIORITY POLLUTANT VOLATILES

Method 8240

Parameter	Reporting Limits ug/kg
Acetone	5,000
Acrolein	10,000
Acrylonitrile	10,000
Benzene	500
Bromodichloromethane	500
Bromoform	500
Bromomethane(methyl bromide)	1,000
Carbon disulfide	500
Carbon tetrachloride	500
Chlorobenzene	500
Chlorodibromoethane	500
Chloroethane	1,000
2-Chloroethylvinyl ether	1,000
Chloroform	500
Chloromethane	1,000
Dibromomethane	500
1,4 - Dichloro-2-butane	-
trans-1,4-Dichloro-2-butene	500
Dichlorodifluoromethane	2,000
1,1-Dichloroethane	500
1,2-Dichloroethane	500
1,1-Dichloroethylene	500
trans-1,2-Dichloroethylene	500
1,2-Dichloropropane	500
cis-1,3-Dichloropropene	500
trans-1,3-Dichloropropene	500
Ethanol	10,000
Ethyl benzene	500
Ethyl methacrylate	1,000
2-Hexanone	1,000
Iodomethane	500
Methylene Chloride	500
Methyl ethyl ketone (2-Butanone)	1,000
Methyl isobutyl ketone (4-methyl-2-pentanone)	1,000
Styrene	500
1,1,2,2,-Tetrachloroethane	500
Tetrachloroethylene	500
Toluene	500
1,1,1-Trichloroethane	500
1,1,2-Trichloroethane	500
Trichloroethylene	500
Trichlorofluoromethane	500
1,2,3-Trichloropropane	500
Vinyl acetate	500
Vinyl chloride	1,000
Xylenes	1,000

TABLE-3
PRIORITY POLLUTANT SEMIVOLATILES

Method 8270

Parameter	Reporting Limits ug/kg
Acenaphthene	5,000
Acenaphthylene	5,000
Acetophenone	5,000
4-Aminobiphenyl	-
Aniline	5,000
Anthracene	5,000
Benzidine	50,000
Benzoic Acid	5,000
Benzo(a)anthracene	5,000
Benzo(b)fluoranthene	5,000
Benzo(k)fluoranthene	5,000
Benzo(g,h,i)perylene	5,000
Benzo(a)pyrene	5,000
Benzyl alcohol	5,000
Bis(2-chloroethoxy)methane	5,000
Bis(2-chloroethyl)ether	5,000
Bis(2-chloroisopropyl)ether [bis(2-chloro-1 methylethyl)ether]	5,000
Bis(2-ethylhexyl)phthalate	5,000
4-Bromophenyl phenyl ether	5,000
Butyl benzyl phthalate	5,000
4-Chloroaniline	5,000
4-Chloro-3-methylphenol	5,000
1-Chloronaphthane	5,000
2-Chloronaphthane	5,000
2-Chlorophenol	5,000
4-Chlorophenyl phenyl ether	5,000
Chrysene	5,000
Dibenzo(a,j)acridine	-
Dibenzo(a,h) anthracene	5,000
Dibenzo furans(tetrachloro, pentachloro, hexachloro)	-
Di-n-butylphthalate	5,000
1,2-Dichlorobenzene	5,000
1,3-Dichlorobenzene	5,000
1,4-Dichlorobenzene	5,000
3,3-Dichlorobenzidine	10,000
2,4-Dichlorophenol	5,000
2,6-Dichlorophenol	5,000
Diethyl phthalate	5,000
p(Dimethylamino)azobenzene	5,000
7,12-Dimethylbenz(a)anthracene	5,000
aa-Demethylphenethylamine	5,000
2,4-Dimethylphenol	5,000
Dimethyl phthalate	5,000
4,6-Dinitro-2-methylphenol	25,000
2,4-Dinitrophenol	25,000
2,4-Dinitrotoluene	5,000

TABLE-3 Continued

2,6-Dintrotoluene	5,000
Di-n-octyl phthalate	5,000
Diphenylamine	5,000
1,2-Diphenylhydrazine	5,000
Ethyl methanesulfonate	5,000
Fluoranthene	5,000
Flourene	5,000
Hexachlorobenzene	5,000
Hexachloro-13-butadiene	5,000
Hexachlorocyclopentadiene	5,000
Hexachloroethane	5,000
Indeno(1,2,3-cd)pyrene	5,000
Isophorene	5,000
3-Methylcholanthrene	5,000
Methyl methanesulfonate	5,000
2-Methylnaphthalene	5,000
2-Methylphenol	5,000
3-Methylphenol	5,000
4-Methylphenol	5,000
Naphthalene	5,000
1-Naphthylamine	5,000
2-Naphthylamine	5,000
2-Nitroaniline	25,000
3-Nitroaniline	25,000
4-Nitroaniline	25,000
Nitrobenzene	5,000
2-Nitrophenol	5,000
4-Nitrophenol	25,000
N-Nitrosodimethylamine	5,000
N-Nitroso-di-n-butylamine	5,000
N-Nitroso-di-n-propylamine	5,000
N-Nitrosopiperidine	5,000
N-Nitrosodiphenylamine	5,000
Pentachlorobenzene	5,000
Pentachloronitrobenzene	25,000
Pentachlorophenol	25,000
Phenacetin	5,000
Phenanthrene	5,000
Phenol	5,000
2-Picoline	5,000
Pronamide	5,000
Pyrene	5,000
1,2,4,5-Tetrachlorobenzene	5,000
2,3,4,6-Tetrachlorophenol	25,000
1,2,4-Trichlorobenzene	5,000
2,4,5-Trichlorophenol	25,000
2,4,6-Trichlorophenol	5,000

SECTION 5.0

Statistical Information for Soil Samples

SECTION 5.1

GENERAL REVIEW

This section includes the collection of information required, the methodology for statistical calculations and the actual statistical comparisons of background values to each individual sample.

Background samples were collected on April 28, 1987 and April 4 and 5, 1988. The analysis for each sampling event is listed on TABLE 5-1 and TABLE 5-2 respectively. All background samples were collected from a background plot which is specified in FIGURE 5-1. The exact location of each sample point is specifically listed on FIGURE 5-2 and FIGURE 5-3. The background plot and sample collection locations were approved by the New Mexico Environmental Improvement Division in a Land Treatment Demonstration Permit that was issued to Giant Refining Company on December 22, 1986.

It was Giant's plan to use equivalent vertical depths for background and sample comparisons. However, many of the individual sample points (1-2 foot, 2-3 foot, 3-4 foot, and 4-5 foot) for background collection was composited into one (1) sample for each of the two (2) sampling events. This allowed only two (2) samples to be used for calculating averages and tolerance limits. It is generally understood that a minimum of four (4) sets of analysis should be used to calculate background averages.

To achieve this goal, Giant combined the background analytical for each metal from all samples ranging in vertical depths of zero (0) to five (5) feet. These background averages were then compared to the results of all samples collected for the RFI samples that were in the zero (0) to five (5) foot interval range. Averages and tolerance limits were calculated on the background samples from the five (5) to six (6) foot intervals. These averages were used for statistical comparisons of all remaining RFI samples greater than five (5) feet in depth.

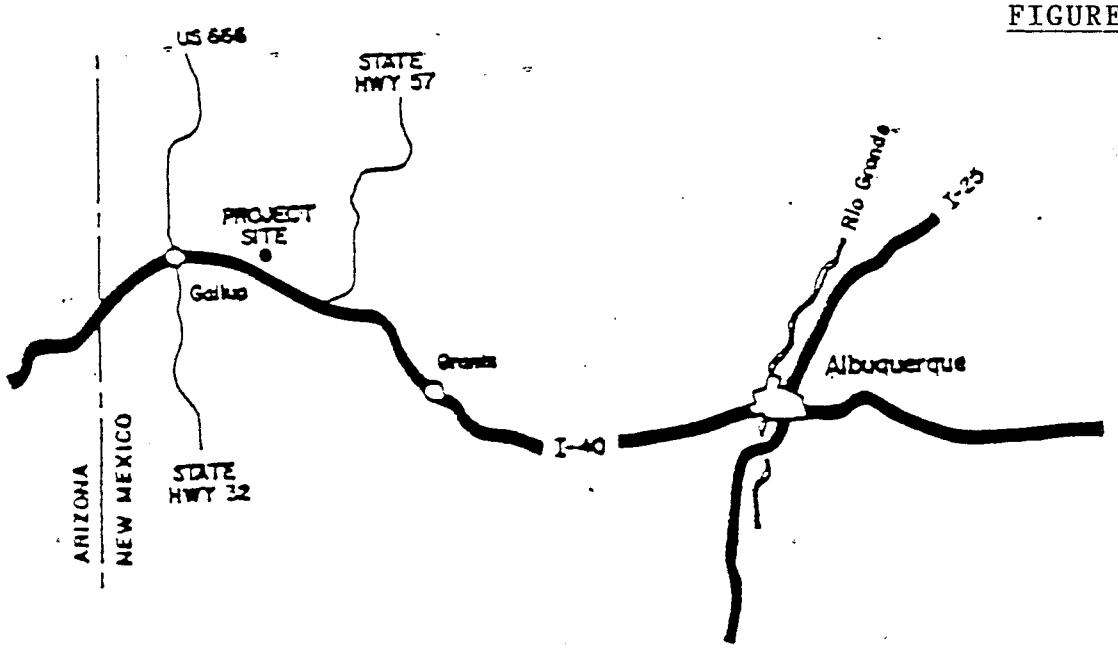
There were no background calculations computed for antimony, cadmium, mercury and selenium as all the original data was below the detection limits for each of these metals. This did not have any impact on the statistical comparisons as none of the samples collected during the Phase I Supplemental sampling event was analyzed for these metals.

The background data for beryllium at the zero (0) to five (5) foot level is somewhat different as all analytical parameters equaled one (1). As a result, the upper tolerance limit is one (1) and there is no coefficient of variance.

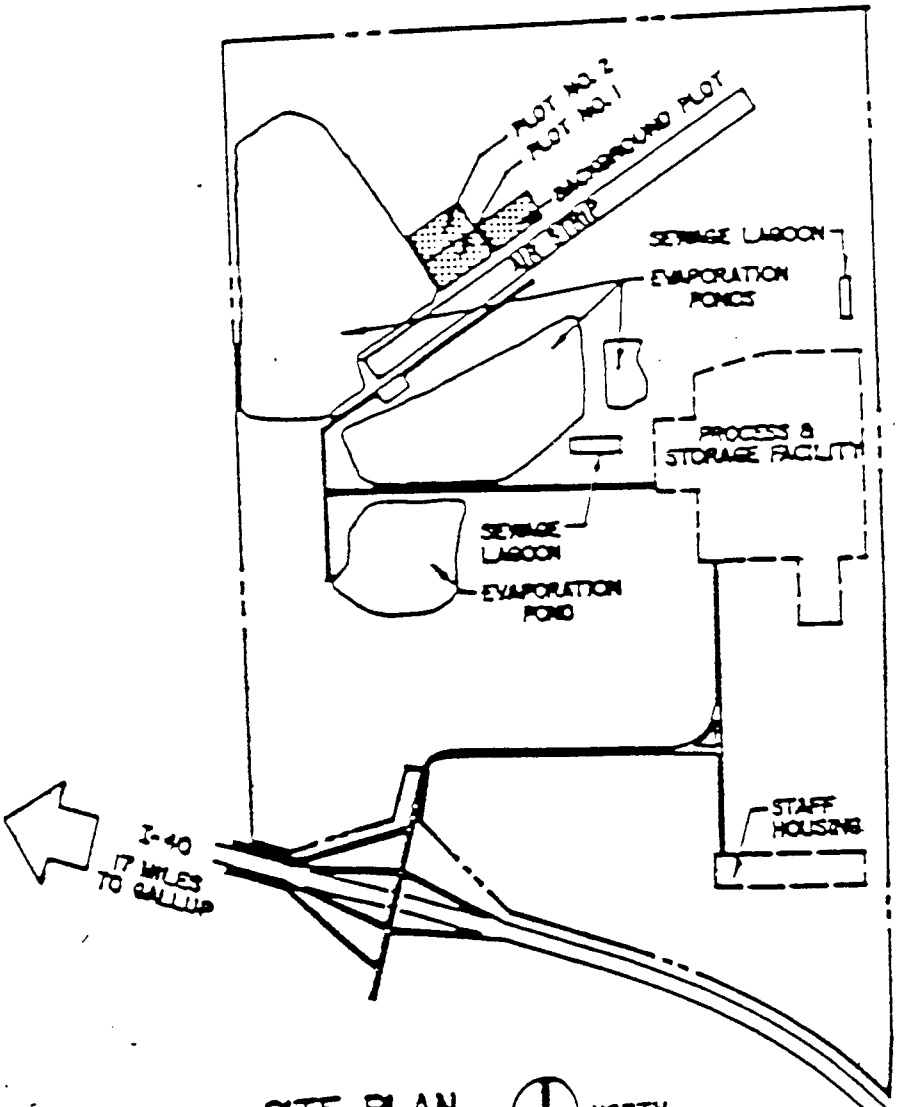
SECTION 5.1 (cont')

The background values for lead at the five (5) to six (6) foot level was calculated from the results of the April 28, 1987 sampling event. All lead analysis from this sample depth for the April 4 and 5, 1988 sampling event was reported as non-detectable at a detection limit of 10 mg/kg.

FIGURE 5-1



VICINITY MAP NORTH



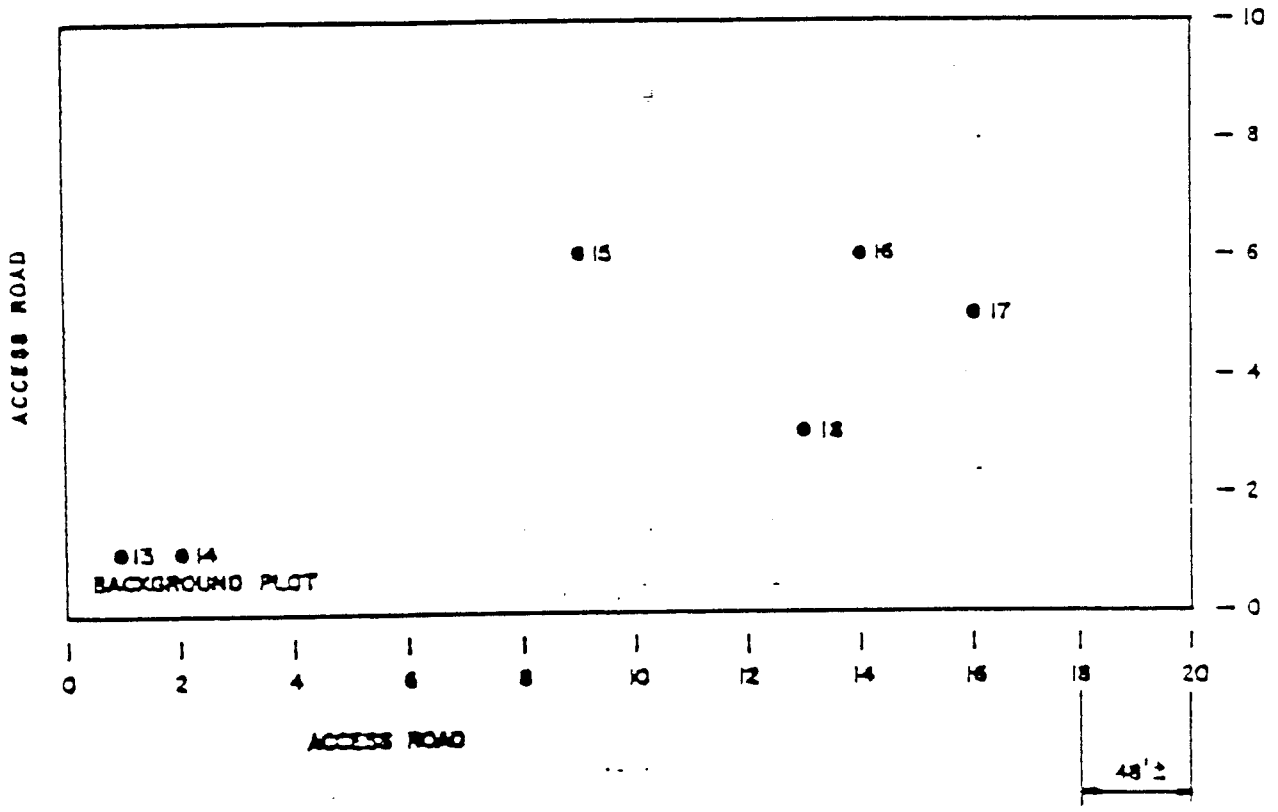
SITE PLAN NORTH

FIGURE 2.0

Lockwood, Andrews & Newnam, Inc.

GIANT REFINING COMPANY - GALLUP, NM
LAND TREATMENT DEMONSTRATION
VICINITY & SITE PLAN

FIGURE 5-2



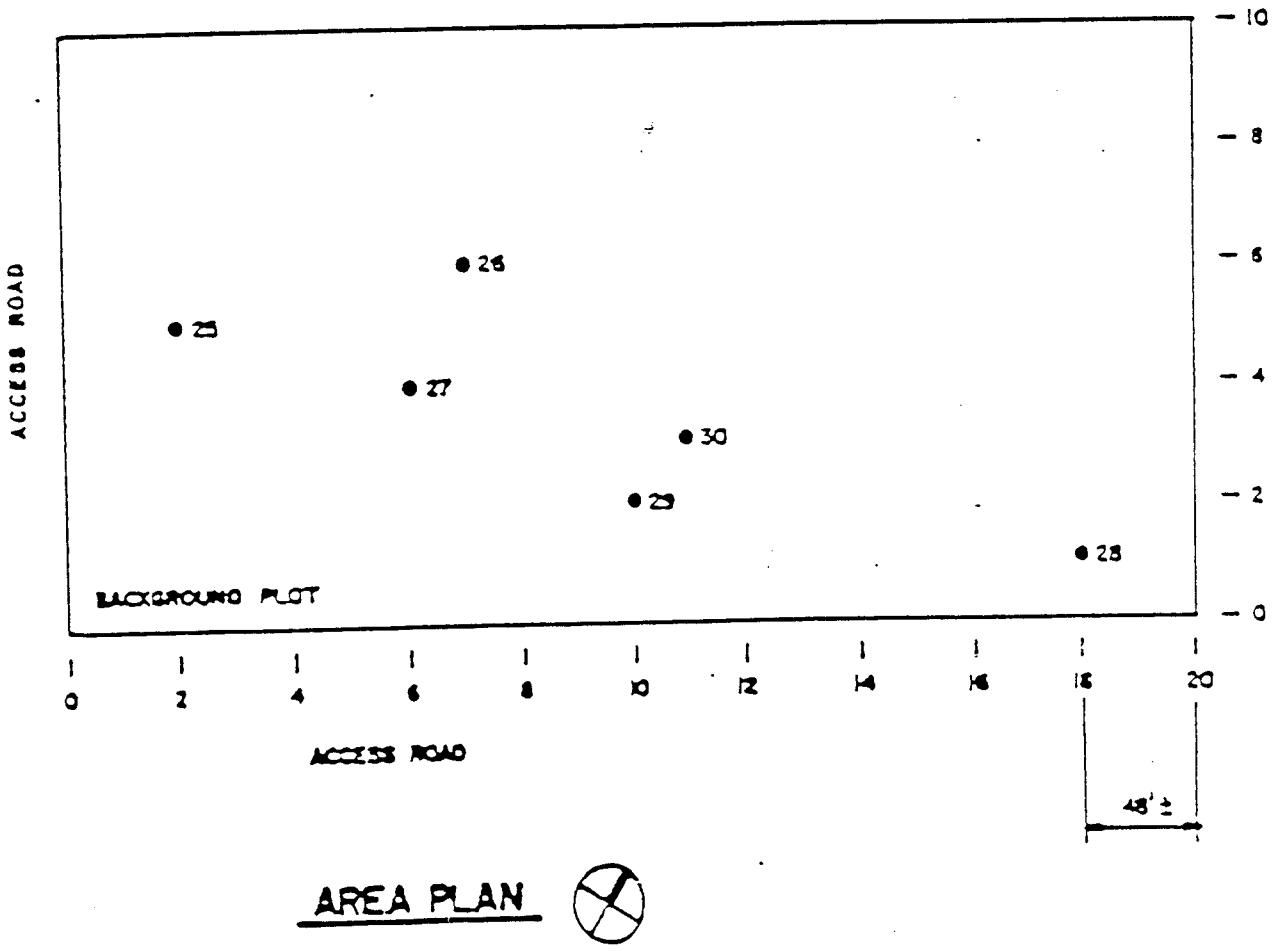
AREA PLAN

FIGURE 3.2

GIANT REFINING COMPANY-GALLUP, NM
LAND TREATMENT DEMONSTRATION
SAMPLE LOCATIONS-PRE DEMO EVENT, APR '87

Lockwood, Andrews & Newnam, Inc.

FIGURE 5-3



AREA PLAN

FIGURE 3.7

GIANT REFINING COMPANY - GALLUP, NM
LAND TREATMENT DEMONSTRATION
SAMPLE LOCATIONS - EVENT NO. 5, APR '88

Lockwood, Andrews & Newnam, Inc.

TABLE 5-1

First sampling trip
after application
4-28-87

Background Plot Data

METALS	zone	0-1	0-1	1-2	2-3	3-4	4-5	5-6	5-6	5-6	5-6	5-6	5-6
	sample #	0745	0925	0750	0755	0800	805	810	0820	0900	0940	1035	1130
	comp holes	13-15	16-18	13-18	13-18	13-18	13-18	13	14	15	16	17	17
TOTAL METALS, mg/kg													
ANTIMONY		nd	nd					nd	nd	nd	nd	nd	nd
ARSENIC		3.8	4.4					6.2	5.8	7	6	2.8	7.2
BARIUM		300	250	280	230	300	370	180	280	250	170	320	280
BERYLLIUM		1	1					1.3	1.2	1.3	1	0.8	1.3
CADMIUM		nd	nd					nd	nd	nd	0.5	nd	nd
CHROMIUM		7	7	3	5	5	6	7	4	7	3	3	5
COBALT		2.9	3.7					4	2.1	3.7	2.2	0.5	2.6
COPPER		4.4	4.1					5.7	4.6	5.5	4.7	2.9	5.4
LEAD		12	13	9	11	9	11	12	11	12	9	9	10
MERCURY		0.06	nd					nd	nd	nd	nd	nd	nd
NICKEL		9	9					10	7	10	5	7	9
POTASSIUM		2100	2900					1700	1600	1700	1000	700	1500
SELENIUM		nd	nd					nd	nd	nd	nd	nd	nd
VANADIUM		13	15					16	13	15	11	8.7	13
ZINC		18	15	9	12	12	13	14	12	15	9	8	13

TABLE 5-2

Fifth sampling trip
after application
4-5-88 and 4-6-88

Background Plot Data

METALS	zone	0-1	0-1	1-2	2-3	3-4	4-5	5-6	5-6	5-6	5-6	5-6	5-6
	sample #	3701	3801	3912	4023	4134	4245	4356	4456	4556	4656	4756	4856
	comp holes	25-27	28-30	25-30	25-30	25-30	25-30	25	26	27	28	29	30
TOTAL METALS, mg/kg													
ANTIMONY		nd	nd					nd	nd	nd	nd	nd	nd
ARSENIC		0.5	0.4					0.6	nd	nd	0.6	1.1	nd
BARIUM		300	300	280	300	380	290	270	330	270	260	220	270
BERYLLIUM		1	1					1.1	1.2	1.2	1.3	1.2	0.8
CADMIUM		nd	nd					nd	nd	nd	nd	nd	nd
CHROMIUM		6	5	4	4	4	4	4	5	4	4	3	4
COBALT		3	2					2	3	3	3	3	2
COPPER		4	3					4	6	5	5	5	4
LEAD		12	10	11	12	1	10	nd	nd	nd	nd	nd	nd
MERCURY		nd	nd					nd	nd	nd	nd	nd	nd
NICKEL		8	7					7	9	8	8	7	6
POTASSIUM		1400	1400					1300	1300	1300	1400	1100	1300
SELENIUM		nd	nd					nd	nd	nd	nd	nd	nd
VANADIUM		13	11					13	12	11	13	12	13
ZINC		16	12	11	11	10	11	10	12	11	11	10	9

Statistical Analysis.

The statistical analysis is concerned with the problem of comparing observations of the concentrations of metals from compliance data with observations of concentrations from background data in order to determine if the concentrations of metals from the compliance data exceed, in a statistically significant fashion, the concentrations from the background data. The primary method used is that of the construction of a *tolerance interval* and the use of the resulting *upper tolerance limit*. The analysis was carried out in the following way:

1. The background data consisted, for each of the eleven metals analyzed, of from four to twelve values at each of two depths.

2. For each metal, at each of the two depths, the (one-sided) tolerance interval was constructed using the following technique:

   a) Calculate the mean, $\overline{X}$, and the standard deviation, SD, from the background data.

   b) Construct the one-sided upper tolerance limit as $TL = \overline{X} + KS$, where K is the one-sided normal tolerance factor found in Table 1.

   c) The tolerance interval is the interval [0, TL]. This interval will contain, with 95% confidence, 95% of random observations from the same distribution as the background data.

3. The observations forming the compliance data (for the same metal at the same depth) are now compared, one by one, with the upper tolerance limit, TL, found above. If an observation exceeds TL, this is interpreted as statistically significant evidence that the observation is from a distribution with a higher concentration of the metal and that, therefore, contamination has occured.

Notes on the Statistical Analysis.

1. In order to construct the upper tolerance limit, the backgound data is assumed to be approximately normally distributed. This assumption was checked by calculating the coefficient of variation (CV) for each of the background data sets. If this value exceeds 1, then that fact indicates non-normality. In none of the data sets analyzed did the coefficient of variation exceed 1. It was therefore assumed that the values observed in the background wells were normally distributed. No other tests of normality were carried out.

2. If the standard deviation for the backgound data is zero, (i.e., all values are the same), then the tolerance interval approach is not particulary useful. In that case the upper tolerance limit is identical to the common value of the background data values and any observation coming from the compliance wells which exceeds that upper tolerance limit must be taken as evidence of contamination. This was the situation for beryllium at the shallow depth; the background data consisted of four values, all equal to 1 mg/kg. For this one data set an analysis of variance was also carried out; this test indicated no statistically significant difference in the concentrations of beryllium in the background data and the compliance data, even though many of the individual values from the compliance wells indicated contamination using the tolerance interval approach.

3. No detectable amounts of arsenic, cadmium, mercury or selenium were found in the background. Therefore, no tests were carried out for these elements.

4. The analytical results reported under the sample data column is reported in mg/kg.

Background Data for Arsenic: 0-5 foot level

Data: 3.8, 4.4, 0.5, 0.4
Mean: 2.27
SD: 1.84
The Upper Tolerance Limit = 11.73
The Coefficient of Variance = 0.81

Background Data for Arsenic: 5-6 foot level

Data: 6.2, 5.8, 7, 6, 2.8, 7.2, 0.6, 0.6, 1.1
Mean: 4.14
SD: 2.67
The Upper Tolerance Limit = 12.23
The Coefficient of Variance = 0.64

Background Data for Barium: 0-5 foot level

Data: 300, 250, 280, 230, 300, 370, 300, 300, 280, 300, 380, 290
Mean: 298.33
SD: 40.38
The Upper Tolerance Limit = 408.81
The Coefficient of Variance = 0.14

Background Data for Barium: 5-6 foot level

Data: 180, 280, 250, 170, 320, 280, 270, 330, 270, 260, 220, 270
Mean: 258.33
SD: 46.34
The Upper Tolerance Limit = 385.11
The Coefficient of Variance = 0.18

Background Data for Beryllium: 0-5 foot level

Data: 1, 1, 1, 1
Mean: 1.00
SD: 0.00
The Upper Tolerance Limit = 1.00
The Coefficient of Variance = 0.00

Background Data for Beryllium: 5-6 foot level

Data: 1.3, 1.2, 1.3, 1, 0.8, 1.3, 1.1, 1.2, 1.2, 1.3, 1.2, 0.8
Mean: 1.14
SD: 0.18
The Upper Tolerance Limit = 1.62
The Coefficient of Variance = 0.15

Background Data for Chromium: 0-5 foot level

Data: 7, 7, 3, 5, 5, 6, 6, 5, 4, 4, 4, 4
Mean: 5.00
SD: 1.22
The Upper Tolerance Limit = 8.35
The Coefficient of Variance = 0.24

Background Data for Chromium: 5-6 foot level

Data: 7, 4, 7, 3, 3, 5, 4, 5, 4, 4, 3, 4
Mean: 4.42
SD: 1.32
The Upper Tolerance Limit = 8.03
The Coefficient of Variance = 0.30

Background Data for Cobalt: 0-5 foot level

Data: 2.9, 3.7, 3, 2
Mean: 2.90
SD: 0.60
The Upper Tolerance Limit = 6.01
The Coefficient of Variance = 0.21

Background Data for Cobalt: 5-6 foot level

Data: 4, 2.1, 3.7, 2.2, 0.5, 2.6, 2, 3, 3, 3, 3, 2
Mean: 2.59
SD: 0.88
The Upper Tolerance Limit = 5.01
The Coefficient of Variance = 0.34

Background Data for Copper: 0-5 foot level

Data: 4.4, 4.1, 4, 3
Mean: 3.88
SD: 0.53
The Upper Tolerance Limit = 6.58
The Coefficient of Variance = 0.14

Background Data for Copper: 5-6 foot level

Data: 5.7, 4.6, 5.5, 4.7, 2.9, 5.4, 4, 6, 5, 5, 5, 4
Mean: 4.82
SD: 0.82
The Upper Tolerance Limit = 7.07
The Coefficient of Variance = 0.17

Background Data for Lead: 0-5 foot level

Data: 12, 13, 9, 11, 9, 11, 12, 10, 11, 12, 1, 10
Mean: 10.08
SD: 2.98
The Upper Tolerance Limit = 18.25
The Coefficient of Variance = 0.30

Background Data for Lead: 5-6 foot level

Data: 12, 11, 12, 9, 9, 10
Mean: 10.50
SD: 1.26
The Upper Tolerance Limit = 15.16
The Coefficient of Variance = 0.12

Background Data for Nickel: 0-5 foot level

Data: 9, 9, 8, 7
Mean: 8.25
SD: 0.83
The Upper Tolerance Limit = 12.52
The Coefficient of Variance = 0.10

Background Data for Nickel: 5-6 foot level

Data: 10, 7, 10, 5, 7, 9, 7, 9, 8, 8, 7, 6
Mean: 7.75
SD: 1.48
The Upper Tolerance Limit = 11.80
The Coefficient of Variance = 0.19

Background Data for Potassium: 0-5 foot level

Data: 2100, 2900, 1400, 1400
Mean: 1950.00
SD: 618.47
The Upper Tolerance Limit = 5132.01
The Coefficient of Variance = 0.32

Background Data for Potassium: 5-6 foot level

Data: 1700, 1600, 1700, 1000, 700, 1500, 1300, 1300, 1300, 1400
1100, 1300
Mean: 1325.00
SD: 280.25
The Upper Tolerance Limit = 2091.77
The Coefficient of Variance = 0.21

Background Data for Vanadium: 0-5 foot level

Data: 13, 15, 13, 11
Mean: 13.00
SD: 1.41
The Upper Tolerance Limit = 20.28
The Coefficient of Variance = 0.11

Background Data for Vanadium: 5-6 foot level

Data: 16, 13, 15, 11, 8.7, 13, 13, 12, 11, 11, 10, 9
Mean: 11.89
SD: 2.14
The Upper Tolerance Limit = 17.74
The Coefficient of Variance = 0.18

Background Data for Zinc: 0-5 foot level

Data: 18, 15, 9, 12, 12, 13, 16, 12, 11, 11, 10, 11
Mean: 12.50
SD: 2.50
The Upper Tolerance Limit = 19.34
The Coefficient of Variance = 0.20

Background Data for Zinc: 5-6 foot level

Data: 14, 12, 15, 9, 8, 13, 10, 12, 11, 11, 10, 9
Mean: 11.17
SD: 2.03
The Upper Tolerance Limit = 16.73
The Coefficient of Variance = 0.18

RFI #	METAL	DATA	NOTE
RFI0625V11.0	Nickel	17.0	Exceeds the tolerance limits by 44.0%
RFI0628V11.0	Lead	8.1	Within the tolerance limit
	Nickel	42.0	Exceeds the tolerance limits by 255.9%

RFI #	METAL	DATA	NOTE
RFI1006V15.0	Chromium	4.2	Within the tolerance limit
	Copper	4.8	Within the tolerance limit
	Lead	9.0	Within the tolerance limit
	Zinc	12.9	Within the tolerance limit
RFI1006D15.0	Chromium	8.4	Exceeds the tolerance limit by 4.6%
	Copper	6.8	Within the tolerance limit
	Lead	11.0	Within the tolerance limit
	Zinc	22.0	Exceeds the tolerance limit by 31.5%
RFI1007V15.0	Chromium	4.8	Within the tolerance limit
	Copper	5.5	Within the tolerance limit
	Lead	10.0	Within the tolerance limit
	Zinc	13.3	Within the tolerance limit

SECTION 6.0

TABULATED ANALYTICAL SUMMARY

PHASE 1, RFI SUPPLEMENTAL

Additional Data requested for Phase I,RFI
Sample dates are 5/6/91 & 5/7/91

RFI06
TANK FARM

Sample Point #		21	22	23	24	24	25	26	27	28	29	30	25	31	32	33
Depth of Sample		V11.0	V11.0	V11.0	V11.0	D11.0	V11.0	V11.0	V11.0	V11.0	V11.0	V11.0	E11.0	V16.0	V11.0	V14.0
Parameter	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	19	<0.050	<0.025	<0.125	<0.025	<0.025	<0.025	0.58	<0.025	<0.025
Toluene	mg/kg	0.070	0.23	<0.025	<0.025	<0.025	450	0.20	0.037	<0.125	<0.025	0.10	<0.025	2.9	<0.025	<0.025
Ethyl Benzene	mg/kg	0.041	0.15	0.062	<0.025	<0.025	160	0.17	0.45	0.62	<0.025	0.20	<0.025	0.94	<0.025	<0.025
Total Xylenes	mg/kg	0.15	0.57	0.24	<0.025	<0.025	1000	1.4	3.8	5.7	<0.025	1.9	<0.025	7.2	<0.025	<0.025
MTBE	mg/kg	<0.125	<0.125	<0.125	<0.125	<0.125	<6.250	0.41	<0.125	7	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125
Lead	mg/kg	---	---	---	---	---	---	---	---	8.1	---	---	---			
Nickel	mg/kg	---	---	---	---	---	17	---	---	42	---	---	---			

PHASE 1, RFI SUPPLEMENTAL
RFI08

Sample point number		14	15	15
Depth of sample		V7.0	V7.0	D7.0
Parameter	Units			
Method 8270				
Anthracene	ug/kg	<0.17	<0.17	<0.17
Benzo(a)anthracene	ug/kg	<0.17	<0.17	<0.17
Benzo(b)fluoranthene	ug/kg	<0.17	<0.17	<0.17
Benzo(k)fluoranthene	ug/kg	<0.17	<0.17	<0.17
Benzo(a)pyrene	ug/kg	<0.17	<0.17	<0.17
bis(2-Ethylhexyl) phthalate	ug/kg	<0.17	<0.17	<0.17
Butyl benzyl phthalate	ug/kg	<0.17	<0.17	<0.17
Chrysene	ug/kg	<0.17	<0.17	<0.17
Dibenz(a,h)anthracene	ug/kg	<0.17	<0.17	<0.17
Di-n-butyl phthalate	ug/kg	<0.17	<0.17	<0.17
1,2-Dichlorobenzene	ug/kg	<0.17	<0.17	<0.17
1,3-Dichlorobenzene	ug/kg	<0.17	<0.17	<0.17
1,4-Dichlorobenzene	ug/kg	<0.17	<0.17	<0.17
Diethyl phthalate	ug/kg	<0.17	<0.17	<0.17
7,12-Dimethylbenz(a)-anthracene	ug/kg	<0.17	<0.17	<0.17
Dimethyl phthalate	ug/kg	<0.17	<0.17	<0.17
Di-n-octyl phthalate	ug/kg	<0.17	<0.17	<0.17
Fluoranthene	ug/kg	<0.17	<0.17	<0.17
Indene	ug/kg	<0.17	<0.17	<0.17
1-Methylnaphthalene	ug/kg	<0.17	<0.17	<0.17
Naphthalene	ug/kg	<0.17	<0.17	<0.17
Phenanthrene	ug/kg	<0.17	<0.17	<0.17
Pyrene	ug/kg	<0.17	<0.17	<0.17
Pyridine	ug/kg	<0.17	<0.17	<0.17
Quinoline	ug/kg	<0.85	<0.85	<0.85
Benzenethiol	ug/kg	<0.17	<0.17	<0.17

PHASE 1, RFI SUPPLEMENTAL, CONT.
RFI08

Sample point number		14	15	15
Depth of sample		V7.0	V7.0	D7.0
Parameter	Units			
Method 8270 (con't)				
Dibenz(a,j)acridine	ug/kg	<0.17	<0.17	<0.17
2,4-Dimethylphenol	ug/kg	<0.17	<0.17	<0.17
2,4-Dinitrophenol	ug/kg	<0.85	<0.85	<0.85
4-Nitrophenol	ug/kg	<0.85	<0.85	<0.85
Phenol	ug/kg	<0.17	<0.17	<0.17
2-Methylphenol	ug/kg	<0.17	<0.17	<0.17
4-Methylphenol	ug/kg	<0.17	<0.17	<0.17
Methylchrysene	ug/kg	<0.17	<0.17	<0.17
3-Methylphenol	ug/kg	<0.17	<0.17	<0.17

PHASE 1, RFI SUPPLEMENTAL, CONT.
RFI10

Sample point number						
Depth of sample		06	06	07	07	07*
		V15.0	D15.0	V15.0	E15.0	V6.0
Parameter	Units					(MG/L)
Total Metals						
Antimony	mg/kg	---	---	---	---	
Arsenic	mg/kg	---	---	---	---	<0.1
Barium	mg/kg	---	---	---	---	1.98
Beryllium	mg/kg	---	---	---	---	---
Cadmium	mg/kg	---	---	---	---	0.007
Chromium	mg/kg	4.2	8.4	4.8	<0.010	<0.010
Cobalt	mg/kg	---	---	---	---	---
Copper	mg/kg	4.8	6.8	5.5	0.010	---
Lead	mg/kg	9.0	11.0	10.0	0.002	0.10
Mercury	mg/kg	---	---	---	---	0.0002
Nickel	mg/kg	---	---	---	---	---
Potassium	mg/kg	---	---	---	---	---
Selenium	mg/kg	---	---	---	---	<0.10
Vanadium	mg/kg	---	---	---	---	---
Zinc	mg/kg	12.9	22.0	13.3	0.016	---

* RFI1007V6.0 is a composite sample from 5.0-9.0', with a TCLP Extraction for for the analytical results.

PHASE 1, RFI SUPPLEMENTAL
RFI10

Sample point number		06	06	07	07	07*
Depth of sample		V15.0	D15.0	V15.0	E15.0	V6.0
					(UG/L)	(UG/L)
Parameter	Units					
Method 8240						
Chloromethane	mg/kg	<0.50	<0.50	<0.50	<5	<10
Bromomethane	mg/kg	<1	<1	<1	<10	<10
Vinyl chloride	mg/kg	<0.05	<0.05	<0.05	<0.5	<10
Chloroethane	mg/kg	<0.05	<0.05	<0.05	<0.5	<10
Methylene chloride	mg/kg	<0.3	<0.3	<0.3	<3	240 B
1,1-Dichloroethene	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,1-Dichloroethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,2-Dichloroethene (cis/trans)	mg/kg	<0.5	<0.5	<0.5	<5	<5
Chloroform	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,2-Dichloroethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,1,1-Trichloroethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
Carbon tetrachloride	mg/kg	<0.5	<0.5	<0.5	<5	<5
Bromodichloromethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,2-Dichloropropane	mg/kg	<0.5	<0.5	<0.5	<5	<5
trans-1,3-Dichloropropene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Trichloroethene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Dibromochloromethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
1,1,2-Trichloroethene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Benzene	mg/kg	<0.5	<0.5	<0.5	<5	<5
cis-1,3-Dichloropropene	mg/kg	<0.5	<0.5	<0.5	<3	<5
2-Chloroethyl vinyl ether	mg/kg	<0.5	<0.5	<0.5	<5	NA
Bromoform	mg/kg	<0.3	<0.3	<0.3	<3	<5
1,1,2,2-Tetrachloroethane	mg/kg	<0.5	<0.5	<0.5	<5	<5
Tetrachloroethene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Toluene	mg/kg	<0.5	<0.5	<0.5	<5	8
Chlorobenzene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Acetone	mg/kg	<1.0	<1.0	<1.0	<10	44
Acrolein	mg/kg	<1.0	<1.0	<1.0	<10	---
Acrylonitrile	mg/kg	<0.5	<0.5	<0.5	<5	---
Carbon disulfide	mg/kg	<0.5	<0.5	<0.5	<5	<5
Dibromomethane	mg/kg	<0.5	<0.5	<0.5	<5	---
trans-1,4-Dichloro-2-butene	mg/kg	<0.25	<0.25	<0.25	<2.5	---
Dichlorodifluoromethane	mg/kg	<0.5	<0.5	<0.5	<5	---
1,4-Dichloro-2-butane	mg/kg	<0.5	<0.5	<0.5	<5	---
Ethanol	mg/kg	<10	<10	<10	<100	---
Iodomethane	mg/kg	<0.25	<0.25	<0.25	<2.5	---
2-Butanone (MEK)	mg/kg	<0.5	<0.5	<0.5	<5	<10
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.5	<0.5	<0.5	<5	<10
Styrene	mg/kg	<0.5	<0.5	<0.5	<5	<5
Trichlorofluoromethane	mg/kg	<0.5	<0.5	<0.5	<5	---
1,2,3-Trichloropropane	mg/kg	<0.5	<0.5	<0.5	<5	---
Vinyl acetate	mg/kg	<0.5	<0.5	<0.5	<5	<10
Xylenes (total)	mg/kg	<0.5	<0.5	<0.5	<5	16
2-Hexanone	mg/kg	<0.5	<0.5	<0.5	<5	<10
Ethyl methacrylate	mg/kg	<0.25	<0.25	<0.25	<2.5	---

* RFI1007V6.0 is a composite sample from 5.0-9.0', with a TCLP Extraction for for the analytical results.

B Also detected in reagent blank.

PHASE 1, RFI SUPPLEMENTAL, CONT.
RFI10

Sample point number		06	06	07	07	07*
Depth of sample		V15.0	D15.0	V15.0	E15.0	V6.0
						(UG/L)
Parameter	Units					
Method 8270						
Acenapthene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Acenaphthylene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Acetophenone	mg/kg	<0.17	<0.17	<0.17	---	---
4-Aminobiphenyl	mg/kg	<0.17	<0.17	<0.17	---	---
Aniline	mg/kg	<0.17	<0.17	<0.17	<5	<10
Anthracene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Benzo(a)anthracene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Benzo(b)fluoranthene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Benzo(k)fluoranthene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Benzo(g,h,i)perylene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Benzo(a)pyrene	mg/kg	<0.17	<0.17	<0.17	---	<10
Benzyl alcohol	mg/kg	<0.17	<0.17	<0.17	<5	<10
bis(2-Chloroethoxy)-methane	mg/kg	<0.17	<0.17	<0.17	<5	<10
bis(2-Chloroethyl) ether	mg/kg	<0.17	<0.17	<0.17	<5	<10
bis(2-Chloroisopropyl)-ether	mg/kg	<0.17	<0.17	<0.17	<5	<10
bis(2-Ethylhexyl) phthalate	mg/kg	<0.17	<0.17	<0.17	<5	25
4-Bromophenyl phenyl ether	mg/kg	<0.17	<0.17	<0.17	<5	<10
Butyl benzyl phthalate	mg/kg	<0.17	<0.17	<0.17	<5	<10
4-Chloroaniline	mg/kg	<0.17	<0.17	<0.17	<5	<10
4-Chloro-3-methylphenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
2-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<5	<10
2-Chlorophenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
4-Chlorophenyl phenyl ether	mg/kg	<0.17	<0.17	<0.17	<5	<10
Chrysene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Dibenz(a,h)anthracene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Di-n-butyl phthalate	mg/kg	<0.17	<0.17	<0.17	<5	<10
1,2-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
1,3-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
1,4-Dichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
3,3-Dichlorobenzidine	mg/kg	<0.34	<0.34	<0.34	---	---
2,4-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
2,6-Dichlorophenol	mg/kg	<0.17	<0.17	<0.17	---	---
Diethyl phthalate	mg/kg	<0.17	<0.17	<0.17	<5	<10
p-Dimethylaminoazobenzene	mg/kg	<0.17	<0.17	<0.17	---	---
7,12-Dimethylbenz(a)-anthracene	mg/kg	<0.17	<0.17	<0.17	---	---
a,a-Dimethylphenethyl-amine	mg/kg	<0.17	<0.17	<0.17	---	---
2,4-Dimethylphenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
Dimethyl phthalate	mg/kg	<0.17	<0.17	<0.17	<5	<10
1,3-Dinitrobenzene	mg/kg	<0.17	<0.17	<0.17	---	---
4,6-Dinitro-o-cresol	mg/kg	<0.85	<0.85	<0.85	---	---
2,4-Dinitrophenol	mg/kg	<0.85	<0.85	<0.85	<25	<50
2,4-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<5	<10
2,6-Dinitrotoluene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Di-n-octyl phthalate	mg/kg	<0.17	<0.17	<0.17	<5	<10
Diphenylamine	mg/kg	<0.17	<0.17	<0.17	---	---
Dibenzo(a,j)acridine	mg/kg	<0.17	<0.17	<0.17	---	---
2-Methylphenol	mg/kg	<0.17	<0.17	<0.17	---	---
3-Methylphenol	mg/kg	<0.17	<0.17	<0.17	---	---
4-Methylphenol	mg/kg	<0.17	<0.17	<0.17	---	---

* RFI1007V6.0 is a composite sample from 5.0-9.0', with a TCLP Extraction for for the analytical results.

PHASE 1, RFI SUPPLEMENTAL, CONT.
RFI10

Sample point number		06	06	07	07	07*
Depth of sample		V15.0	D15.0	V15.0	E15.0	V6.0
Parameter	Units					
Method 8270 (con't)						
Ethyl methanesulfonate	mg/kg	<0.17	<0.17	<0.17	---	---
Fluoranthene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Fluorene	mg/kg	<0.17	TR	TR	<5	<10
Hexachlorobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Hexachlorobutadiene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Hexachlorocyclopentadiene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Hexachloroethane	mg/kg	<0.17	<0.17	<0.17	<5	<10
Indeno(1,2,3-cd)pyrene	mg/kg	<0.17	<0.17	<0.17	<5	<10
Isophorone	mg/kg	<0.17	<0.17	<0.17	<5	<10
3-Methylcholanthrene	mg/kg	<0.17	<0.17	<0.17	---	---
Methyl methanesulfonate	mg/kg	<0.17	<0.17	<0.17	---	---
2-Methylnaphthalene	mg/kg	<0.17	3	1.1	<5	28
Naphthalene	mg/kg	<0.17	TR	0.2	<5	13
1-Naphthylamine	mg/kg	<0.17	<0.17	<0.17	---	---
2-Naphthylamine	mg/kg	<0.17	<0.17	<0.17	---	---
2-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<25	<50
3-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<25	<50
4-Nitroaniline	mg/kg	<0.85	<0.85	<0.85	<25	<50
Nitrobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
2-Nitrophenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
4-Nitrophenol	mg/kg	<0.85	<0.85	<0.85	---	<50
N-Nitroso-di-n-butylamine	mg/kg	<0.17	<0.17	<0.17	---	---
N-Nitrosodimethylamine	mg/kg	<0.17	<0.17	<0.17	<5	<10
N-Nitrosodiphenylamine	mg/kg	<0.17	<0.17	<0.17	<5	<10
N-Nitroso-di-n-propylamine	mg/kg	<0.17	<0.17	<0.17	<5	<10
N-Nitrosopiperidine	mg/kg	<0.17	<0.17	<0.17	---	---
Pentachlorobenzene	mg/kg	<0.17	<0.17	<0.17	---	---
Pentachloronitrobenzene	mg/kg	<0.85	<0.85	<0.85	---	---
Pentachlorophenol	mg/kg	<0.85	<0.85	0.2	<25	<50
Phenacetin	mg/kg	<0.17	<0.17	<0.17	---	---
Phenanthrene	mg/kg	<0.17	4	<0.17	<5	<10
Phenol	mg/kg	<0.17	<0.17	<0.17	<5	<10
2-Picoline	mg/kg	<0.17	<0.17	<0.17	---	---
Pronamide	mg/kg	<0.17	<0.17	<0.17	---	---
Pyrene	mg/kg	<0.17	<0.17	<0.17	<50	<10
1,2,4,5-Tetrachloro-benzene	mg/kg	<0.17	<0.17	<0.17	---	---
2,3,4,6-Tetrachlorophenol	mg/kg	<0.85	<0.85	<0.85	---	---
1,2,4-Trichlorobenzene	mg/kg	<0.17	<0.17	<0.17	<5	<10
2,4,5-Trichlorophenol	mg/kg	<0.85	<0.85	<0.85	<25	<50
2,4,6-Trichlorophenol	mg/kg	<0.17	<0.17	<0.17	<25	<10
Benzidine	mg/kg	<0.17	<0.17	<0.17	<50	<100
Benzoic acid	mg/kg	<0.85	<0.85	<0.85	<25	<50
1-Chloronaphthane	mg/kg	<0.17	<0.17	<0.17	<5	---
1,2-Diphenylhydrazine	mg/kg	<0.17	<0.17	<0.17	<5	---

* RFI1007V6.0 is a composite sample from 5.0-9.0', with a TCLP Extraction for for the analytical results.

SECTION 7.0

ORIGINAL ANALYTICAL DATA

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 105625

May 29, 1991

Giant Refining Company
Route 3, P.O. Box 7
Gallup, NM 87301

Project Name/Number: Phase I RFI

Attention: Claud Rosendale

On 05/08/91, Analytical Technologies, Inc. received a request to analyze soil & aqueous sample(s). The sample(s) 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.

Sample collection dates for the samples listed below were confirmed off of the sample container's labels. The chain of custody reflected the samples being collected on 9/6 rather than 5/6.

Sample ID	ATI ID
RFI 0624V11.0	10562504
RFI 0624D11.0	10562505
RFI 0627V11.0	10562508

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Analytical Technologies, Inc.

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/08/91
REPORT DATE : 05/23/91

ATI I.D. : 105625

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	RFI0621V11.0	SOIL	05/07/91
02	RFI0622V11.0	SOIL	05/07/91
03	RFI0623V11.0	SOIL	05/07/91
04	RFI0624V11.0	SOIL	05/06/91
05	RFI0624D11.0	SOIL	05/06/91
06	RFI0625V11.0	SOIL	05/07/91
07	RFI0626V11.0	SOIL	05/07/91
08	RFI0627V11.0	SOIL	05/06/91
09	TRIP BLANK	AQUEOUS	05/06/91
10	RFI0628V11.0	SOIL	05/06/91
11	RFI0629V11.0	SOIL	05/06/91
12	RFI0630V11.0	SOIL	05/07/91
13	RFI0625E11.0	AQUEOUS	05/07/91

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	11
AQUEOUS	2

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 105625

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/08/91
REPORT DATE : 05/23/91

PARAMETER	UNITS	06	10
NICKEL	MG/KG	-	8.1
LEAD	MG/KG	17	42

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

ATI I.D. : 105625

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
NICKEL	MG/KG	10559203	15.9	16.6	4	61.5	50.0	91
LEAD	MG/KG	10559203	9	9	0	49	50	80

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562513

TEST : BTEX & MTBE (EPA METHOD 602)

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: N/A
CLIENT I.D.	: RFI0625E11.0	DATE ANALYZED	: 05/10/91
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
TOLUENE	0.7
ETHYLBENZENE	<0.5
TOTAL XYLENES	<0.5
METHYL-t-BUTYL ETHER	<2.5
SURROGATE PERCENT RECOVERIES	
BROMOFLUOROBENZENE (%)	95

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562509

TEST : BTEX & MTBE (EPA METHOD 602)

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 05/10/91
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.5
TOLUENE	<0.5
ETHYLBENZENE	<0.5
TOTAL XYLENES	<0.5
METHYL-t-BUTYL ETHER	<2.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	93

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : BTEX & MTBE (EPA METHOD 602)

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105625
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/10/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.5
TOLUENE	<0.5
ETHYLBENZENE	<0.5
TOTAL XYLENES	<0.5
METHYL-t-BUTYL ETHER	<2.5

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	100

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105625

TEST : BTEX & MTBE (EPA METHOD 602)

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10599802

DATE ANALYZED : 05/10/91
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.5	20	20	100	19	95	5
TOLUENE	<0.5	20	20	100	19	95	5
ETHYLBENZENE	<0.5	20	20	100	19	95	5
TOTAL XYLENES	<0.5	60	60	100	57	95	5
METHYL-t-BUTYL ETHER	<2.5	40	39	98	38	95	3

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562501

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0621V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	0.070
ETHYLBENZENE	0.041
TOTAL XYLENES	0.15
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	95

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562502

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0622V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	0.23
ETHYLBENZENE	0.15
TOTAL XYLENES	0.57
METHYL-t-BUTYL ETHER	<0.125
SURROGATE PERCENT RECOVERIES	
BROMOFLUOROBENZENE (%)	93

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562503

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0623V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	0.062
TOTAL XYLENES	0.24
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	111

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562504

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0624V11.0	DATE ANALYZED	: 05/10/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	90

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562505

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0624D11.0	DATE ANALYZED	: 05/10/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	92

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562506

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0625V11.0	DATE ANALYZED	: 05/10/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 50

COMPOUNDS	RESULTS
BENZENE	19
TOLUENE	450
ETHYLBENZENE	160
TOTAL XYLENES	1000
METHYL-t-BUTYL ETHER	<6.250
SURROGATE PERCENT RECOVERIES	
BROMOFLUOROBENZENE (%)	92

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562507

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0626V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 2

COMPOUNDS	RESULTS
BENZENE	<0.050
TOLUENE	0.20
ETHYLBENZENE	0.17
TOTAL XYLENES	1.4
METHYL-t-BUTYL ETHER	0.41

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	76

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562508

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0627V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	0.037
ETHYLBENZENE	0.45
TOTAL XYLENES	3.8
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	96

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562510

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0628V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
BENZENE	<0.125
TOLUENE	<0.125
ETHYLBENZENE	0.62
TOTAL XYLENES	5.7
METHYL-t-BUTYL ETHER	<0.625

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	112

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562511

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0629V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	89

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10562512

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/07/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/08/91
CLIENT I.D.	: RFI0630V11.0	DATE ANALYZED	: 05/16/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	0.10
ETHYLBENZENE	0.20
TOTAL XYLENES	1.9
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	93

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105625
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/09/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	116

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105625

TEST : BTEX (8020) AND MTBE

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10599920

DATE ANALYZED : 05/10/91
SAMPLE MATRIX : NON-AQUEOUS
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.0	1.2	120	1.3	130	8
TOLUENE	<0.025	1.0	1.2	120	1.3	130	8
ETHYLBENZENE	<0.025	1.0	1.2	120	1.3	130	8
TOTAL XYLENES	<0.025	3.0	3.5	117	3.8	127	8
METHYL-T-BUTYL ETHER	<0.125	1.0	1.0	100	1.2	120	18

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE _____ PAGE 1 OF 2

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt 3 Box 7
Gallup, NM 87301

BILL TO:
COMPANY: Same
ADDRESS:

Lynn Shelton
SAMPLERS: (Signature)

(505) 722 0217
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Lead	Total Nickel	NUMBER OF CONTAINERS
BFI0621V11.0	5-7	9:20	Soil	1				X																	1
BFI0622V11.0	5-7	11:05	Soil	2				X																	1
BFI0623V11.0	5-7	8:20	Soil	3				X																	1
BFI0624V11.0	9-6	1000	Soil	4				X																	1
BFI0624DU1.0	9-6	1000	Soil	5				X																	1
BFI0625V11.0	5-7	9:20	Soil	6				X															X		2
BFI0626V11.0	5-7	8:50	Soil	7				X																	1
BFI0627V11.0	9-6	1045	Soil	8				X																	1
Trip Blank	—	—	Water	9				X																	1

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Phase I BFI	
P.O. NO. 01908	
SHIPPED VIA: Fed Exp	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	10
CHAIN OF CUSTODY SEALS	Y
INTACT?	Y
RECEIVED GOOD COND./COLD	Y
LAB NUMBER	105625

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 12:00	Signature: Time:	Signature: Time:
Printed Name: Date 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: 11:40
Printed Name: Date:	Printed Name: Date:	Printed Name: R. Tubesewski Date: 5/8
Company:	Company:	Analytical Technologies, Inc. ati · phoenix

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

7.22

AnalyticalTechnologies,Inc.
Phoenix, Arizona

Chain of Custody

DATE _____ PAGE 2 OF 2

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt 3 Box 7
Gallup NM 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: ~~505~~ 722-0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Lead	Total Nickel	NUMBER OF CONTAINERS
RFI0628V11.0	5-6	1140	Soil	10				X															X	X	2
RFI0629V11.0	5-6	1110	Soil	11				X																	1
RFI0630V11.0	5-7	1145	Soil	12				X																	1
RFI0625E11.0	5-7	9:00	Water	13				X																	

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Phase I RFI	
P.O. NO. 01908	
SHIPPED VIA: ~~GLCS~~ Fed Exp	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI ☐ RETURN	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	4
CHAIN OF CUSTODY SEALS	Y
INTACT?	Y
RECEIVED GOOD COND./COLD	Y
LAB NUMBER	105625

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 12:00	Signature: Time:	Signature: Time:
Printed Name: [signature] Date 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: R. Tuleszewski Time: 11:40
Printed Name: Date:	Printed Name: Date:	Printed Name: R. Tuleszewski Date: 5/8
Company:	Company:	Analytical Technologies, Inc. ATI phoenix

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

7.23

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 106789

July 1, 1991

Giant Refining Company
Route 3, P.O. Box 7
Gallup, NM 87301

Project Name/Number: Phase I, RFI

Attention: Claud Rosendale

On 06/27/91, Analytical Technologies, Inc. received a request to anayze soil sample(s). The sample(s) 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.

The sample marked on the chain-of-custody as RFI0633V15.0 was marked RFI0633V14.0 on the bottle, and has been logged in by the bottle description.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Inc.

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I, RFI

DATE RECEIVED : 06/20/91
REPORT DATE : 06/27/91

ATI I.D. : 106789

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	RFI0631V16.0	SOIL	06/18/91
02	RFI0632V11.0	SOIL	06/18/91
03	RFI0633V14.0	SOIL	06/18/91

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10678901

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 06/18/91
PROJECT #	: (NONE)	DATE RECEIVED	: 06/20/91
PROJECT NAME	: PHASE I, RFI	DATE EXTRACTED	: 06/22/91
CLIENT I.D.	: RFI0631V16.0	DATE ANALYZED	: 06/26/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
BENZENE	0.58
TOLUENE	2.9
ETHYLBENZENE	0.94
TOTAL XYLENES	7.2
METHYL-t-BUTYL ETHER	<1.250

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	78

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10678902

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 06/18/91
PROJECT #	: (NONE)	DATE RECEIVED	: 06/20/91
PROJECT NAME	: PHASE I, RFI	DATE EXTRACTED	: 06/22/91
CLIENT I.D.	: RFI0632V11.0	DATE ANALYZED	: 06/26/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	96

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10678903

TEST : BTEX (8020) AND MTBE

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 06/18/91
PROJECT #	: (NONE)	DATE RECEIVED	: 06/20/91
PROJECT NAME	: PHASE I, RFI	DATE EXTRACTED	: 06/22/91
CLIENT I.D.	: RFI0633V14.0	DATE ANALYZED	: 06/26/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : BTEX (8020) AND MTBE

		ATI I.D.	: 106789
CLIENT	: GIANT REFINING CO.	DATE EXTRACTED	: 06/22/91
PROJECT #	: (NONE)	DATE ANALYZED	: 06/26/91
PROJECT NAME	: PHASE I, RFI	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
BENZENE	<0.025
TOLUENE	<0.025
ETHYLBENZENE	<0.025
TOTAL XYLENES	<0.025
METHYL-t-BUTYL ETHER	<0.125

SURROGATE PERCENT RECOVERIES

BROMOFLUOROBENZENE (%)	102

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 106789

TEST : BTEX (8020) AND MTBE

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I, RFI
REF I.D. : 10678003

DATE ANALYZED : 06/26/91
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.025	1.0	1.05	105	0.91	91	14
TOLUENE	<0.025	1.0	1.06	106	0.96	96	10
ETHYLBENZENE	<0.025	1.0	1.06	106	0.98	98	8
TOTAL XYLENES	<0.025	3.0	3.11	104	2.90	97	7
METHYL-T-BUTYL ETHER	<0.125	1.0	0.82	82	0.78	78	5

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AnalyticalTechnologies, Inc.
Phoenix, Arizona

Chain of Custody

6-18-91
DATE PAGE 1 OF 1

PROJECT MANAGER: CLAUD ROSENDALE

COMPANY: GIANT REFINING
ADDRESS: Rt 3 BOX 7
GALLUP, NM 87301

BILL TO:
COMPANY: SAME
ADDRESS:

Lynn Shelton
SAMPLERS: (Signature)

(505) 722 0227
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	NUMBER OF CONTAINERS
RFI 0631 V16.0	6-18-91	8:45 Am	SOIL	1				X															1
RFI 0632 V11.0	6-18-91	12:10 pm	SOIL	2				X															1
RFI 0633 V15.0	6-18-91	10:50 am	SOIL	3				X															1
~~RFI 06~~	~~6-18-91~~		~~SOIL~~																				

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NO:		TOTAL NO. OF CONTAINERS	3
PROJECT NAME: PHASE I, RFI		CHAIN OF CUSTODY SEALS	Y
P.O. NO. 01908		INTACT?	Y
SHIPPED VIA: FED EXPRESS		RECEIVED GOOD COND./COLD	Y
SAMPLE DISPOSAL INSTRUCTIONS		LAB NUMBER	106789
☒ ATI	☐ RETURN		

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time: 9:45 Am	Signature: Time:	Signature: Time:
Printed Name: LYNN Shelton Date: 6-19-91	Printed Name: Date	Printed Name: Date
Company: GIANT REFINING	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Linda Eshelman Time: 10:20
Printed Name: Date:	Printed Name: Date:	Printed Name: Linda Eshelman Date: 6/20/91
Company:	Company:	Analytical Technologies, Inc.

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 105624

June 10, 1991

Giant Refining Company
Route 3, P.O. Box 7
Gallup, NM 87301

Project Name/Number: Phase I RFI

Attention: Claud Rosendale

On 05/08/91, Analytical Technologies, Inc. received a request to analyze soil sample(s). The sample(s) 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 (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Inc.

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/08/91
REPORT DATE : 05/22/91

ATI I.D. : 105624

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	RFI0814V7.0	SOIL	05/06/91
02	RFI0815V7.0	SOIL	05/06/91
03	RFI0815D7.0	SOIL	05/06/91

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	3

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10562401

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI0814V7.0	DATE ANALYZED	: 05/17/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
PHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
4-METHYLPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
NAPTHALENE	<0.17
DIMETHYLPHTHALATE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIETHYLPHTHALATE	<0.17
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZENETHIOL	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
7,12-DIMETHYLBENZ(a)ANTHRACENE	<0.17
INDENE	<0.17
METHYLCHRYSENE	<0.17
1-METHYLNAPHTHALENE	<0.17
3-METHYLPHENOL	<0.17
PYRIDINE	<0.17
QUINOLINE	<0.85

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA.

Analytical Technologies, Inc.

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

ATI I.D. : 10562401

COMPOUNDS	RESULTS
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	46
2-FLUOROBIPHENYL (%)	64
TERPHENYL (%)	85
PHENOL-D6 (%)	35
2-FLUOROPHENOL (%)	53
2,4,6-TRIBROMOPHENOL (%)	29

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10562402

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI0815V7.0	DATE ANALYZED	: 05/17/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
PHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
4-METHYLPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
NAPTHALENE	<0.17
DIMETHYLPHTHALATE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIETHYLPHTHALATE	<0.17
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZENETHIOL	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
7,12-DIMETHYLBENZ(a)ANTHRACENE	<0.17
INDENE	<0.17
METHYLCHRYSENE	<0.17
1-METHYLNAPHTHALENE	<0.17
3-METHYLPHENOL	<0.17
PYRIDINE	<0.17
QUINOLINE	<0.85

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA.

Analytical Technologies, Inc.

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

ATI I.D. : 10562402

COMPOUNDS	RESULTS
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	38
2-FLUOROBIPHENYL (%)	50
TERPHENYL (%)	70
PHENOL-D6 (%)	29
2-FLUOROPHENOL (%)	46
2,4,6-TRIBROMOPHENOL (%)	22

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10562403

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/06/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/08/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI0815D7.0	DATE ANALYZED	: 05/17/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
PHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
4-METHYLPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
NAPTHALENE	<0.17
DIMETHYLPHTHALATE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIETHYLPHTHALATE	<0.17
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZENETHIOL	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
7,12-DIMETHYLBENZ(A)ANTHRACENE	<0.17
INDENE	<0.17
METHYLCHRYSENE	<0.17
1-METHYLNAPHTHALENE	<0.17
3-METHYLPHENOL	<0.17
PYRIDINE	<0.17
QUINOLINE	<0.85

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA.

Analytical Technologies, Inc.

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

ATI I.D. : 10562403

COMPOUNDS	RESULTS
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	45
2-FLUOROBIPHENYL (%)	59
TERPHENYL (%)	74
PHENOL-D6 (%)	33
2-FLUOROPHENOL (%)	47
2,4,6-TRIBROMOPHENOL (%)	22

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (SKINNER LIST) EPA 8270

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105624
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/13/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/17/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
PHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
4-METHYLPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
NAPTHALENE	<0.17
DIMETHYLPHTHALATE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIETHYLPHTHALATE	<0.17
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZENETHIOL	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
7,12-DIMETHYLBENZ(a)ANTHRACENE	<0.17
INDENE	<0.17
METHYLCHRYSENE	<0.17
1-METHYLNAPTHALENE	<0.17
3-METHYLPHENOL	<0.17
PYRIDINE	<0.17
QUINOLINE	<0.85

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA.

Analytical Technologies, Inc.

TEST : VOLATILE ORGANICS (SKINNER LIST) EPA 8270

ATI I.D. : 105624

COMPOUNDS	RESULTS
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	46
2-FLUOROBIPHENYL (%)	51
TERPHENYL (%)	76
PHENOL-D6 (%)	46
2-FLUOROPHENOL (%)	54
2,4,6-TRIBROMOPHENOL (%)	15

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105624

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10599923

DATE ANALYZED : 05/20/91
SAMPLE MATRIX : NON-AQUEOUS
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<0.17	1.7	1.6	76	1.2	71	8
ACENAPHTHENE	<0.17	1.7	1.3	76	1.2	71	8
2,4-DINITROTOLUENE	<0.17	1.7	0.9	53	0.9	53	0
PYRENE	<0.17	1.7	1.7	100	1.6	94	6
N-NITROSO-DI-N-PROPYLAMINE	<0.17	1.7	1.4	82	1.3	76	7
1,4-DICHLOROBENZENE	<0.17	1.7	1.3	76	1.1	65	17
PENTACHLOROPHENOL	<0.85	3.3	3.9	118	3.5	106	11
PHENOL	<0.17	3.3	2.8	85	2.6	79	7
2-CHLOROPHENOL	<0.17	3.3	2.7	82	2.6	79	4
4-CHLORO-3-METHYLPHENOL	<0.17	3.3	3.0	91	3.0	91	0
4-NITROPHENOL	<0.85	3.3	2.9	88	3.0	91	3

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

AnalyticalTechnologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-6-91 PAGE 1 OF 1

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt. 3 Box 7
Gallup, N.M. 87301

BILL TO:
COMPANY: Same
ADDRESS:

SAMPLERS: (Signature)
PHONE NUMBER: (505) 722-0217

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (8270) See Attached	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	NUMBER OF CONTAINERS
RFI0814V7.0	5-6	0840	Soil	1										X									1
RFI0815V7.0	5-6	0900	Soil	2										X									1
RFI0815D7.0	5-6	0900	Soil	3										X									1

PROJECT INFORMATION	
PROJECT NO:	
PROJECT NAME:	Phase I RFI
P.O. NO.	01908
SHIPPED VIA:	Fed. Exp
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI	☐ RETURN

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	105624

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments: See Attachment for specific Analysis

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: [signature] Time: 12:00	Signature: Time:	Signature: Time:
Printed Name: Clay Rosenbalt Date: 5-7-91	Printed Name: Date	Printed Name: Date
Company: Giant	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: R. Tuboszewski Time: 11:30
Printed Name: Date:	Printed Name: Date:	Printed Name: R. Tuboszewski Date: 5/8
Company:	Company:	Analytical Technologies, Inc. ATI-phoenix

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

TABLE -1
BACKGROUND METALS

Total Metals

Parameter	Analytical Method	Reporting Limit mg/kg
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
Potassium	6010	500
Selenium	7740	0.5
Vanadium	6010	1.0
Zinc	6010	2.0

TABLE-4
SKINNER LIST

METHOD 8240

Parameter	Reporting Limit (ug/kg)
Benzene	500
Carbon disulfide	500
Chlorobenzene	500
2-Chloroethylvinyl ether	1,000
1,2-Dibromomethane	1,000
1,2-Dichloroethane	500
1,4-Dioxane	50,000
Ethyl Benzene	500
Methyl ethyl ketone (2-butanone)	1,000
Styrene	500
Toluene	500
Xylenes	500

METHOD 8270

Anthracene	5,000
Benzenethiol	-
Benzo(a)anthracene	5,000
Benzo(b)fluoranthene	5,000
Benzo(k)fluoranthene	5,000
Benzo(a)pyrene	5,000
Bis(2-ethylhexyl)phthalate	5,000
Butyl benzyl phthalate	5,000
Chrysene	5,000
Dibenzo(a,X)acridine	-
Dibenzo(a,h)anthracene	5,000
Di-n-butylphthalate	5,000
1,2-Dichlorobenzene	5,000
1,3-Dichlorobenzene	5,000
1,4-Dichlorobenzene	5,000
Diethyl phthalate	5,000
7,12-Dimethylbenz(a)anthrancene	5,000
2,4-Dimethylphenol	5,000
Dimethyl phthalate	5,000
2,4-Dinitrophenol	25,000
Di-n-octyl phthalate	5,000
Fluoranthene	5,000
Indene	5,000
Methylchrysene	-
1-Methylnaphthalene	5,000
2-Methylphenol	5,000
3-Methylphenol	5,000
4-Methylphenol	5,000
Naphthalene	5,000
4-Nitrophenol	25,000
Phenanthrene	5,000

TABLE-4 Continued

	5,000
Phenol	5,000
Pyrene	10,000
Pyridine	25,000
Quinoline	

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 105674

June 11, 1991

Giant Refining Company
Route 3, P.O. Box 7
Gallup, NM 87301

Project Name/Number: Phase I RFI

Attention: Claud Rosendale

On 05/10/91, Analytical Technologies, Inc. received a request to analyze soil & aqueous sample(s). The sample(s) 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 (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Inc.

CLIENT : GIANT REFINING CO. DATE RECEIVED : 05/10/91
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI REPORT DATE : 05/29/91
ATI I.D. : 105674

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	RFI1006V15.0	SOIL	05/08/91
02	RFI1006D15.0	SOIL	05/08/91
03	RFI1007V15.0	SOIL	05/09/91
04	RFI1007E15.0	AQUEOUS	05/09/91

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	3
AQUEOUS	1

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 105674

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/10/91
REPORT DATE : 05/29/91

PARAMETER	UNITS	01	02	03
CHROMIUM	MG/KG	4.2	8.4	4.8
COPPER	MG/KG	4.8	6.8	5.5
LEAD	MG/KG	9	11	10
ZINC	MG/KG	12.9	22.0	13.3

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 105674

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/10/91
REPORT DATE : 05/29/91

PARAMETER	UNITS	04
CHROMIUM	MG/L	<0.010
COPPER	MG/L	0.010
LEAD	MG/L	<0.002
ZINC	MG/L	0.016

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI ATI I.D. : 105674

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CHROMIUM	MG/L	10566901	0.015	0.014	7	0.983	1.00	97
CHROMIUM	MG/KG	10559203	10.0	12.1	19	54.5	50.0	89
COPPER	MG/L	10569401	0.261	0.264	1	0.365	0.100	104
COPPER	MG/KG	10559203	16.3	15.5	5	36.3	25.0	80
LEAD	MG/L	10569401	0.006	0.006	0	0.061	0.050	110
LEAD	MG/KG	10559203	9	9	0	49	50	80
ZINC	MG/L	10566901	0.062	0.063	2	0.572	0.500	102
ZINC	MG/KG	10559201	58.6	57.9	1	110	50.0	103

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567401

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/14/91
CLIENT I.D.	: RFI1006V15.0	DATE ANALYZED	: 05/20/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<1.0
CARBON DISULFIDE	<0.5
1,1-DICHLOROETHENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,2-DICHLOROETHENE (TOTAL)	<0.5
CHLOROFORM	<0.5
1,2-DICHLOROETHANE	<0.5
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.5
CARBON TETRACHLORIDE	<0.5
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
1,2-DICHLOROPROPANE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
TRICHLOROETHENE	<0.5
DIBROMOCHLOROMETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
BENZENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.5
TETRACHLOROETHENE	<0.5
TOLUENE	<0.5
CHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
STYRENE	<0.5
TOTAL XYLENES	<0.5
ACROLEIN	<1
ACRYLONITRILE	<0.50
DIBROMOMETHANE	<0.5
DICHLORODIFLUOROMETHANE	<0.5
METHYL IODIDE	<0.25
TRANS-1,4-DICHLORO-2-BUTENE	<0.25
TRICHLOROMONOFLUOROMETHANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567401

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
ETHYL METHACRYLATE	<0.25
ETHANOL	<10
BROMOMETHANE	<1
2-CHLOROETHYLVINYLETHER	<0.5
1,4-DICHLORO-2-BUTANE	<0.5
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	114
BFB (%)	102
TOLUENE-D8 (%)	105

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567402

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/14/91
CLIENT I.D.	: RFI1006D15.0	DATE ANALYZED	: 05/20/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<1.0
CARBON DISULFIDE	<0.5
1,1-DICHLOROETHENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,2-DICHLOROETHENE (TOTAL)	<0.5
CHLOROFORM	<0.5
1,2-DICHLOROETHANE	<0.5
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.5
CARBON TETRACHLORIDE	<0.5
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
1,2-DICHLOROPROPANE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
TRICHLOROETHENE	<0.5
DIBROMOCHLOROMETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
BENZENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.5
TETRACHLOROETHENE	<0.5
TOLUENE	<0.5
CHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
STYRENE	<0.5
TOTAL XYLENES	<0.5
ACROLEIN	<1
ACRYLONITRILE	<0.50
DIBROMOMETHANE	<0.5
DICHLORODIFLUOROMETHANE	<0.5
METHYL IODIDE	<0.25
TRANS-1,4-DICHLORO-2-BUTENE	<0.25
TRICHLOROMONOFLUOROMETHANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567402

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
ETHYL METHACRYLATE	<0.25
ETHANOL	<10
BROMOMETHANE	<1
2-CHLOROETHYLVINYLETHER	<0.5
1,4-DICHLORO-2-BUTANE	<0.5
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	117
BFB (%)	101
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567403

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/14/91
CLIENT I.D.	: RFI1007V15.0	DATE ANALYZED	: 05/20/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<1.0
CARBON DISULFIDE	<0.5
1,1-DICHLOROETHENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,2-DICHLOROETHENE (TOTAL)	<0.5
CHLOROFORM	<0.5
1,2-DICHLOROETHANE	<0.5
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.5
CARBON TETRACHLORIDE	<0.5
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
1,2-DICHLOROPROPANE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
TRICHLOROETHENE	<0.5
DIBROMOCHLOROMETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
BENZENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.5
TETRACHLOROETHENE	<0.5
TOLUENE	<0.5
CHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
STYRENE	<0.5
TOTAL XYLENES	<0.5
ACROLEIN	<1
ACRYLONITRILE	<0.50
DIBROMOMETHANE	<0.5
DICHLORODIFLUOROMETHANE	<0.5
METHYL IODIDE	<0.25
TRANS-1,4-DICHLORO-2-BUTENE	<0.25
TRICHLOROMONOFLUOROMETHANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567403

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
ETHYL METHACRYLATE	<0.25
ETHANOL	<10
BROMOMETHANE	<1
2-CHLOROETHYLVINYLETHER	<0.5
1,4-DICHLORO-2-BUTANE	<0.5
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	98
BFB (%)	107
TOLUENE-D8 (%)	105

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105674
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/14/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/20/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<1.0
CARBON DISULFIDE	<0.5
1,1-DICHLOROETHENE	<0.5
1,1-DICHLOROETHANE	<0.5
1,2-DICHLOROETHENE (TOTAL)	<0.5
CHLOROFORM	<0.5
1,2-DICHLOROETHANE	<0.5
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.5
CARBON TETRACHLORIDE	<0.5
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.5
1,1,2,2-TETRACHLOROETHANE	<0.5
1,2-DICHLOROPROPANE	<0.5
TRANS-1,3-DICHLOROPROPENE	<0.5
TRICHLOROETHENE	<0.5
DIBROMOCHLOROMETHANE	<0.5
1,1,2-TRICHLOROETHANE	<0.5
BENZENE	<0.5
CIS-1,3-DICHLOROPROPENE	<0.5
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.5
TETRACHLOROETHENE	<0.5
TOLUENE	<0.5
CHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
STYRENE	<0.5
TOTAL XYLENES	<0.5
ACROLEIN	<1
ACRYLONITRILE	<0.50
DIBROMOMETHANE	<0.5
DICHLORODIFLUOROMETHANE	<0.5
METHYL IODIDE	<0.25
TRANS-1,4-DICHLORO-2-BUTENE	<0.25
TRICHLOROMONOFLUOROMETHANE	<0.5
1,2,3-TRICHLOROPROPANE	<0.5
ETHYL METHACRYLATE	<0.25
ETHANOL	<10

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 105674

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
BROMOMETHANE	<1
2-CHLOROETHYLVINYLETHER	<0.5
1,4-DICHLORO-2-BUTANE	<0.5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	111
BFB (%)	103
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105674

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10699918

DATE ANALYZED : 05/23/91
SAMPLE MATRIX : NON-AQUEOUS
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.5	2.5	2.1	84	2.1	84	0
TRICHLOROETHENE	<0.5	2.5	2.1	84	2.2	88	5
CHLOROBENZENE	<0.5	2.5	2.3	92	2.4	96	4
TOLUENE	<0.5	2.5	2.4	96	2.5	100	4
BENZENE	<0.5	2.5	2.1	84	2.1	84	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567404

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: N/A
CLIENT I.D.	: RFI1007E15.0	DATE ANALYZED	: 05/23/91
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<5
VINYL CHLORIDE	<0.5
CHLOROETHANE	<0.5
METHYLENE CHLORIDE	<3
ACETONE	<10
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<5
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<5
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
BROMOFORM	<3
2-HEXANONE (MBK)	<5
4-METHYL-2-PENTANONE (MIBK)	<5
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5
ACROLEIN	<10
ACRYLONITRILE	<5
DIBROMOMETHANE	<5
DICHLORODIFLUOROMETHANE	<5
METHYL IODIDE	<2.5
TRANS-1,4-DICHLORO-2-BUTENE	<2.5
TRICHLOROMONOFLUOROMETHANE	<5
1,2,3-TRICHLOROPROPANE	<5

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567404

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
ETHYL METHACRYLATE	<2.5
ETHANOL	<100
BROMOMETHANE	<10
2-CHLOROETHYLVINYLETHER	<5
1,4-DICHLORO-2-BUTANE	<0.5
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	103
BFB (%)	103
TOLUENE-D8 (%)	104

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105674
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/23/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/23/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<5
VINYL CHLORIDE	<0.5
CHLOROETHANE	<0.5
METHYLENE CHLORIDE	<3
ACETONE	<10
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<5
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<5
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
BROMOFORM	<3
2-HEXANONE (MBK)	<5
4-METHYL-2-PENTANONE (MIBK)	<5
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5
ACROLEIN	<10
ACRYLONITRILE	<5
DIBROMOMETHANE	<5
DICHLORODIFLUOROMETHANE	<5
METHYL IODIDE	<2.5
TRANS-1,4-DICHLORO-2-BUTENE	<2.5
TRICHLOROMONOFLUOROMETHANE	<5
1,2,3-TRICHLOROPROPANE	<5
ETHYL METHACRYLATE	<2.5
ETHANOL	<100

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Analytical Technologies, Inc.

GCMS - RESULTS

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ATI I.D. : 105674

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

COMPOUNDS	RESULTS
BROMOMETHANE	<10
2-CHLOROETHYLVINYLETHER	<5
1,4-DICHLORO-2-BUTANE	<0.5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BFB (%)	103
TOLUENE-D8 (%)	106

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105674

TEST : VOLATILE ORGANICS (EPA 8240) APPENDIX IX

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10699904

DATE ANALYZED : 05/28/91
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<5	50	41	82	43	86	5
TRICHLOROETHENE	<5	50	47	94	48	96	2
CHLOROBENZENE	<5	50	45	90	46	92	2
TOLUENE	<5	50	44	88	44	88	0
BENZENE	<5	50	41	82	42	84	2

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567401

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1006V15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORENE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-NITROANILINE	<0.85
DIMETHYLPHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567401

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
FLUORENE	<0.17
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3'-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17
1-CHLORONAPHTHANE	<0.17
2-CHLORONAPHTHANE	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
DI-N-OCTYLPHTHALATE	<0.17
1,2-DIPHENYLHYDRAZINE	<0.17

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	77
2-FLUOROBIPHENYL (%)	76
TERPHENYL (%)	90
PHENOL-D6 (%)	63
2-FLUOROPHENOL (%)	76
2,4,6-TRIBROMOPHENOL (%)	57

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567401

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1006V15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ACETOPHENONE	<0.17
a,a-DIMETHYLPHENETHYLAMINE	<0.17
4-AMINOBIPHENYL	<0.17
2,6-DICHLOROPHENOL	<0.17
p-(DIMETHYLAMINO)AZOBENZENE	<0.17
7,12-DIMETHYLBENZO(a)ANTHRACENE	<0.17
DIPHENYLAMINE	<0.17
ETHYL METHANESULFONATE	<0.17
3-METHYLCHOLANTHRENE	<0.17
METHYL METHANESULFONATE	<0.17
3-METHYLPHENOL (m-CRESOL)	<0.17
1-NAPHTHYLAMINE	<0.17
2-NAPHTHYLAMINE	<0.17
N-NITROSO-DI-BUTYLAMINE	<0.17
N-NITROSOPIPERIDINE	<0.17
PENTACHLOROBENZENE	<0.17
PENTACHLORONITROBENZENE	<0.85
PHENACETIN	<0.17
2-PICOLINE	<0.17
PRONAMIDE	<0.17
1,2,4,5-TETRACHLOROBENZENE	<0.17
2,3,4,6-TETRACHLOROPHENOL	<0.85

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

ATI I.D. : 10567401

COMPOUNDS	RESULTS
SUBSTITUTED NAPHTHALENES	10
TOTAL EXTRACTABLE HYDROCARBONS C8-C14	30

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567402

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: N/A
CLIENT I.D.	: RFI1006D15.0	DATE ANALYZED	: 05/13/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<1.7
PHENOL	<1.7
ANILINE	<1.7
BIS(2-CHLOROETHYL)ETHER	<1.7
2-CHLOROPHENOL	<1.7
1,3-DICHLOROBENZENE	<1.7
1,4-DICHLOROBENZENE	<1.7
BENZYL ALCOHOL	<1.7
1,2-DICHLOROBENZENE	<1.7
2-METHYLPHENOL	<1.7
BIS(2-CHLOROISOPROPYL)ETHER	<1.7
4-METHYLPHENOL	<1.7
N-NITROSO-DI-N-PROPYLAMINE	<1.7
HEXACHLOROETHANE	<1.7
NITROBENZENE	<1.7
ISOPHORENE	<1.7
2-NITROPHENOL	<1.7
2,4-DIMETHYLPHENOL	<1.7
BENZOIC ACID	<8.5
BIS(2-CHLOROETHOXY)METHANE	<1.7
2,4-DICHLOROPHENOL	<1.7
1,2,4-TRICHLOROBENZENE	<1.7
NAPHTHALENE	TR
4-CHLOROANILINE	<1.7
HEXACHLOROBUTADIENE	<1.7
4-CHLORO-3-METHYLPHENOL	<1.7
2-METHYLNAPHTHALENE	3
HEXACHLOROCYCLOPENTADIENE	<1.7
2,4,6-TRICHLOROPHENOL	<1.7
2,4,5-TRICHLOROPHENOL	<8.5
2-NITROANILINE	<8.5
DIMETHYLPHTHALATE	<1.7
ACENAPHTHYLENE	<1.7
3-NITROANINLINE	<8.5
ACENAPHTHENE	<1.7
2,4-DINITROPHENOL	<8.5
4-NITROPHENOL	<8.5
2,4-DINITROTOLUENE	<1.7
2,6-DINITROTOLUENE	<1.7
DIETHYLPHTHALATE	<1.7
4-CHLOROPHENYL-PHENYLETHER	<1.7

TR - Compound detected at an unquantifiable trace level

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567402

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
FLUORENE	TR
4-NITROANILINE	<8.5
4,6-DINITRO-2-METHYLPHENOL	<8.5
N-NITROSODIPHENYLAMINE	<1.7
4-BROMOPHENYL-PHENYLETHER	<1.7
HEXACHLOROBENZENE	<1.7
PENTACHLOROPHENOL	<8.5
PHENANTHRENE	4
ANTHRACENE	<1.7
DI-N-BUTYLPHTHALATE	<1.7
FLUORANTHENE	<1.7
BENZIDINE	<1.7
PYRENE	<1.7
BUTYLBENZYLPHTHALATE	<1.7
3,3'-DICHLOROBENZIDINE	<3.4
BENZO(a)ANTHRACENE	<1.7
BIS(2-ETHYLHEXYL)PHTHALATE	<1.7
CHRYSENE	<1.7
BENZO(b)FLUORANTHENE	<1.7
BENZO(k)FLUORANTHENE	<1.7
BENZO(a)PYRENE	<1.7
INDENO(1,2,3-cd)PYRENE	<1.7
DIBENZO(a,h)ANTHRACENE	<1.7
BENZO(g,h,i)PERYLENE	<1.7
1-CHLORONAPHTHANE	<1.7
2-CHLORONAPHTHANE	<1.7
DIBENZO(A,J)ACRIDINE	<1.7*
DI-N-OCTYLPHTHALATE	<1.7
1,2-DIPHENYLHYDRAZINE	<1.7

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	65
2-FLUOROBIPHENYL (%)	81
TERPHENYL (%)	85
PHENOL-D6 (%)	58
2-FLUOROPHENOL (%)	59
2,4,6-TRIBROMOPHENOL (%)	39

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567402

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/08/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1006D15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 10

COMPOUNDS	RESULTS
ACETOPHENONE	<1.7
a,a-DIMETHYLPHENETHYLAMINE	<1.7
4-AMINOBIPHENYL	<1.7
2,6-DICHLOROPHENOL	<1.7
p-(DIMETHYLAMINO)AZOBENZENE	<1.7
7,12-DIMETHYLBENZO(a)ANTHRACENE	<1.7
DIPHENYLAMINE	<1.7
ETHYL METHANESULFONATE	<1.7
3-METHYLCHOLANTHRENE	<1.7
METHYL METHANESULFONATE	<1.7
3-METHYLPHENOL (m-CRESOL)	<1.7
1-NAPHTHYLAMINE	<1.7
2-NAPHTHYLAMINE	<1.7
N-NITROSO-DI-BUTYLAMINE	<1.7
N-NITROSOPIPERIDINE	<1.7
PENTACHLOROBENZENE	<1.7
PENTACHLORONITROBENZENE	<8.5
PHENACETIN	<1.7
2-PICOLINE	<1.7
PRONAMIDE	<1.7
1,2,4,5-TETRACHLOROBENZENE	<1.7
2,3,4,6-TETRACHLOROPHENOL	<8.5

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

ATI I.D. : 10567402

COMPOUNDS	RESULTS
SUBSTITUTED NAPHTHALENES	50
TOTAL EXTRACTABLE HYDROCARBONS C8-C25	1000
METHYL ANTHRACENE	10

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567403

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1007V15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORENE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	0.2
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	1.1
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-NITROANILINE	<0.85
DIMETHYLPHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17

TR - Compound detected at an unquantifiable trace level

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567403

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
FLUORENE	TR
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	0.2
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3'-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17
1-CHLORONAPHTHANE	<0.17
2-CHLORONAPHTHANE	<0.17
DIBENZO(A,J)ACRIDINE	<0.17*
DI-N-OCTYLPHTHALATE	<0.17
1,2-DIPHENYLHYDRAZINE	<0.17

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	81
2-FLUOROBIPHENYL (%)	79
TERPHENYL (%)	106
PHENOL-D6 (%)	76
2-FLUOROPHENOL (%)	84
2,4,6-TRIBROMOPHENOL (%)	78

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567403

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1007V15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ACETOPHENONE	<0.17
a,a-DIMETHYLPHENETHYLAMINE	<0.17
4-AMINOBIPHENYL	<0.17
2,6-DICHLOROPHENOL	<0.17
p-(DIMETHYLAMINO)AZOBENZENE	<0.17
7,12-DIMETHYLBENZO(a)ANTHRACENE	<0.17
DIPHENYLAMINE	<0.17
ETHYL METHANESULFONATE	<0.17
3-METHYLCHOLANTHRENE	<0.17
METHYL METHANESULFONATE	<0.17
3-METHYLPHENOL (m-CRESOL)	<0.17
1-NAPHTHYLAMINE	<0.17
2-NAPHTHYLAMINE	<0.17
N-NITROSO-DI-BUTYLAMINE	<0.17
N-NITROSOPIPERIDINE	<0.17
PENTACHLOROBENZENE	<0.17
PENTACHLORONITROBENZENE	<0.85
PHENACETIN	<0.17
2-PICOLINE	<0.17
PRONAMIDE	<0.17
1,2,4,5-TETRACHLOROBENZENE	<0.17
2,3,4,6-TETRACHLOROPHENOL	<0.85

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

ATI I.D. : 10567403

COMPOUNDS	RESULTS
SUBSTITUTED NAPHTHALENES	8
METHYL ANTHRACENE	1
TOTAL EXTRACTABLE HYDROCARBONS C8-C25	500

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105674
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/17/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/17/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORENE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-NITROANILINE	<0.85
DIMETHYLPHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17
FLUORENE	<0.17
4-NITROANILINE	<0.85

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 105674

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<0.17
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3'-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17
1-CHLORONAPHTHANE	<0.17
2-CHLORONAPHTHANE	<0.17
DIBENZO(A,J)ACRIDINE	<0.17 *
DI-N-OCTYLPHTHALATE	<0.17
1,2-DIPHENYLHYDRAZINE	<0.17

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	46
2-FLUOROBIPHENYL (%)	51
TERPHENYL (%)	76
PHENOL-D6 (%)	46
2-FLUOROPHENOL (%)	54
2,4,6-TRIBROMOPHENOL (%)	15

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105674
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/17/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/17/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ACETOPHENONE	<0.17
a,a-DIMETHYLPHENETHYLAMINE	<0.17
4-AMINOBIPHENYL	<0.17
2,6-DICHLOROPHENOL	<0.17
p-(DIMETHYLAMINO)AZOBENZENE	<0.17
7,12-DIMETHYLBENZO(a)ANTHRACENE	<0.17
DIPHENYLAMINE	<0.17
ETHYL METHANESULFONATE	<0.17
3-METHYLCHOLANTHRENE	<0.17
METHYL METHANESULFONATE	<0.17
3-METHYLPHENOL (m-CRESOL)	<0.17
1-NAPHTHYLAMINE	<0.17
2-NAPHTHYLAMINE	<0.17
N-NITROSO-DI-BUTYLAMINE	<0.17
N-NITROSOPIPERIDINE	<0.17
PENTACHLOROBENZENE	<0.17
PENTACHLORONITROBENZENE	<0.85
PHENACETIN	<0.17
2-PICOLINE	<0.17
PRONAMIDE	<0.17
1,2,4,5-TETRACHLOROBENZENE	<0.17
2,3,4,6-TETRACHLOROPHENOL	<0.85

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105674

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10699918

DATE ANALYZED : 05/20/91
SAMPLE MATRIX : NON-AQUEOUS
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<0.17	1.7	1.3	76	1.2	71	8
ACENAPHTHENE	<0.17	1.7	1.3	76	1.2	71	8
2,4-DINITROTOLUENE	<0.17	1.7	0.9	53	0.9	53	0
PYRENE	<0.17	1.7	1.7	100	1.6	94	6
N-NITROSO-DI-N-PROPYL AMINE	<0.17	1.7	1.4	82	1.3	76	7
1,4-DICHLOROBENZENE	<0.17	1.7	1.3	76	1.1	65	17
PENTACHLOROPHENOL	<0.85	3.3	3.9	118	3.5	106	11
PHENOL	<0.17	3.3	2.8	85	2.6	79	7
2-CHLOROPHENOL	<0.17	3.3	2.7	82	2.6	79	4
4-CHLORO-3-METHYLPHENOL	<0.17	3.3	3.0	91	3.0	91	0
4-NITROPHENOL	<0.85	3.3	2.9	88	3.0	91	3

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567404

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/10/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/13/91
CLIENT I.D.	: RFI1007E15.0	DATE ANALYZED	: 05/21/91
SAMPLE MATRIX	: AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<5
PHENOL	<5
ANILINE	<5
BIS(2-CHLOROETHYL)ETHER	<5
2-CHLOROPHENOL	<5
1,3-DICHLOROBENZENE	<5
1,4-DICHLOROBENZENE	<5
BENZYL ALCOHOL	<5
1,2-DICHLOROBENZENE	<5
2-METHYLPHENOL	<5
BIS(2-CHLOROISOPROPYL)ETHER	<5
4-METHYLPHENOL	<5
N-NITROSO-DI-N-PROPYLAMINE	<5
HEXACHLOROETHANE	<5
NITROBENZENE	<5
ISOPHORENE	<5
2-NITROPHENOL	<5
2,4-DIMETHYLPHENOL	<5
BENZOIC ACID	<25
BIS(2-CHLOROETHOXY)METHANE	<5
2,4-DICHLOROPHENOL	<5
1,2,4-TRICHLOROBENZENE	<5
NAPHTHALENE	<5
4-CHLOROANILINE	<5
HEXACHLOROBUTADIENE	<5
4-CHLORO-3-METHYLPHENOL	<5
2-METHYLNAPHTHALENE	<5
HEXACHLOROCYCLOPENTADIENE	<5
2,4,6-TRICHLOROPHENOL	<5
2,4,5-TRICHLOROPHENOL	<25
2-NITROANILINE	<25
DIMETHYLPHTHALATE	<5
ACENAPHTHYLENE	<5
3-NITROANINLINE	<25
ACENAPHTHENE	<5
2,4-DINITROPHENOL	<25
4-NITROPHENOL	<25
2,4-DINITROTOLUENE	<5
2,6-DINITROTOLUENE	<5
DIETHYLPHTHALATE	<5
4-CHLOROPHENYL-PHENYLETHER	<5

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10567404

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
FLUORENE	<5
4-NITROANILINE	<25
4,6-DINITRO-2-METHYLPHENOL	<25
N-NITROSODIPHENYLAMINE	<5
4-BROMOPHENYL-PHENYLETHER	<5
HEXACHLOROBENZENE	<5
PENTACHLOROPHENOL	<25
PHENANTHRENE	<5
ANTHRACENE	<5
DI-N-BUTYLPHTHALATE	<5
FLUORANTHENE	<5
BENZIDINE	<50
PYRENE	<5
BUTYLBENZYLPHTHALATE	<5
3,3'-DICHLOROBENZIDINE	<10
BENZO(a)ANTHRACENE	<5
BIS(2-ETHYLHEXYL)PHTHALATE	<5
CHRYSENE	<5
BENZO(b)FLUORANTHENE	<5
BENZO(k)FLUORANTHENE	<5
BENZO(a)PYRENE	<5
INDENO(1,2,3-cd)PYRENE	<5
DIBENZO(a,h)ANTHRACENE	<5
BENZO(g,h,i)PERYLENE	<5
1-CHLORONAPHTHANE	<5
2-CHLORONAPHTHANE	<5
DIBENZO(A,J)ACRIDINE	<5 *
DI-N-OCTYLPHTHALATE	<5
1,2-DIPHENYLHYDRAZINE	<5

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	76
2-FLUOROBIPHENYL (%)	73
TERPHENYL (%)	103
PHENOL-D6 (%)	62
2-FLUOROPHENOL (%)	73
2,4,6-TRIBROMOPHENOL (%)	50

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

ATI I.D. : 10567404

COMPOUNDS	RESULTS
NO ADDITIONAL COMPOUNDS	<20

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105674
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/13/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/16/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<5
PHENOL	<5
ANILINE	<5
BIS(2-CHLOROETHYL)ETHER	<5
2-CHLOROPHENOL	<5
1,3-DICHLOROBENZENE	<5
1,4-DICHLOROBENZENE	<5
BENZYL ALCOHOL	<5
1,2-DICHLOROBENZENE	<5
2-METHYLPHENOL	<5
BIS(2-CHLOROISOPROPYL)ETHER	<5
4-METHYLPHENOL	<5
N-NITROSO-DI-N-PROPYLAMINE	<5
HEXACHLOROETHANE	<5
NITROBENZENE	<5
ISOPHORENE	<5
2-NITROPHENOL	<5
2,4-DIMETHYLPHENOL	<5
BENZOIC ACID	<25
BIS(2-CHLOROETHOXY)METHANE	<5
2,4-DICHLOROPHENOL	<5
1,2,4-TRICHLOROBENZENE	<5
NAPHTHALENE	<5
4-CHLOROANILINE	<5
HEXACHLOROBUTADIENE	<5
4-CHLORO-3-METHYLPHENOL	<5
2-METHYLNAPHTHALENE	<5
HEXACHLOROCYCLOPENTADIENE	<5
2,4,6-TRICHLOROPHENOL	<5
2,4,5-TRICHLOROPHENOL	<25
2-NITROANILINE	<25
DIMETHYLPHTHALATE	<5
ACENAPHTHYLENE	<5
3-NITROANINLINE	<25
ACENAPHTHENE	<5
2,4-DINITROPHENOL	<25
4-NITROPHENOL	<25
2,4-DINITROTOLUENE	<5
2,6-DINITROTOLUENE	<5
DIETHYLPHTHALATE	<5
4-CHLOROPHENYL-PHENYLETHER	<5
FLUORENE	<5
4-NITROANILINE	<25

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 105674

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

COMPOUNDS	RESULTS
4,6-DINITRO-2-METHYLPHENOL	<25
N-NITROSODIPHENYLAMINE	<5
4-BROMOPHENYL-PHENYLETHER	<5
HEXACHLOROBENZENE	<5
PENTACHLOROPHENOL	<25
PHENANTHRENE	<5
ANTHRACENE	<5
DI-N-BUTYLPHTHALATE	<5
FLUORANTHENE	<5
BENZIDINE	<50
PYRENE	<5
BUTYLBENZYLPHTHALATE	<5
3,3'-DICHLOROBENZIDINE	<10
BENZO(a)ANTHRACENE	<5
BIS(2-ETHYLHEXYL)PHTHALATE	<5
CHRYSENE	<5
BENZO(b)FLUORANTHENE	<5
BENZO(k)FLUORANTHENE	<5
BENZO(a)PYRENE	<5
INDENO(1,2,3-cd)PYRENE	<5
DIBENZO(a,h)ANTHRACENE	<5
BENZO(g,h,i)PERYLENE	<5
1-CHLORONAPHTHANE	<5
2-CHLORONAPHTHANE	<5
DIBENZO(A,J)ACRIDINE	<5 *
DI-N-OCTYLPHTHALATE	<5
1,2-DIPHENYLHYDRAZINE	<5

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	69
2-FLUOROBIPHENYL (%)	63
TERPHENYL (%)	57
PHENOL-D6 (%)	42
2-FLUOROPHENOL (%)	47
2,4,6-TRIBROMOPHENOL (%)	46

* ESTIMATED PRACTICAL QUANTITATION LIMIT BASED ON A REVIEW OF THE MASS SPECTRA DATA

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105674

TEST : SEMI-VOLATILE ORGANICS (EPA 8270) APPENDIX IX

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10699904

DATE ANALYZED : 05/16/91
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<5	50	29	58	27	54	7
ACENAPHTHENE	<5	50	26	52	26	52	0
2,4-DINITROTOLUENE	<5	50	32	64	29	58	10
PYRENE	<5	50	30	60	30	60	0
N-NITROSO-DI-N-PROPYL AMINE	<5	50	28	56	25	50	11
1,4-DICHLOROBENZENE	<5	50	29	58	30	60	3
PENTACHLOROPHENOL	<25	100	48	48	47	47	2
PHENOL	<5	100	61	61	62	62	2
2-CHLOROPHENOL	<5	100	67	67	68	68	1
4-CHLORO-3-METHYLPHENOL	<5	100	78	78	79	79	1
4-NITROPHENOL	<25	100	62	62	71	71	14

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-9-91 PAGE 1 OF 1

PROJECT MANAGER: Elizabeth Proffitt

COMPANY: Giant Refining Co.
ADDRESS: Rt 3 Box 7
Gallup, NM 87301

BILL TO:
COMPANY: Same
ADDRESS:

Lynn Shelton — SAMPLERS: (Signature)
(505) 722-0217 — PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	Total Metals (Cr, Cu, Pb, Zn)	NUMBER OF CONTAINERS
RFI1006V15.0	5-9-91	1:10pm	Soil	1										X	X								X	3
RFI1006D15.0	5-8-91	1:10	Soil	2										X	X								X	3
RFI1007V15.0	5-9-91	9:10	Soil	3										X	X								X	3
RFI1007E15.0	5-9-91	9:25	Water	4										X	X								X	4
Trip blank			Water	5											X									1

Not Rec'd

PROJECT INFORMATION	
PROJECT NO: —	
PROJECT NAME: Phase I RFI	
P.O. NO. 01908	
SHIPPED VIA: Fed Exp	
SAMPLE DISPOSAL INSTRUCTIONS	
☒ ATI	☐ RETURN

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	15
CHAIN OF CUSTODY SEALS	Y
INTACT?	Y
RECEIVED GOOD COND./COLD	Y
LAB NUMBER	105674

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments: See attachments for analytical parameters

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time: 11:00 AM	Signature: Time:	Signature: Time:
Printed Name: Lynn Shelton Date: 5-9-91	Printed Name: Date	Printed Name: Date
Company: Giant Refining	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc. 5/10/91

ATI Labs: San Diego (619)458-9141 • Phoenix (602)438-1530 • Seattle (206)228-8335 • Pensacola (904)474-1001 DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

7.88

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 105696

Composite TCLP of Sludge Pits

June 12, 1991

Giant Refining Company
Route 3, P.O. Box 7
Gallup, NM 87301

Project Name/Number: Phase I RFI

Attention: Claud Rosendale

On 05/13/91, Analytical Technologies, Inc. received a request to anayze soil sample(s). The sample(s) 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.

Zero Headspace Extraction and 8240 analyses were performed by ATI, Fort Collins. The results reported for TCLP analyses are the actual measured values, and are not corrected for matrix spike recovery bias. The matrix spike recovery results for TCLP analyses are included in this report.

B indicates the compound was also detected in the reagent blank. 2-chloroethyl vinyl ether was not analyzed.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Elizabeth Proffitt
Senior Project Manager

Robert V. Woods
Laboratory Manager

RVW:clf
Enclosure

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Inc.

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/13/91
REPORT DATE : 06/06/91

ATI I.D. : 105696

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	RFI 1007V6.0	SOIL	05/09/91
02	ZHE REAGENT BLANK	NON-AQUEOUS	05/09/91

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	1
NON-AQUEOUS	1

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 105696

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI

DATE RECEIVED : 05/13/91
REPORT DATE : 06/06/91

PARAMETER	UNITS	01
SILVER (IN TCLP)	MG/L	<0.010
ARSENIC (IN TCLP)	MG/L	<0.1
BARIUM (IN TCLP)	MG/L	1.98
CADMIUM (IN TCLP)	MG/L	0.007
CHROMIUM (IN TCLP)	MG/L	<0.010
MERCURY (IN TCLP)	MG/L	<0.0002
LEAD (IN TCLP)	MG/L	<0.10
SELENIUM (IN TCLP)	MG/L	<0.10

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI ATI I.D. : 105696

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER (IN TCLP)	MG/L	10568904	<0.010	<0.010	NA	0.903	1.00	90
ARSENIC (IN TCLP)	MG/L	10568904	<0.1	<0.1	NA	1.1	1.0	110
BARIUM (IN TCLP)	MG/L	10568904	1.15	1.12	3	2.09	1.00	94
CADMIUM (IN TCLP)	MG/L	10568904	<0.005	0.005	NA	0.950	1.00	95
CHROMIUM (IN TCLP)	MG/L	10568904	<0.010	<0.010	NA	0.948	1.00	95
MERCURY (IN TCLP)	MG/L	10568904	<0.0002	<0.0002	NA	0.0047	0.0050	94
LEAD (IN TCLP)	MG/L	10568904	<0.10	<0.10	NA	0.90	1.00	90
SELENIUM (IN TCLP)	MG/L	10568904	<0.10	<0.10	NA	1.22	1.00	122

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10569601

TEST : METHOD 8240 (TCLP EXTRACT)

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/13/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/15/91
CLIENT I.D.	: RFI 1007V6.0	DATE ANALYZED	: 05/29/91
SAMPLE MATRIX	: SOIL	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<10
CHLOROETHANE	<10
METHYLENE CHLORIDE	240 B
ACETONE	44
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	NA
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<5
TOLUENE	8
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	16

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	95
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	98

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10569602

TEST : METHOD 8240 (TCLP EXTRACT)

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/13/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/15/91
CLIENT I.D.	: ZHE REAGENT BLANK	DATE ANALYZED	: 05/28/91
SAMPLE MATRIX	: NON-AQUEOUS	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<10
CHLOROETHANE	<10
METHYLENE CHLORIDE	57 B
ACETONE	<5
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	NA
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	105
BROMOFLUOROBENZENE (%)	99
TOLUENE-D8 (%)	96

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : METHOD 8240 (TCLP EXTRACT)

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105696
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/15/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/28/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<10
CHLOROETHANE	<10
METHYLENE CHLORIDE	20
ACETONE	<10
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	NA
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BROMOFLUOROBENZENE (%)	87
TOLUENE-D8 (%)	110

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : METHOD 8240 (TCLP EXTRACT)

CLIENT	: GIANT REFINING CO.	ATI I.D.	: 105696
PROJECT #	: (NONE)	DATE EXTRACTED	: 05/15/91
PROJECT NAME	: PHASE I RFI	DATE ANALYZED	: 05/29/91
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<10
CHLOROETHANE	<10
METHYLENE CHLORIDE	11
ACETONE	<5
CARBON DISULFIDE	<5
1,1-DICHLOROETHENE	<5
1,1-DICHLOROETHANE	<5
1,2-DICHLOROETHENE (TOTAL)	<5
CHLOROFORM	<5
1,2-DICHLOROETHANE	<5
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<5
CARBON TETRACHLORIDE	<5
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<5
1,1,2,2-TETRACHLOROETHANE	<5
1,2-DICHLOROPROPANE	<5
TRANS-1,3-DICHLOROPROPENE	<5
TRICHLOROETHENE	<5
DIBROMOCHLOROMETHANE	<5
1,1,2-TRICHLOROETHANE	<5
BENZENE	<5
CIS-1,3-DICHLOROPROPENE	<5
2-CHLOROETHYLVINYLETHER	NA
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<5
TOLUENE	<5
CHLOROBENZENE	<5
ETHYLBENZENE	<5
STYRENE	<5
TOTAL XYLENES	<5

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BROMOFLUOROBENZENE (%)	95
TOLUENE-D8 (%)	100

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105696

TEST : METHOD 8240 (TCLP EXTRACT)

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10569601

DATE ANALYZED : 05/29/91
SAMPLE MATRIX : SOIL
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<5	50	51	102	52	104	2
TRICHLOROETHENE	<5	50	50	100	51	102	2
CHLOROBENZENE	<5	50	46	92	45	90	2
TOLUENE	8	50	52	88	53	90	2
BENZENE	<5	50	50	100	50	100	0

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10569601

TEST : METHOD 8270 (TCLP EXTRACT)

CLIENT	: GIANT REFINING CO.	DATE SAMPLED	: 05/09/91
PROJECT #	: (NONE)	DATE RECEIVED	: 05/13/91
PROJECT NAME	: PHASE I RFI	DATE EXTRACTED	: 05/14/91
CLIENT I.D.	: RFI 1007V6.0	DATE ANALYZED	: 05/25/91
SAMPLE MATRIX	: SOIL	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	13
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	28
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANINLINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 10569601

TEST : METHOD 8270 (TCLP EXTRACT)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	25
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	46
2-FLUOROBIPHENYL (%)	41
TERPHENYL (%)	49
PHENOL-D6 (%)	22
2-FLUOROPHENOL (%)	29
2,4,6-TRIBROMOPHENOL (%)	32

Analytical Technologies, Inc.

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

TEST : METHOD 8270 (TCLP EXTRACT)

ATI I.D. : 10569601

COMPOUNDS	RESULTS
SUBSTITUTED BENZENES	40

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : METHOD 8270 (TCLP EXTRACT)

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
CLIENT I.D. : REAGENT BLANK

ATI I.D. : 105696
DATE EXTRACTED : 05/14/91
DATE ANALYZED : 05/25/91
UNITS : UG/L
DILUTION FACTOR : N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYLPHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANINLINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYLPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

(CONTINUED NEXT PAGE)

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ATI I.D. : 105696

TEST : METHOD 8270 (TCLP EXTRACT)

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRACENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYLPHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZO(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	50
2-FLUOROBIPHENYL (%)	44
TERPHENYL (%)	66
PHENOL-D6 (%)	42
2-FLUOROPHENOL (%)	51
2,4,6-TRIBROMOPHENOL (%)	44

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 105696

TEST : METHOD 8270 (TCLP EXTRACT)

CLIENT : GIANT REFINING CO.
PROJECT # : (NONE)
PROJECT NAME : PHASE I RFI
REF I.D. : 10599922

DATE ANALYZED : 05/25/91
SAMPLE MATRIX :
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	50	23	46	23	46	0
ACENAPHTHENE	<10	50	24	48	22	44	9
2,4-DINITROTOLUENE	<10	50	30	60	25	50	18
PYRENE	<10	50	37	74	33	66	11
NITROSO-DI-PROPYLAMINE	<10	50	26	52	23	46	12
1,4-DICHLOROBENZENE	<10	50	24	48	23	46	4
PENTACHLOROPHENOL	<50	100	98	98	102	102	4
PHENOL	<10	100	60	60	60	60	0
2-CHLOROPHENOL	<10	100	59	59	62	62	5
4-CHLORO-3-METHYLPHENOL	<10	100	72	72	72	72	0
4-NITROPHENOL	<50	100	57	57	63	63	10

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.
Phoenix, Arizona

Chain of Custody

DATE 5-9-91 PAGE 1 OF 1

PROJECT MANAGER: TOP

COMPANY: GIANT REFINING CO
ADDRESS: Rt 3 Box 7
GALLUP, NM 87301

BILL TO:
COMPANY: SAME
ADDRESS:

Lynn Shelton
SAMPLERS: (Signature)

(505) 722-0227
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE	Pesticides/PCB (608/8080)	Herbicides (615/8150)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)	SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP (1311)	NUMBER OF CONTAINERS
RFI 1007 V 6.0	5-9-91	9:00AM	SOIL	1										X	X							X	3

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NO:	TOTAL NO. OF CONTAINERS	3
PROJECT NAME: PHASE 1 RFI	CHAIN OF CUSTODY SEALS	Y
P.O. NO. 01908	INTACT?	Y
SHIPPED VIA: FED EXPRESS	RECEIVED GOOD COND./COLD	Y
SAMPLE DISPOSAL INSTRUCTIONS	LAB NUMBER	1056916
☒ ATI ☐ RETURN		

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TAT: (NORMAL) X (RUSH) ☐ 24 ☐ 48 ☐ 72 ☐ 1 WEEK

Comments:
TCLP FOR ALL

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Lynn Shelton Time: 10:00AM	Signature: Time:	Signature: Time:
Printed Name: LYNN Shelton Date 5-10-91	Printed Name: Date	Printed Name: Date
Company: GIANT REFINING CO	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time: 10:30
Printed Name: Date:	Printed Name: Date:	Printed Name: Lorraine Burr Date: 5-13-91
Company:	Company:	Analytical Technologies, Inc.

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SECTION 8.0

SUMMARY AND CONCLUSIONS

SUMMARY AND RECOMMENDATIONS

Giant Refining Company has completed the sampling requirements for Phase I of the RCRA Facility Investigative for the Ciniza Refinery. These requirements included the following:

A. SWMU Site-Specific Facility Investigation Workplan and the May 31, 1990 approval letter for the following SWMU's:

1. SWMU #6 - Tank Farm
2. SWMU #8 - Railroad Rack Lagoon
3. SWMU #9 - Inactive Land Treatment Area and Associated Drainage Ditch
4. SWMU #10 - Two Sludge Pits and,
5. SWMU #12 (Partial) - Contact Wastewater Collection System

B. Phase I Supplemental Sampling outlined in the Phase I Report dated April 8, 1991 and the approval letter dated July 9, 1991 for the following SWMU's:

1. SWMU #6 - Tank Farm
2. SWMU #8 - Railroad Rack Lagoon and,
3. SWMU #10 - Two Sludge Pits

C. Additional samples as required by Giant for:

1. SWMU #6 - Tank Farm (Tank 569) and,
2. SWMU #10 - Two Sludge Pits

After reviewing the sampling information and analysis of all the samples associated with the SWMU's listed in Phase I of the RFI, Giant proposes the following recommendations and Final Remedy Plans (FRP).

SWMU #6 - Tank Farm

Soil borings for this SWMU was collected around ten (10) tanks which had previously contained leaded gasolines. A vertical boring was made near the manway of each tank and an angle boring was made at a pre-approved location around each tank. Samples were collected at three (3) intervals for each tank (0-½ ft., 3½-4 ft. and 7-7½ ft.) resulting in a total of 60 soil samples being collected.

Each sample was analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), lead and nickel as outlined in the Generic Sampling Plan. Table 8-1 outlines all lead and nickel results which exceeded the background tolerances. This table also outlines the total BTEX concentration of each sample collected.

After reviewing this data, Giant decided that it would be necessary to collect samples at deeper intervals. It was agreed as part of the supplemental sampling requirements that ten (10) additional samples would be collected to a depth of 11-11½ ft.. These samples would all be analyzed for BTEX with two (2) of the samples being analyzed for metals (sample no. 25V for lead and sample no. 28V for lead and nickel).

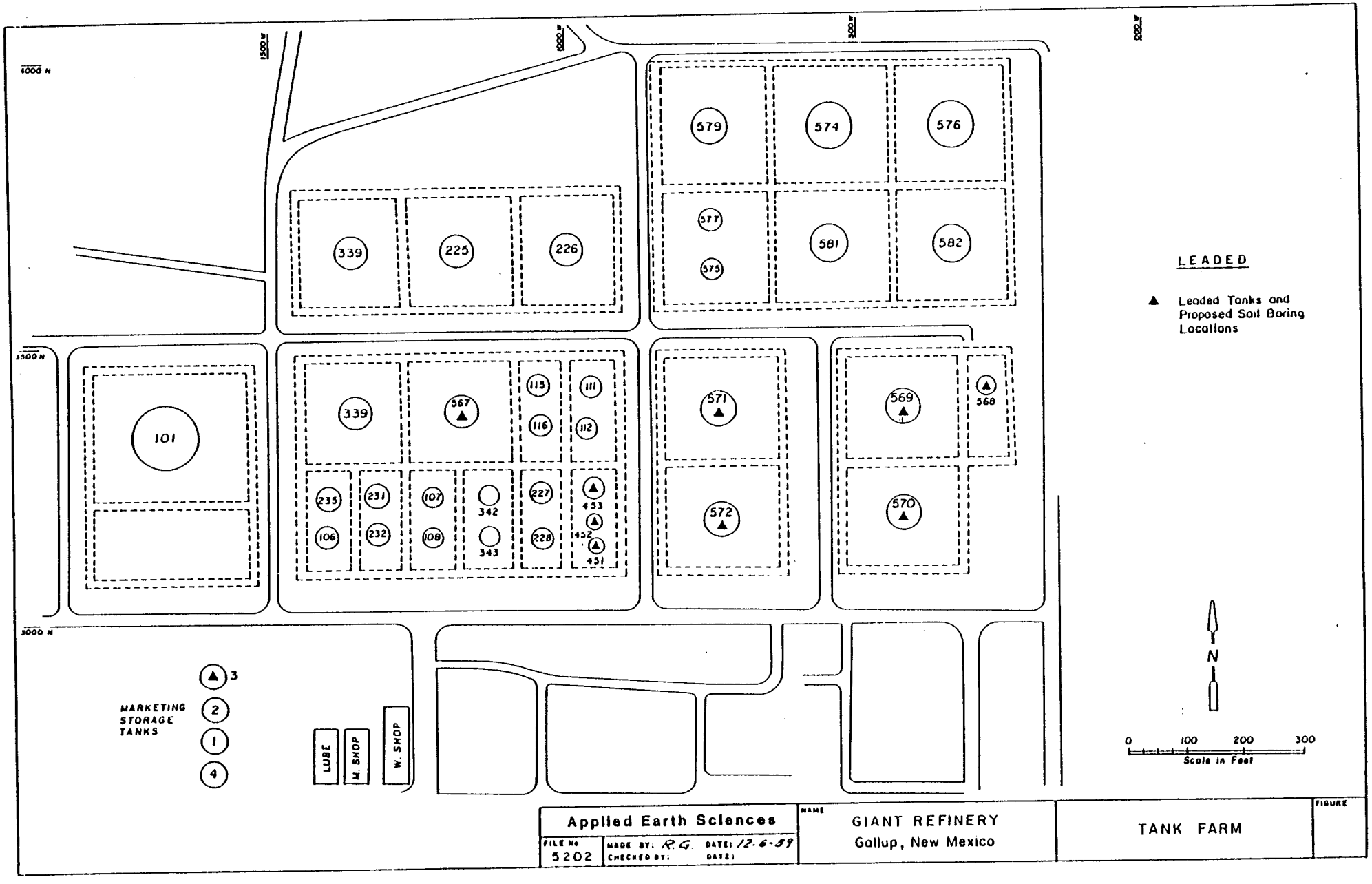
After Giant conducted the supplemental sampling requirements and reviewed the results of the analytical, it was determined that additional samples should be collected around Tank 569. Three additional borings were made with one sample collected from each boring. These samples were collected at different depth intervals as follows: 11-11½ ft., 14-14½ ft. and 16-16½ ft.. All sample numbers, depths and analytical results for these samples are included in Table 8-1.

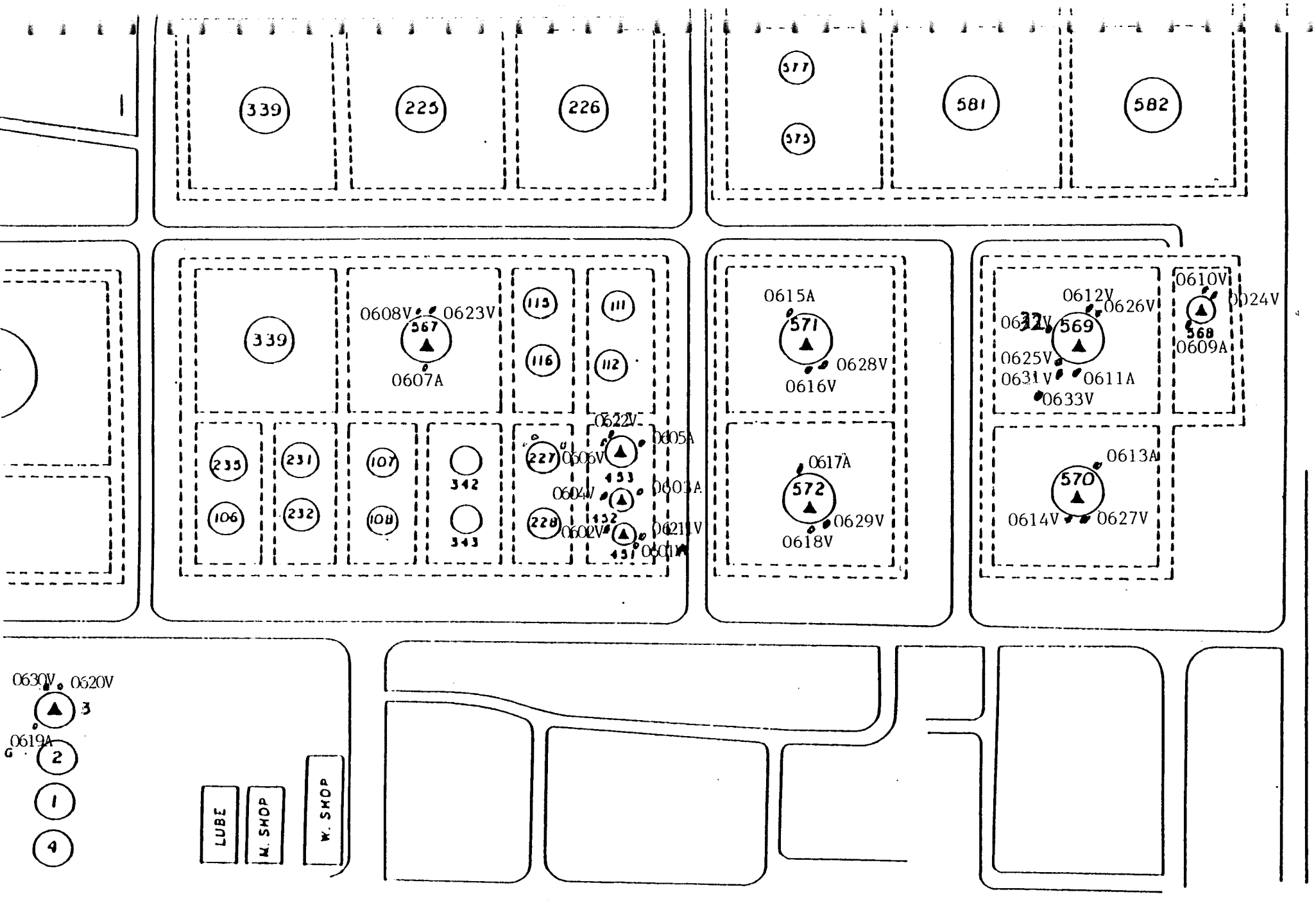
The BTEX levels are all below any of the proposed corrective action levels. There has been no proposed corrective action levels for lead. This coupled with the low permeability of the soils in this area and the low rainfall amounts contribute to the unlikely possibility of the lead leaching into any aquifers. Therefore, Giant does not believe any corrective action is required for this SWMU.

TABLE 1

Tank #	Sample #	Metals pb(Ni) Sample Depths (ft) 0	3½	7	11	Total BTEX (ppm) Sample Depths (ft) 0	3½	7	11	14	16
3	19A	19.1	-	-	-	180	-	0.42	-	-	-
	20V	21.6(49.8)	-	-	-	-	104.6	10.0	-	-	-
	30V	-	-	-	-	-	-	-	2.2	-	-
451	1A	-	-	-	-	-	0.64	28.6	-	-	-
	2V	-	-	-	-	-	-	-	-	-	-
	21V	-	-	-	-	-	-	-	0.26	-	-
452	3A	-	27.7	-	-	-	-	-	-	-	-
	4V	-	-	-	-	-	-	-	-	-	-
453	5A	138	-	-	-	-	119	0.26	-	-	-
	6V	28.5	-	-	-	0.37	7.6	54.1	-	-	-
	22V	-	-	-	-	-	-	-	0.95	-	-
567	7A	-	-	-	-	-	-	-	-	-	-
	8V	23.1	-	-	-	-	-	51.3	-	-	-
	23V	-	-	-	-	-	-	-	0.30	-	-
568	9A	-	-	-	-	-	-	-	-	-	-
	10V	129(15.2)	-	-	-	-	2.68	4.66	-	-	-
	24V	-	-	-	-	-	-	-	ND	-	-
569	11A	44.6	21.4	23.9	-	-	269	248.4	-	-	-
	12V	736(413)	-	-	-	488	1677	160.	-	-	-
	25V	-	-	-	(17)	-	-	-	1629	-	-
	26V	-	-	-	-	-	-	-	1.77	-	-
	31V	-	-	-	-	-	-	-	-	-	11.62
	32V	-	-	-	-	-	-	-	ND	-	-
	33V	-	-	-	-	-	-	-	-	ND	-
570	13A	-	-	-	-	-	-	-	-	-	-
	14V	57.4	-	-	-	1.58	28	460	-	-	-
	27V	-	-	-	-	-	-	-	4.29	-	-
571	15A	-	-	-	-	-	-	-	-	-	-
	16V	238(32.9)	301(58.2)	55:3	-	0.47	41.3	23:9	-	-	-
	28V	-	-	-	8.1(42)	-	-	-	6.32	-	-
572	17A	-	-	-	-	-	-	-	-	-	-
	18V	-	-	-	-	-	113.6	26.65	-	-	-
	29V	-	-	-	-	-	-	-	ND	-	-

FIGURE 8-1


6000 N
1500 W
1000 W
500 W
0 W
3500 N
3000 N
339
225
226
579
574
576
577
575
581
582
101
339
567
113
111
116
112
235
231
107
342
227
453
106
232
108
343
228
452
451
571
572
569
568
570
MARKETING STORAGE TANKS
3
2
1
4
LUBE
M. SHOP
W. SHOP
LEADED
Leaded Tanks and Proposed Soil Boring Locations
N
0
100
200
300
Scale in Feet
Applied Earth Sciences
FILE No. 5202
MADE BY: R.G.
DATE: 12-6-89
CHECKED BY:
DATE:
NAME
GIANT REFINERY
Gallup, New Mexico
TANK FARM
FIGURE



Applied Earth Sciences		NAME
FILE NO 5202	MADE BY: R.G DATE: 12-6-89 CHECKED BY: DATE:	GIANT REFINERY Gallup, New Mexico

FIGURE 8-2

SWMU #8 - Railroad Rack Lagoon

The railroad rack lagoon is approximately seven (7) feet deep and maintains approximately three (3) feet of liquid. A total of three (3) vertical and three (3) angle soil borings were collected around the lagoon. Samples were collected at three (3) different intervals, (5-5½ ft., 8-8½ ft. and 10½-11 ft.) for a total of 28 soil samples around the lagoon. Seven (7) additional vertical borings were collected (three (3) along the "discharge stream" and four (4) along the "fan out" area) at three (3) different intervals (0-½ ft., 2-2½ ft. and 4½-5 ft.) for 21 more samples. This resulted in the collection of 49 soil samples. The discharge stream was not flowing therefore, no surface water was collected. Each sample was analyzed for the Skinner List constituents, including metals, that are listed in the Generic Sampling Plan.

Very low levels of ethylbenzene, xylene, toluene, 1-methylnaphthalene, naphthalene and phenanthrene was detected in some of the samples. The greatest composite detection of all volatiles and semi-volatiles for any one sample was 131 ppm. Assorted metals were detected in various samples at or above the background limits. However, none of these levels were excessive enough to exceed the proposed corrective action levels.

It was determined that due to the composite concentration of volatile and semi-volatile constituents in sample nos. 09V2.5 (106 ppm), 09V4.5 (6.7 ppm) and, 11V4.5 (131 ppm), that an addition vertical sample would be collected from the 7-7½ ft. interval near original borings 09 and 11. These samples were analyzed for the 8270 portion of the Skinner List. The analytical results of these samples indicated that all constituents were below detection limits.

None of the semi-volatiles that were detected in the samples listed above are referenced in the proposed corrective action rule. The greatest concentration of volatiles are as follows: ethylbenzene-0.69 ppm, toluene-0.95 ppm and, xylene-6.6. These concentrations are at least 10,000 fold less than the proposed corrective action levels. All metals that were detected above background levels were also well below the proposed corrective action levels.

As a result of these analysis, Giant does not believe that any remediation of soils is required for this SWMU. However, as indicated in previous correspondence, it has been agreed that continued operation of the railroad rack lagoon is not an acceptable environmental practice. As a result, Giant proposes the following Final Remedy Plan (FRP) for the Railroad Rack Lagoon.

CINIZA REFINERY

FINAL REMEDY PLAN FOR SWMU #8
RAILROAD RACK LAGOON

Giant proposes to divert the drainage water around the railroad rack area from the existing lagoon to the refinery waste water system which results in separation at the API pit and storage in the existing evaporation lagoons. The existing drainage system will be plugged and the liquids in the lagoon will be transferred to the refinery waste water system for treatment. Soil will be removed from the surface of the lagoon and analyzed for TCLP constituents. Analytical from the liquids in the lagoon and from the soil core samples around the lagoon indicates this soil will not contain hazardous constituents. After confirmation of the sample, the soil will be land applied and farmed as approved in the Ciniza Refinery Part B Permit non-hazardous waste requirements. This proposed work is detailed in the following paragraphs.

Details of the existing drainage system is outlined in attached drawing EZ-80-09-504EP, EZ-80-09-505EP and EZ-80-09-506EP. Two lines will require flushing with water and purging with air to remove all traces of hydrocarbons for the prevention of fires. These lines are the existing railroad rack drainage pipe and the railroad pipe rack collection basin, drain pipe and transfer sump (Detail A). A connecting line will be installed to connect the existing process sewer line to the pipe rack collection drain pipe (Detail B). This will allow the flow of liquid from the existing drainage system to the transfer sump. The drain from the collection basin at the ethyl building (lead house) will be diverted and routed to the existing drainage trough along the rail spur (Detail D1 and D2). This will allow for any emergency spillage and overflow to drain to the transfer sump. Once this piping has been modified, the lower collection box in the existing drainage system will be filled with concrete (Detail C) to prevent the possibility of any liquids reaching the railroad rack lagoon. This will force the flow of all liquids in this system to the transfer sump which is equipped with a submersible pump and level control switch. This pump will transfer liquid to the refinery waste water system.

Once the above modifications have been completed, the liquids in the lagoon will be pumped to the refinery waste water system. If necessary, a vacuum truck will be used to remove all residual liquids.

A backhoe, front end loader or dragline will be used, as required, to remove the top layer of soil from the lagoon.

Soil with any visual discoloration will be removed and stockpiled at the land treatment unit. It is anticipated that six (6) inches or less of soil (approximately 200 cubic yards or less) will need to be removed.

A soil auger will be used to collect one composite sample of this stockpiled soil. The soils of three (3) core samples, each to a depth of three (3) feet will be composited to one sample. Sample collection procedures and methodologies will be the same as outlined in the original Generic Sampling Plan. This sample will be extracted by the Toxicity Characteristic Leaching Procedure (TCLP) and will be analyzed for the constituents in Table 8-7 by the SW846 methods listed in the original Generic Sampling Plan. As a result of extensive sampling and analytical from the Phase I RFI which indicates very low concentrations of any organics, Giant does not believe any additional sampling of soils around the lagoons is required.

Once the TCLP analytical has been received and confirms the material is non-hazardous, the soil will be spread in the land treatment unit and farmed as outlined by the refinery's Part B Permit.

There is no reason to believe this material will be hazardous however, if the analytical indicates that hazardous constituents are present, Giant will determine alternative handling methods (depending on the constituent) and receive EPA approval before proceeding with treatment and disposal.

After completing the remediation, a survey will be performed as required by 40 CFR 264.116. Giant will supply documentation of this survey to your office and will then request a Class III permit modification as required by 40 CFR 270.42 to remove the railroad rack lagoon from further investigation in the permit. Giant will submit a final report outlining all activities conducted during the remediation of this SWMU.

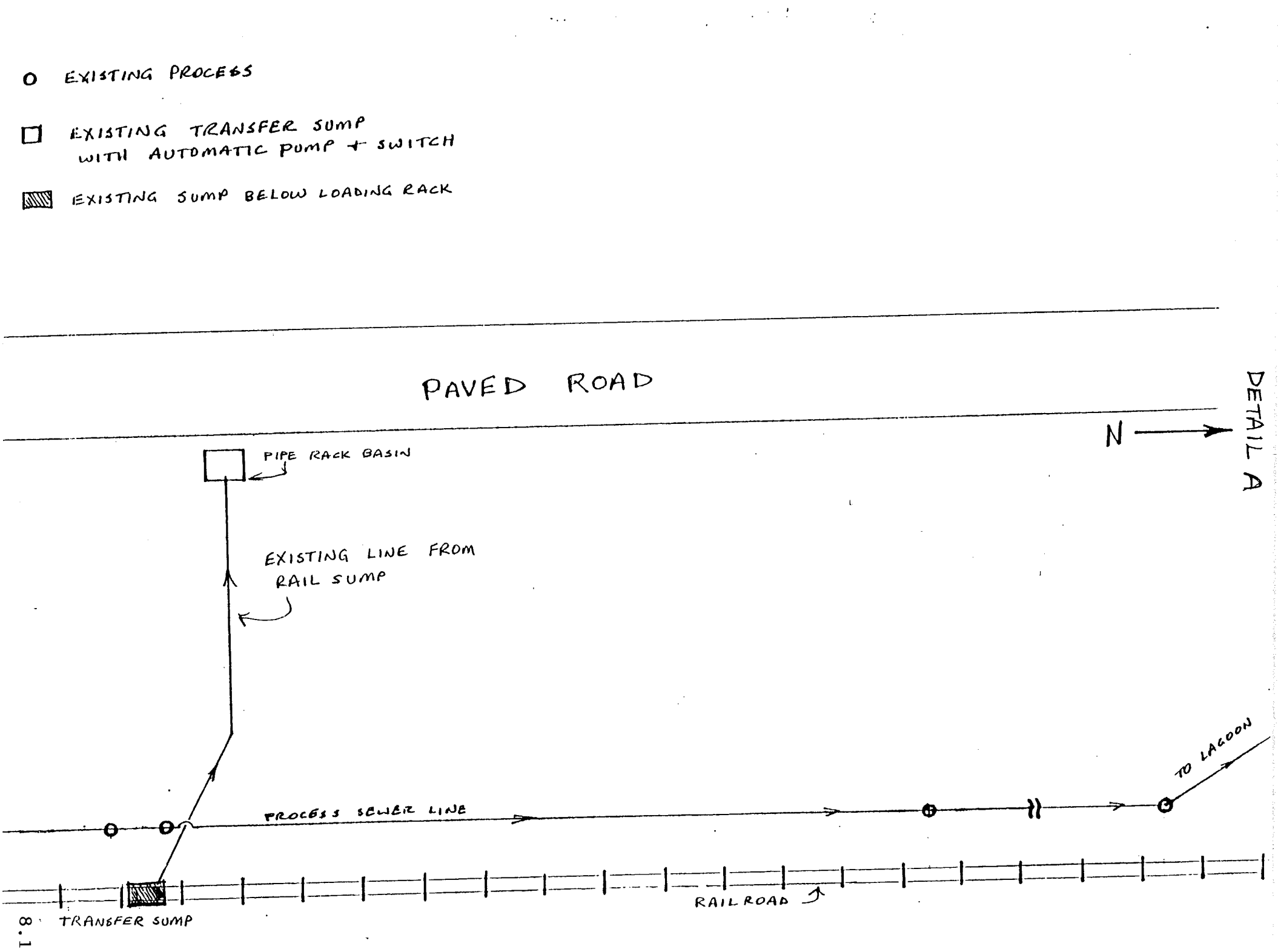
TABLE 8-7

EPA HW NO.	CONTAMINANT	CAS No.
D004	Arsenic	7440-38-2
D005	Barium	7440-39-3
D018	Benzene	71-43-2
D006	Cadmium	7440-43-9
D019	Carbon tetrachloride	56-23-5
D021	Chlorobenzene	108-90-7
D022	Chloroform	67-66-3
D007	Chromium	7440-47-3
D023	o-Cresol	95-48-7
D024	m-Cresol	108-39-4
D025	p-Cresol	106-44-5
D026	Cresol	
D027	1,4-Dichlorobenzene	106-46-7
D028	1,2-Dichloroethane	107-06-2
D029	1,1-Dichloroethylene	75-35-4
D030	2,4-Dinitrotoluene	121-14-2
D032	Hexachlorobenzene	118-74-1
D033	Hexachlorobutadiene	87-68-3
D034	Hexachloroethane	67-72-1
D008	Lead	7439-92-1
D009	Mercury	7439-97-6
D035	Methyl ethyl ketone	78-93-3
D036	Nitrobenzene	98-95-3
D037	Pentrachlorophenol	87-86-5
D038	Pyridine	110-86-1
D010	Selenium	7782-49-2
D011	Silver	7440-22-4
D039	Tetrachlorothylene	127-18-4
D040	Trichloroethylene	79-01-6
D041	2,4,5-Trichlorophenol	95-94-4
D042	2,4,6-Trichlorophenol	88-06-2
D043	Vinyl chloride	75-01-4

ANTICIPATED COST FOR
SWMU #8
CORRECTIVE ACTION

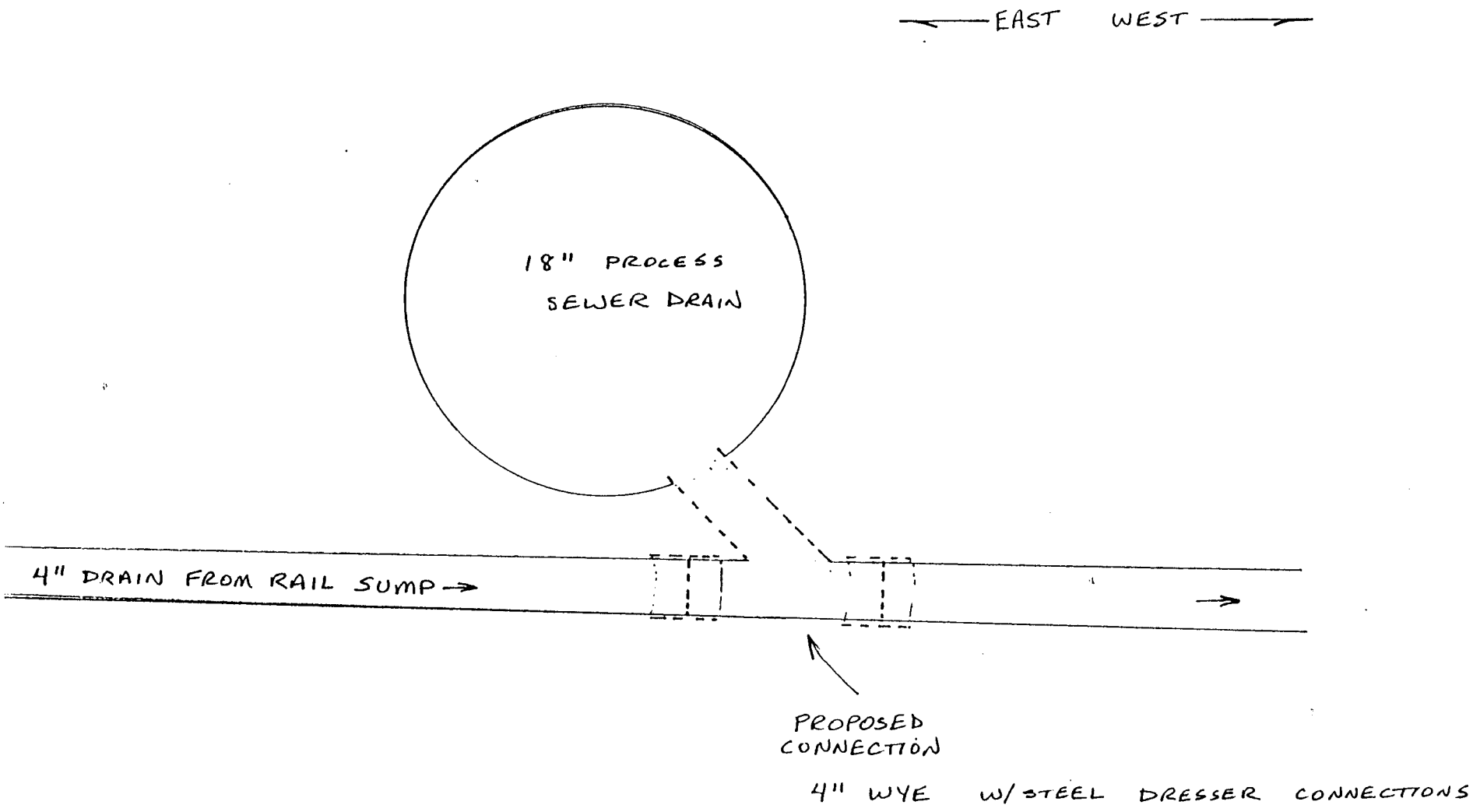
	COST
Piping Modifications	
Supplies	$ 320.00
Labor	750.00
Liquid Removal	
Equipment	$ 500.00
Labor	150.00
Soil Excavation & Transfer	
Backhoe	$ 1440.00
Truck	480.00
Level and Farm	
Blade	$ 200.00
Farm Equipment	450.00
Analytical	
TCLP Analysis	$ 1800.00
Part B Requirements	300.00
Total	$6,390.00

TO VIEW THE MAP AND/OR MAPS WITH THIS DOCUMENT, PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

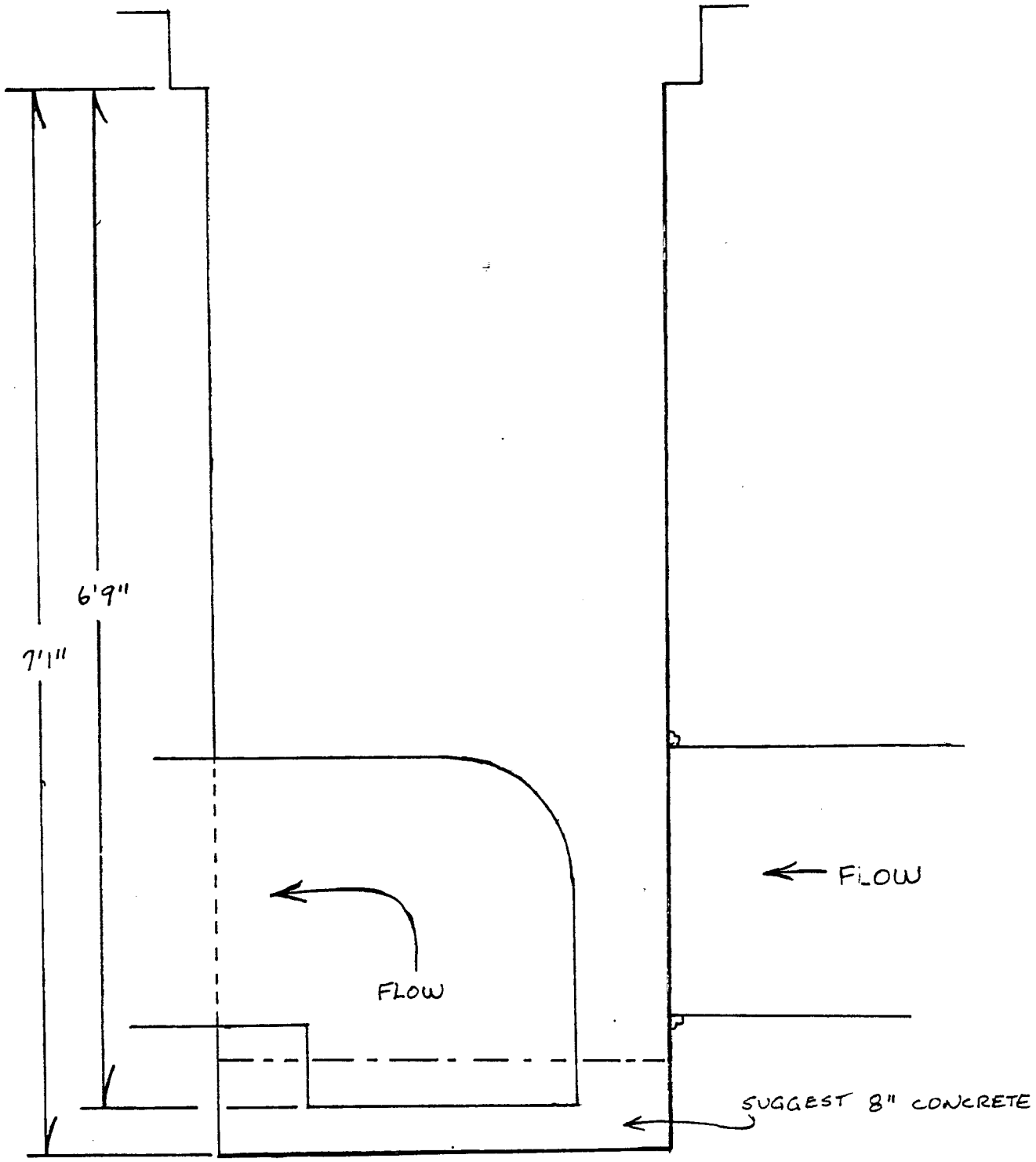

EXISTING PROCESS
EXISTING TRANSFER SUMP WITH AUTOMATIC PUMP + SWITCH
EXISTING SUMP BELOW LOADING RACK
PAVED ROAD
N
DETAIL A
PIPE RACK BASIN
EXISTING LINE FROM RAIL SUMP
PROCESS SEWER LINE
TO LAGOON
RAILROAD
TRANSFER SUMP

8.1

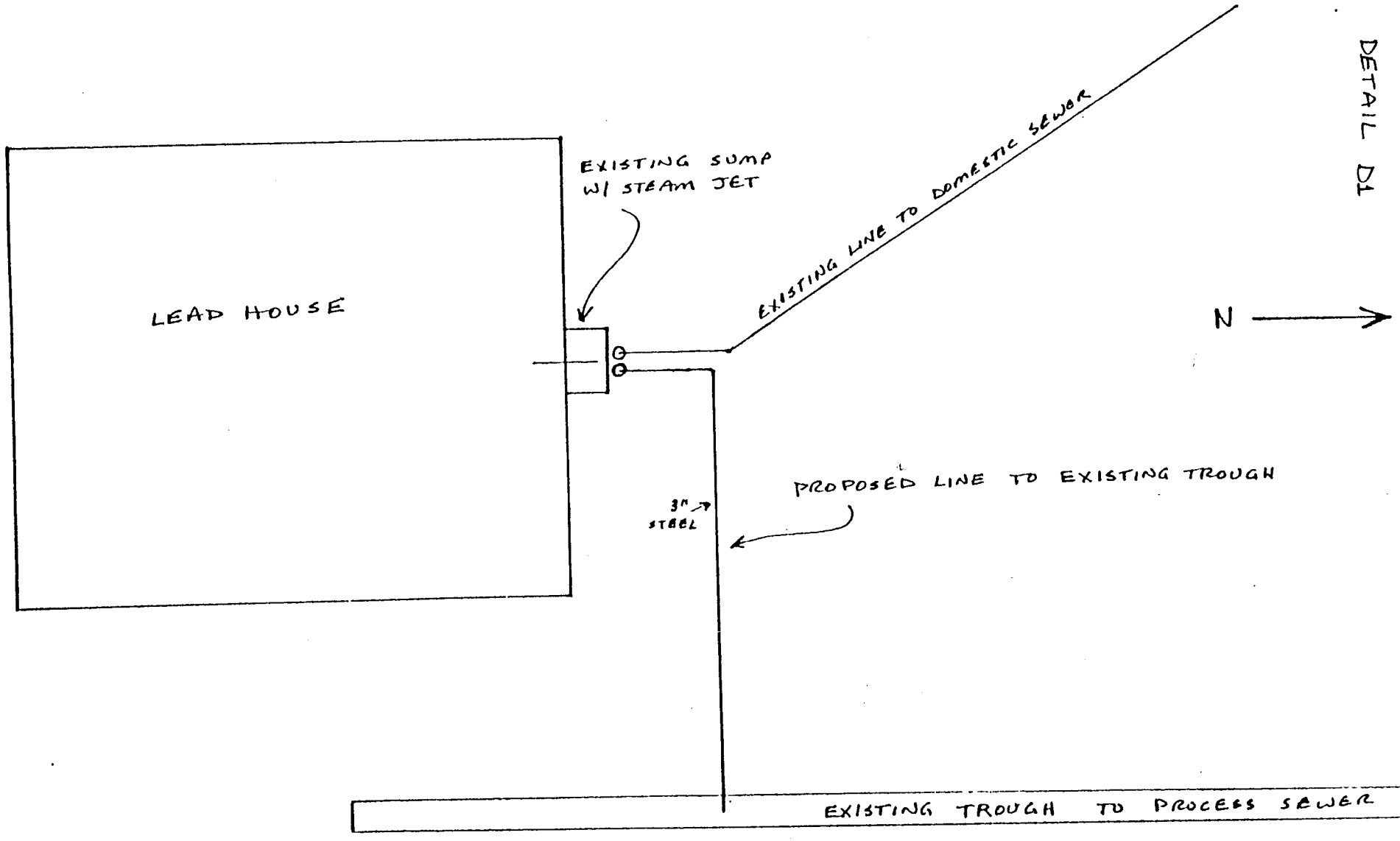
DETAIL B


EAST
WEST
18" PROCESS
SEWER DRAIN
4" DRAIN FROM RAIL SUMP
PROPOSED
CONNECTION
4" WYE W/ STEEL DRESSER CONNECTIONS

DETAIL C

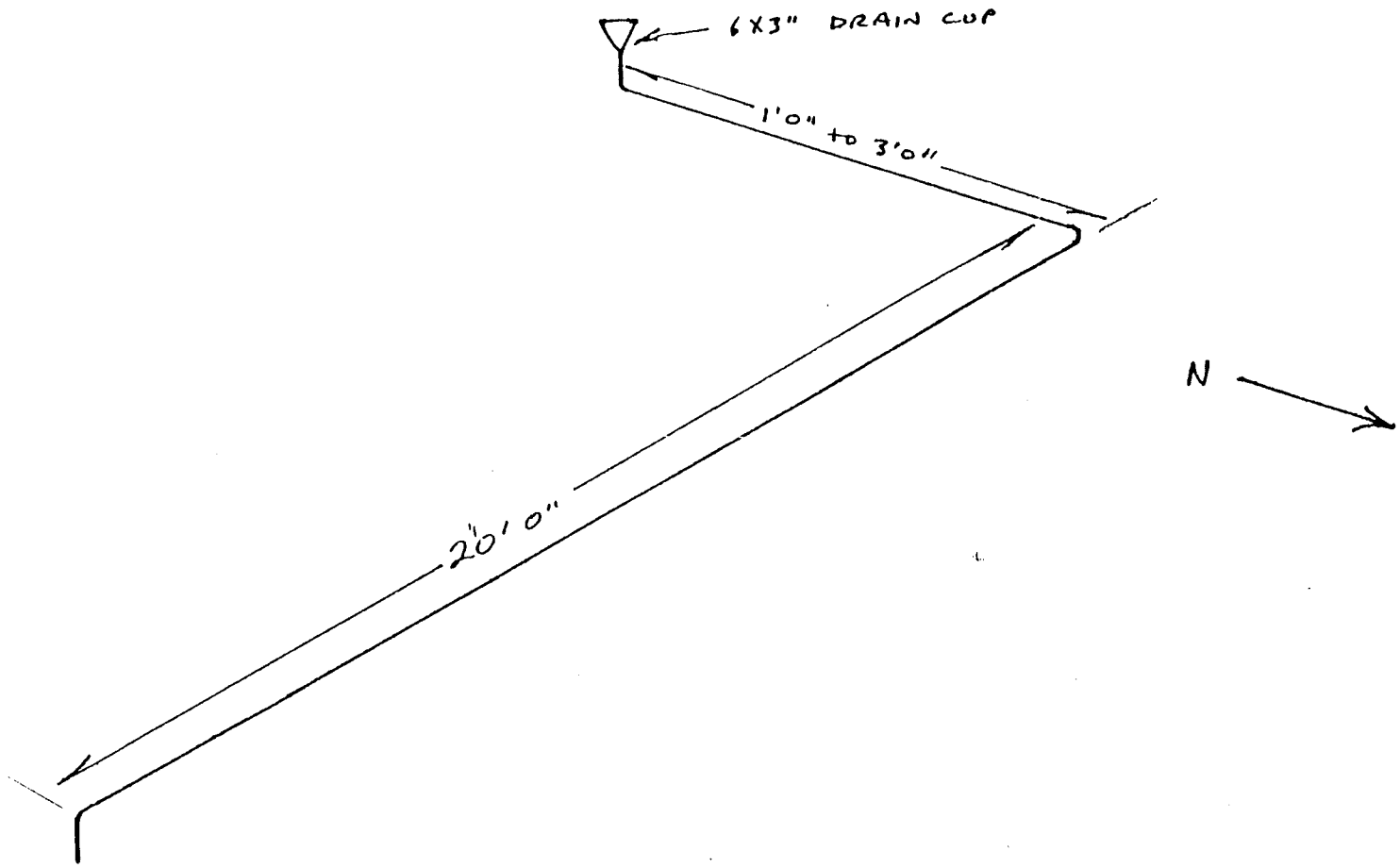


DETAIL D1



TLS 5-30-91 DRAWING NOT TO SCALE

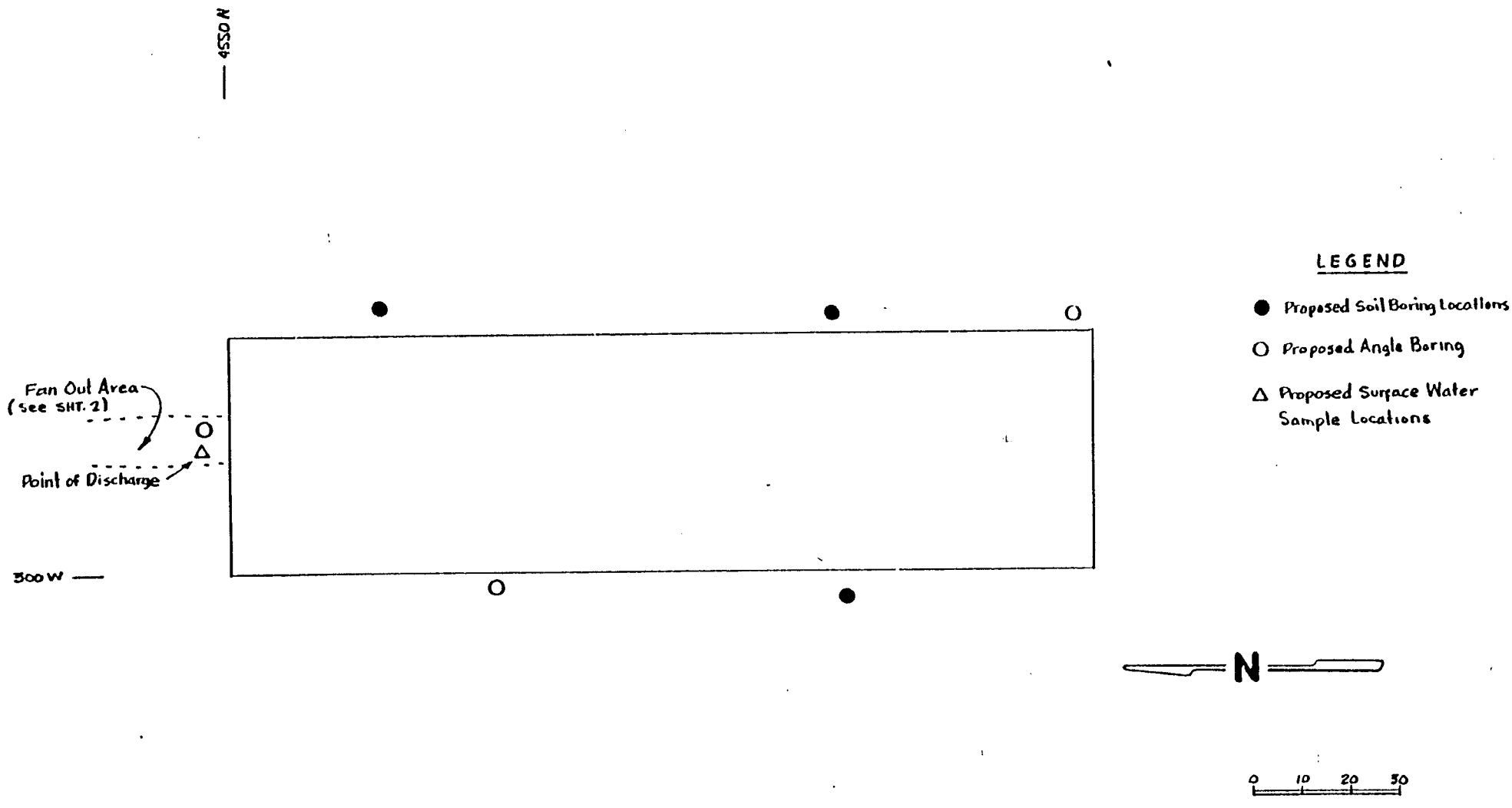
DETAIL D2



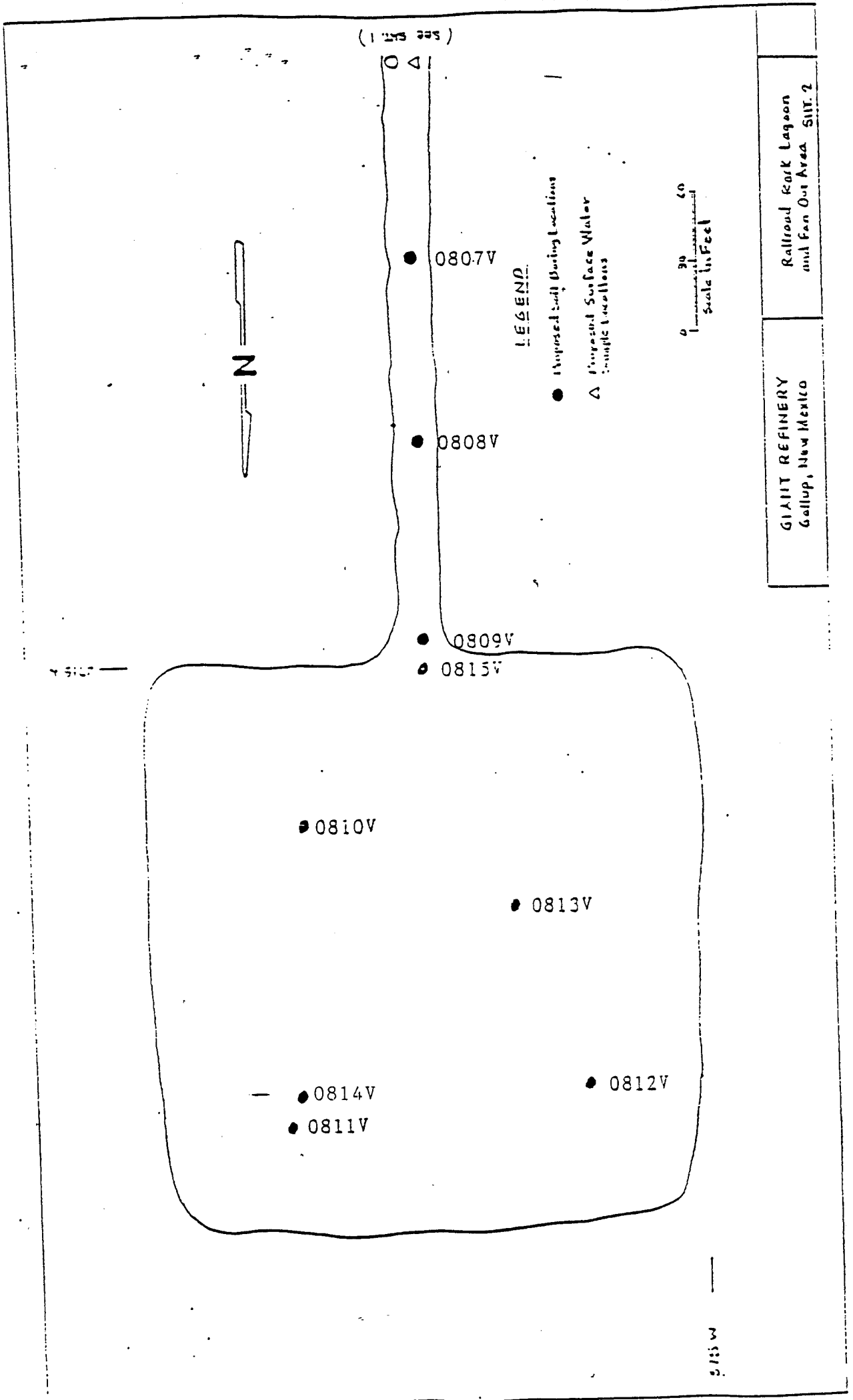
PIPE IS 3" SCH 80 CARBON STEEL

DRAWING IS NOT TO SCALE

TLS 5-30-91



GIANT REFINERY Gallup, New Mexico	Railroad Rack Lagoon and Fan Out Area SHT. 1	FIG.


GIANT REFINERY
Gallup, New Mexico
Railroad Rock Lagoon
and Fan Out Area SHT. 2
LEGEND
Proposed Soil Boring Locations
Proposed Surface Water
Sample Locations
Scale in Feet
N
0807V
0808V
0809V
0815V
0810V
0813V
0812V
0814V
0811V

SUPPLEMENT A
TO THE

COMMUNITY RELATIONS PLAN
RCRA FACILITIES INVESTIGATIVE PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

Section 2.0 "INTERNAL MEETINGS" will include the following:

Any corrective action measures, including remediations and modifications to existing operations, which are a result of the RCRA facility investigation will be discussed with the employees during the semi-annual meetings.

Section 3.1 "Information Repositories - Potential materials for the file include" will include:

- Documents of Final Remedy Plans

- Final Documents outlining the completion of actions required by the Final Remedy Plan

Section 3.2 "Public Notices" will include:

Prior to implementing approved Final Remedy Plans, an advertisement will be place in the local Gallup, New Mexico newspaper which will describe the corrective actions being conducted and refer interested parties to the information repository at the public library.

SUPPLEMENT A
TO THE

DATA MANAGEMENT PLAN
RCRA FACILITIES INVESTIGATION PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

Section 1.4 "Reporting". "Examples of specific reports that may be required include" will be updated to include:

- Records of remediation actions

SUPPLEMENT A
TO THE

SAFETY EXECUTION PLAN
RCRA FACILITIES INVESTIGATION PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

The following sections will be included:

5.1.4 Sewer Line Cleaning, Purging and Repair

- Compliance with Giant Refining's Safe Work Procedure #420 "Confined Space Entry" is required.

5.1.5 Soil Excavation

- Follow the procedures listed in Drilling Rig Safety (5.1.1) for the movement of equipment.
- Avoid dermal contact
- Although the soil will be wet, avoid inhalation of windblown dust if it exists.
- Anchor equipment on level ground to assure no tipping will occur when working on the slopes of the lagoon.
- Assure earth moving equipment is not overloaded during transport.
- Assure equipment is level when dumping soils to prevent tipping.

Section 5.4.3 "Levels of Protection" will include:

<u>Non Hazardous Protection</u>

When working with non hazardous waste the potential exposure to constituents is minimal. However, the following protective equipment will be required for corrective actions associated with SWMU #8:

- Full body clothing including Tyvek
- Boots
- Safety glasses

- Hard hat

- Dust mask

- Gloves - Cotton

Section 5.4.4. "Decontamination" will include:

Equipment will be decontaminated using water or steam at the completion of the project. The decontamination water will be diverted to the refinery waste water system.

"APPENDIX D - Emergency Telephone Numbers - Emergency Coordination" is modified as follows:

Giant Contact	Claud Rosendale (505) 863-5942
Project Manager Health & Safety	Lynn Shelton (505) 722-6842

SWMU #9 - Inactive Land Treatment Area and Associated Drainage Ditch

A total of seven (7) vertical soil borings were collected for this SWMU. Three (3) of the borings were collected from the Drainage Ditch and the remaining four (4) borings was collected in the Inactive Land Treatment Area. Samples were collected at four (4) different intervals for each boring resulting in a total of 28 soil samples being collected. Each sample was analyzed for 15 background metals and the SW-846 Methods 8240 and 8270 priority pollutants listed in the Generic Sampling Plan.

Ethanol was detected in Method 8240 in samples from three (3) of the soil borings. The highest concentration of ethanol was 24.0 ppm. Method 8270 detected chrysene at 26.0 ppm and pyrene at 20.0 ppm in one sample.

Any of the metals that exceeded the tolerance limits were substantially below the proposed corrective action levels listed in the July 27, 1990 Federal Register. Ethanol, chrysene and pyrene are at very low levels and are not listed as constituents requiring corrective action.

As a result of the investigation of SWMU #9, Giant does not believe any remediation or corrective action is required. Giant will conduct a survey of the inactive land treatment unit and drainage ditch as required by 40 CFR 264.116, and forward the documentation to your office. Giant will also initiate a Class III modification to remove this SWMU from the permit. Giant proposes to conduct these activities in 1992 which should allow sufficient time to accumulate data to submit information for several of the SWMU's at one time.

SWMU #10 - Two Sludge Pits

One vertical soil boring was collected at the discharge of the overflow pipe with samples collected at the 0-½ ft. and 3-3½ ft. intervals. Two (2) additional soil borings were collected in each of the two (2) sludge pits with samples collected at the 0-½ ft., 3-3½ ft., 6-6½ ft., 9-9½ ft., and 12½-13 ft. intervals. This resulted in the collection of 22 soil samples which were analyzed for the background metals and the SW-846 Methods 8240 and 8270 priority pollutants listed in the Generic Sampling Plan.

The maximum total concentration of priority pollutants for any sample from borings 1001, 1002 and 1003 was 84.0 ppm. Total chromium was present above background levels but was still well below the proposed corrective action levels for Chromium VI. Recordings of visual inspections indicated layers of what appeared to be dried oil sludges from approximately 3½ foot to 9½ foot depths in sample borings 1004 and 1005. Indications of these layers was also evidenced by readings on the photoionization detector (PID) as high as 150. The analytical results also indicated elevated levels of volatiles, semi-volatiles and some metals. Table 8-2 through Table 8-6 indicates all volatile and semi-volatile constituents that exceeded detection limits and the metals which may exceed corrective action levels.

After reviewing these results and logs, it appeared that leaching of potential contaminants below ten feet was minimal. However, Giant believed it was critical to assure no "sludge" layers existed below these levels. As proposed in the supplemental sampling plan, three additional borings were made to a depth of 18 feet. Visual and PID readings were recorded and samples were collected at the 15-15½ foot level in borings 1006 and 1007. The greatest concentration of any constituent from these samples was 4.0 ppm. Both the visual and PID readings indicated no contamination at deeper levels. Giant also decided that a composite sample would be collected from the 5.0-9.0 foot level. This sample was extracted by the Toxicity Characteristic Leaching Procedure (TLCP) and analyzed for hazardous constituents. Giant believes this material is not regulated since the analytical indicates that all hazardous constituents are below regulated levels. Methylene chloride was detected in this sample however, it was also detected in the trip blank.

Since the material is not an EPA regulated waste, Giant proposes to excavate and land treat the oil/dirt as outlined in the following Final Remedy Plan (FRP).

TABLE 8-2

SWMU #10 Comparisons

Sample #	1001	
Sample Depth	0	3
Constituent PPM		
Total Chromium	-	-
Lead	-	-
Benzene	-	-
Ethylbenzene	-	-
Toluene	-	-
Xylene (Total)	-	-
2-Methylnaphthalene	-	-
Napthalene	-	-
Phenanthrene	-	-
O-Cresol	-	-
M & P Cresol(s)	-	-
Fluorene	-	-
2,4-Dimethylphenol	-	-
Phenol	-	-

TABLE 8-3

SWMU #10 Comparisons

Sample # 1002					
Sample Depth	0	3	6	9	12.5
Constituent PPM					
Total Chromium	-	-	-	-	-
Lead	-	-	-	-	-
Benzene	-	-	-	-	-
Ethylbenzene	-	-	-	-	-
Toluene	-	-	-	-	-
Xylene (Total)	-	-	-	-	-
2-Methylnaphthalene	-	56	-	-	-
Napthalene	-	-	-	-	-
Phenanthrene	-	28	-	-	-
O-Cresol	-	-	-	-	-
M & P Cresol(s)	-	-	-	-	-
Fluorene	-	-	-	-	-
2,4-Dimethylphenol	-	-	-	-	-
Phenol	-	-	-	-	-

TABLE 8-4

SWMU #10 Comparisons

Sample # 1003					
Sample Depth	0	3	6	9	12.5
Constituent PPM					
Total Chromium	-	-	-	-	-
Lead	-	-	-	-	-
Benzene	-	-	-	-	-
Ethylbenzene	-	-	-	-	-
Toluene	-	-	-	-	-
Xylene (Total)	-	-	-	-	-
2-Methylnaphthalene	-	-	-	-	-
Napthalene	-	-	-	-	-
Phenanthrene	-	-	-	-	-
O-Cresol	-	-	-	-	-
M & P Cresol(s)	-	-	-	-	-
Fluorene	-	-	-	-	-
2,4-Dimethylphenol	-	-	-	-	-
Phenol	-	-	-	-	-

TABLE 8-5

SWMU #10 Comparisons

Sample #	1004				
Sample Depth	0	3	6	9	12.5
Constituent PPM					
Total Chromium	-	-	398	-	-
Lead	-	-	-	-	-
Benzene	-	1.7	-	1.4	-
Ethylbenzene	-	5.6	81	43	-
Toluene	-	14	220	120	-
Xylene (Total)	-	54	470	310	-
2-Methylnaphthalene	-	-	290	-	5
Napthalene	-	-	54	-	-
Phenanthrene	-	-	23	-	-
O-Cresol	-	-	16	-	-
M & P Cresol(s)	-	-	26	-	-
Fluorene	-	-	13	-	-
2,4-Dimethylphenol	-	-	27	-	-
Phenol	-	-	-	-	-

TABLE 8-6

SWMU #10 Comparisons

Sample #	1005				
Sample Depth	**0**	**3**	**6**	**9**	**12.5**
Constituent PPM					
Total Chromium	-	-	4020	-	-
Lead	-	-	337	-	-
Benzene	-	-	37	-	-
Ethylbenzene	-	-	76	1.2	-
Toluene	-	-	290	2.6	.98
Xylene (Total)	-	-	540	9.7	1.7
2-Methylnaphthalene	-	-	1400	-	-
Napthalene	-	-	34	-	-
Phenanthrene	-	-	250	-	-
O-Cresol	-	-	-	34	19
M & P Cresol(s)	-	-	120	68	34
Fluorene	-	-	100	-	-
2,4-Dimethylphenol	-	-	-	12	7.9
Phenol	-	-	-	71	32

CINIZA REFINERY

FINAL REMEDY PLAN FOR SWMU #10
TWO SLUDGE PITS

Visual inspections and analytical results of sludge pit #2 of this SWMU does indicate the presence of intermittent layers of an old oil sludge and soil. These layers appear to exist in the 3½ to 9½ foot layer. Composite samples of this material extracted by the TCLP method and analyzed for hazardous constituents indicates that this material is non-hazardous. As a result, Giant proposes to excavate all portions of this SWMU which contains any of the intermittent sludge layer. The excavated material will be transported to the land farm where it will be dumped, leveled and farmed as outlined in the facility Part B Permit. The excavated area will be backfilled and contoured as required to maintain natural drainage of the area. This proposed work is detailed in the following paragraphs.

The visual observation, photoionization detector (PID) reading and analytical, all indicate the area of contamination that is of concern is restricted to Sludge Pit #2 (see attached Sludge Pit drawing). As a result, the estimated quantities, cost, etc., are based on volumes anticipated in Sludge Pit #2. However, as the remediation is conducted, all soils with visual evidence of any contamination (intermittent sludge layers, discoloration, etc.) will be included in the scope of this work.

Visual inspections and PID readings will be used to determine if material is included with the land applied portion. If any visual contamination occurs and if PID readings exceed 20 ppm, the material will be considered contaminated and will require land farming. The soils with no visual contamination and a PID reading of less than 20 ppm will be stockpiled and used for backfilling.

The contamination appears to be in the 3½ to 9½ foot range. Giant proposes to use an excavator and dozer to remove and stockpile the top three (3) feet of soil. This is estimated to be 1,330 cubic yards of soil. A dozer and wheel loader will then be used to remove the next seven (7) feet of soil, depending on the extent of contamination, and load onto dump trucks for transfer to the land treatment area. This is estimated at approximately 3,111 cubic yards.

Previous excavations to a depth of 18 feet, indicates there is no contamination below the 9½ to 10 foot range. Therefore, if PID readings are less than 20 ppm at the ten (10) foot level, no further excavation will be required. The extent of lateral excavation will also depend on visual observations and PID readings.

The overflow pipe will be removed during the excavation. This pipe will be cleaned with steam to remove any oily sludge that may exist. The wash water and residuals will be routed through the refinery waste water system.

The material being transferred to the land treatment unit will be dumped as evenly as possible over the entire area. A grader will be used to spread the piles in the land treatment unit. The area will then be farmed as required by the Part B Permit.

A dozer or scraper will be used to backfill the area to surrounding levels. A grader will be used for contouring of the area to natural drainage.

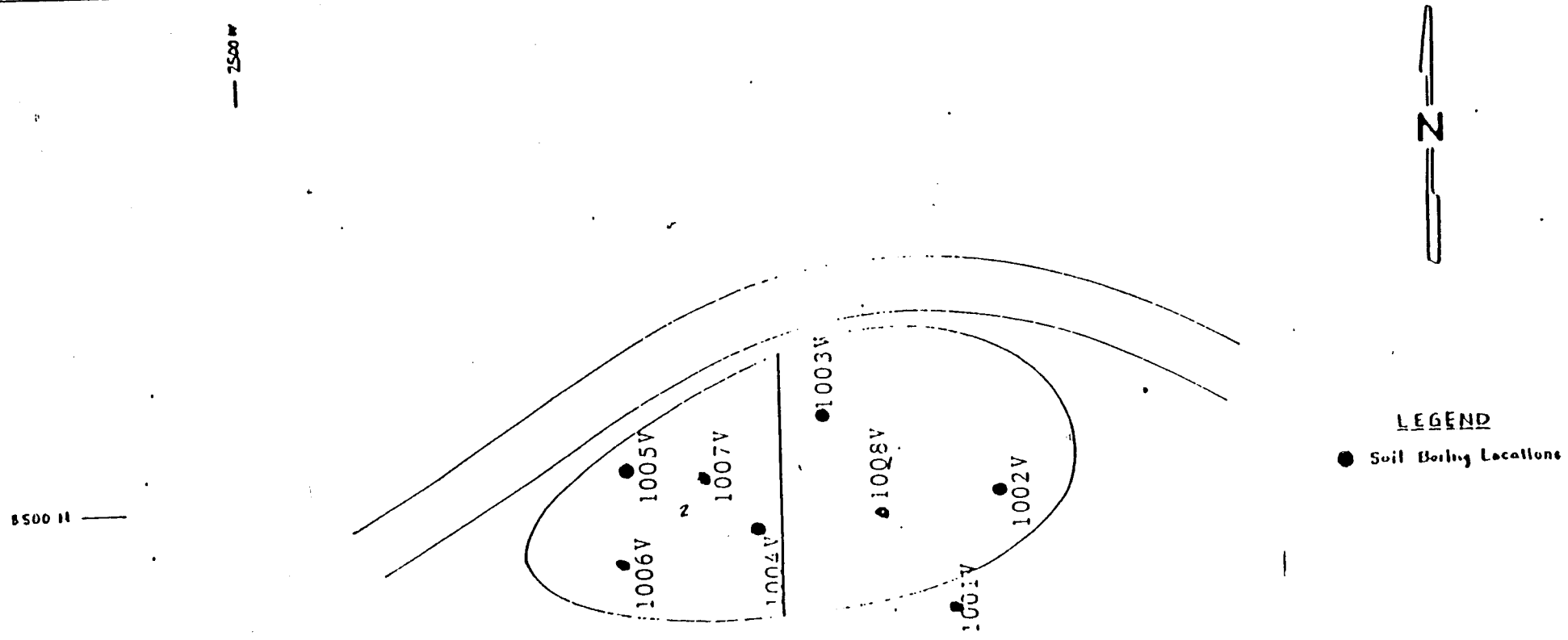
All equipment will be decontaminated as required in the Safety Execution Plan.

After completing the remediation, a survey will be performed as required by 40 CFR 264.116. Giant will supply documentation of this survey to your office and will then request a Class III permit modification as required by 40 CFR 270.42 to remove the Sludge Pits from further investigation in the permit. Giant will submit a final report outlining all activities conducted during the remediation of this SWMU.

ANTICIPATED COST FOR
SWMU #10
CORRECTIVE ACTION

Excavation	COST
Remove & Stockpile 3'	$ 1,615.00
Remove next 7'	2,730.00
Load & Transfer	
Load	$ 2,652.00
Transfer	4,972.00
Level & Farm	
Level	$ 1,143.00
Farm	1,000.00
Fill & Contour	
Backfill	$ 1,615.00
Contour	600.00
Pipe Clean-up	$ 100.00
Analytical	
Part B Requirements	$ 1,000.00
***Total**	$17,427.00

*** Based on quantity estimated in Sludge Pit #2**



GIANT REFINERY Gallup, New Mexico	Sludge Pits

SUPPLEMENT B
TO THE

COMMUNITY RELATIONS PLAN
RCRA FACILITIES INVESTIGATIVE PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

Section 2.0 "INTERNAL MEETINGS" will include the following:

Any corrective action measures, including remediations and modifications to existing operations, which are a result of the RCRA facility investigation will be discussed with the employees during the semi-annual meetings.

Section 3.1 "Information Repositories - Potential materials for the file include" will include:

- Documents of Final Remedy Plans

- Final Documents outlining the completion of actions required by the Final Remedy Plan

Section 3.2 "Public Notices" will include:

Prior to implementing approved Final Remedy Plans, an advertisement will be place in the local Gallup, New Mexico newspaper which will describe the corrective actions being conducted and refer interested parties to the information repository at the public library.

SUPPLEMENT B
TO THE

DATA MANAGEMENT PLAN
RCRA FACILITIES INVESTIGATION PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

Section 1.4 "Reporting". "Examples of specific reports that may be required include" will be updated to include:

- Records of remediation actions

SUPPLEMENT B
TO THE

SAFETY EXECUTION PLAN
RCRA FACILITIES INVESTIGATION PROJECT
GIANT REFINERY
GALLUP, NEW MEXICO

The following sections will be included:

5.1.5 Soil Excavation

- Follow the procedures listed in Drilling Rig Safety (5.1.1) for the movement of equipment.
- Avoid dermal contact
- Although the soil will be wet, avoid inhalation of windblown dust if it exists.
- Anchor equipment on level ground to assure no tipping will occur when working on the slopes of the lagoon.
- Assure earth moving equipment is not overloaded during transport.
- Assure equipment is level when dumping soils to prevent tipping.

Section 5.1.6 Steam Cleaning

- Precautions should be taken to assure the steam pressures are directed only at the equipment being cleaned.

Section 5.4.3 "Levels of Protection" will include:

<u>Non Hazardous Protection</u>

When working with non hazardous waste the potential exposure to constituents is minimal. However, the following protective equipment will be required for corrective actions associated with SWMU #8:

- Full body clothing including Tyvek
- Boots
- Safety glasses

- Hard hat

- Dust mask

- Gloves - Cotton

Steam Cleaning Protection

When working with steam pressures the following protective equipment is required in addition to the above:

- Goggles

- Insulated Gloves

Section 5.4.4. "Decontamination" will include:

Equipment will be decontaminated using water or steam at the completion of the project. The decontamination water will be diverted to the refinery waste water system.

"APPENDIX D - Emergency Telephone Numbers - Emergency Coordination" is modified as follows:

Giant Contact	Claud Rosendale (505) 863-5942
Project Manager Health & Safety	Lynn Shelton (505) 722-6842