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PROGRAM

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October 1, 1994

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NM ENVIRONMENT DEPARTMENT
OFFICE OF THE SECRETARY

Nancy Morlock
Hazardous Waste Management Division
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Report on the Additional RFI Sampling
Giant Refinery - Ciniza NMD000333211

Dear Ms. Morlock:

Giant Refining Company - Ciniza submits the "Report on the Additional RFI Sampling" as required by the January 7, 1994 letter from Allyn M. Davis.

As indicated in the September 30, 1994 Quarterly Progress Report, Giant will be sampling three additional corings on October 24 or 25. Data from that sampling and analysis event will be submitted as an addendum to this report on or before December 1, 1994.

If you have any questions about this report or require additional information, please do not hesitate to contact me at (505) 722-0227.

Sincerely,

Lynn Shelton

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc: Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
Kathleen Sisneros, NMED
Roger Anderson, OCD
Gallup Public Library

TLS\USEPA101

REPORT ON THE

ADDITIONAL RFI SAMPLING

GIANT REFINING COMPANY

OCTOBER 1, 1994

PREPARED BY:

LYNN SHELTON
SENIOR ENVIRONMENTAL COORDINATOR

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1.0 INTRODUCTION

1.1 Additional RFI Sampling

This report documents the additional sampling and analysis of solid waste management units (SWMUs) that required additional characterization of the potential presence of hazardous constituents. This sampling and analysis event is an extension of the sampling and analysis performed to satisfy requirements of the Resource Conservation and Recovery Act (RCRA) Feasibility Investigation (RFI) conducted at Giant Refining Company's (Giant) Ciniza Refinery, located near Gallup, New Mexico. The SWMUs investigated during the additional RFI sampling and analysis event include SWMU No. 4, 5, 6, 7, 10, and 11.

Field activities for the additional RFI sampling and analysis were conducted from July 26 to July 29, 1994 and August 8 to August 11, 1994. A drilling rig was used to continuously core the sample point and samples were collected by Giant personnel from those cores. The soil samples were then shipped by Federal Express to Westech Laboratories in El Paso, Texas for analysis. All sampling and decontamination procedures and laboratory analysis were conducted according to Giant's approved Generic Sampling Plan.

The remainder of this section includes a discussion of the sample number system and Giant's certification of this document. Section 2.0 contains correspondence concerning the RFI project. Section 3.0 contains the statistical analysis of metals in SWMUs No. 4, 5, and 10. Section 4.0 contains the summary of analytical results, including recommendations. Sample collection data, data management forms, tabulated analytical data and drawings of the SWMUs are included in the appendices.

1.2 Sample Numbering System

Giant had created a unique numbering system for identifying sample locations and depth. This numbering system, when compared with maps of boring locations (Figures 1 - 13), assure the ability to pinpoint the exact location of each sample.

As originally developed in 1990 for Phase I of the RFI and using the approved RFI Work Plan as a guide, the numbering

system is described below:

Note #	1	2	3	4	5
Sample #	RFI	04	06	V	6.OD

Note #1 - Sampling Event Title
Note #2 - SWMU Number
Note #3 - Specific Boring Number in Each SWMU
Note #4 - Type of Sample
V = Vertical
A = Angle
Note #5 - Beginning Depth of Sample Interval
D = Duplicate
E = Equipment Rinse
If no suffix, then this is an original sample.

It was noted in the letter received by Giant from Region VI, USEPA (January 7, 1994) that a discrepancy existed in the SWMU numbers between the RFI Work Plan, the HSWA Permit, and the letter from USEPA. The differences are:

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

In that the previous RFI reports have used the numbering sequence from the approved RFI Work Plan, Giant has chosen to continue with that numbering system to minimize confusion.

1.3 Certification

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 by 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.

David C. Pavlick
Health, Safety, Environmental Manager

10/4/94
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

RECEIVED
JAN 12 1994
GIANT REFINING CO.
CINIZA REFINERY

JAN 07 1994

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

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

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

Dear Mr. Stokes:

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

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

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

Sincerely yours,

Allyn M. Davis

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

Enclosure

cc: Kathleen Sisneros, NMED

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

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

GENERAL COMMENTS

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

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

SWMU 6, The Tank Farm

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

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

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

SWMU 9, The Sludge Pits
The EPA is unable to approve Giant's finding of no further action for this SWMU. Two (2) soil samples collected at the 15 foot interval (the deepest interval sampled) contained semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications). Giant may begin the voluntary bioremediation (see SWMU #8 voluntary corrective action) under the CAP after the deeper soil samples have been completed.

MODIFICATIONS

SWMU 1, The Aeration Basin
Giant shall take soil samples around the Aeration Basin every two (2) years beginning in calendar year 1994. Sampling requirements shall be identical to those performed during the previous RFI, except that all soil borings shall be angled and an additional sample shall be collected at the 20-21 foot interval. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

SWMU 6, The Tank Farm
Giant shall complete additional soil borings as close as possible to the following sample points (numbers correspond to previous RFI sampling points completed in May, 1991): 21, 22, 23, 25, 26, 27, 30, and 31. The sampling interval shall be at 16 feet, with the exception of sample point 31 which shall be sampled at 20 feet. Samples shall be analyzed for BTEX constituents. Sampling must extend vertically until no subsequent increase in contamination levels is likely to occur. A minimum of two (2) "clean" samples are required to verify delineation. The results of this sampling event shall be submitted to EPA by October 1, 1994.

SWMU 2, Evaporation Ponds
Giant shall monitor the seven (7) groundwater wells around the evaporation ponds biannually for the same constituents monitored for in the original RFI. Results shall be included in the Annual Monitoring Report.

SWMU 13, Drainage Ditch between APIs Evaporation Ponds and Neutralization Tank Evaporation Ponds
Giant shall conduct soil sampling around the Drainage Ditch every two (2) years, with sampling beginning in calendar year 1994. Sampling procedures and analytical constituents shall be identical to those required in the RFI, except that all soil borings shall be angled and an additional interval shall be sampled at from 6.0-6.5 feet. Results shall be included in the appropriate Annual Monitoring Report (1994, 1996, etc.).

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

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

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

Continuation of SWMU 6, The Overflow Ditch
Giant shall complete three (3) soil borings in the Overflow Ditch after closing the Railroad Rack Lagoon. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. All results shall be included in the 1994 Annual Monitoring Report.

Continuation of SWMU 6, The Fan Out Area
Giant shall complete four (4) soil borings in the Fan Out Area after closure of the Railroad Rack Lagoon has been completed. Sampling procedures and analytical constituents shall be identical to those required in the previous RFI. Soil samples shall be collected at the 3.0 - 4.0 and 6.5 - 7.0 foot interval. Results shall be included in the 1994 Annual Monitoring Report.

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

SWMU 9, The Sludge Pits
Giant shall complete soil borings as close as possible to sampling points 6 and 7 (numbers correspond to previous RFI sampling points, completed in May, 1991). Sampling intervals shall be at 18.0 -19.0 foot and 24.0 - 25.0 foot. Sampling procedures and analytical constituents shall be identical to those required in the previous

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

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

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

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 7 1994

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JAN 12 1994
GIANT REFINING CO.
CINIZA REFINERY

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

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

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

Dear Mr. Stokes:

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

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

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

Sincerely yours,

Jack Dinta

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

Enclosure

cc: Kathleen Sisneros, NMED

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

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

GENERAL COMMENTS

SWMU 5, The Empty Container Storage Area
The EPA hereby approves the finding of No Further Action (NFA) for Solid Waste Management Unit (SWMU) number three (3), the Empty Container Storage Area. However, this approval is contingent upon the completion of a survey plat for the unit. The survey plat shall be completed in accordance with the procedures outlined in 40 CFR 264.116. Giant shall submit a copy of the survey plat to the EPA for review and approval. Upon approval, Giant may submit a Class III permit modification to terminate the RFI/Corrective Measures Study (CMS) process for the Empty Container Storage Area.

SWMU 8, The Old Burn Pit
Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. All three (3) soil samples taken at the 4.5 foot interval (the deepest interval sampled) contained elevated levels of heavy molecular weight semivolatiles. Additionally, one of the three (3) samples at the 4.5 foot interval also contained elevated BTEX levels. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

SWMU 11, The Secondary Oil Skimmer
Due to the presence of elevated levels of volatile and semivolatile contaminants in soil samples from this unit, the EPA is unable to approve Giant's finding of No Further Action. One of the two (2) samples taken at the 3.0 foot interval (the deepest interval sampled) contained volatile and semivolatile contaminants. The EPA is therefore requiring deeper sampling at specified points (see below under Modifications).

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

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

SWMU 7, The Landfill Areas

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

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

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

MODIFICATIONS

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

SWMU #8, The Old Burn Pit

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

SWMU #11, The Secondary Oil Skimmer

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

SWMU #4, The Fire Training Area

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

SWMU #7, The Landfill Areas

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

RECEIVED
AUG 26 1994
GIANT REFINING CO.
CINIZA REFINERY

August 24, 1994

Mr. Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company
Route 3, Box 7
Gallup, NM 87301

Dear Mr. Shelton:

The Environmental Protection Agency (EPA) has reviewed your letter dated August 2, 1994, concerning additional RFI sampling requirements at solid waste management unit (SWMU) #1, the Aeration Basin; #2, the Evaporation Pond; and #13, the Drainage Ditch. In your letter, you propose to conduct soil and groundwater sampling every five years as opposed to the biennial sampling requirement detailed in the EPA's January 7, 1994 letter.

The EPA has reassessed your Phase II RFI Report and hereby approves your request to sample SWMUs 1, 2, and 13 every five years. Sampling shall begin in 1995 and reports shall be submitted to the EPA by December 31 of each sample year. As a reminder, a survey plat must be completed for SWMUs 1, 2, and 13 and submitted to the EPA for review and approval. Giant shall also initiate a Class 3 permit modification to terminate the RFI/Corrective Measures Study process for these SWMUs within three months of receipt of this letter.

Please contact Nancy R. Morlock of my staff at (214) 665-6650 if you have any questions or require additional information.

Sincerely yours,

William K. Honker, P.E., Chief
RCRA Permits Branch

cc: Ms. Kathleen Sisneros, Director
Water and Waste Management Division
New Mexico Environment Department

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GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

August 2, 1994

Allyn M. Davis
United States Environmental Protection Agency
Region VI
1445 Ross Avenue
Suite 1200
Dallas, Texas 75202-2733

Re: Additional RFI Sampling

Dear Mr. Davis:

In the letter from you dated January 7, 1994 (copy enclosed), Giant Refining Company - Ciniza (Giant) received EPA's approval of Giant's recommendation of "No Further Action" on SWMU #1, the *Aeration Basin*; SWMU #2, the *Evaporation Pond*; and SWMU #13, the *Drainage Ditch*. The agency's approval of the "No Further Action" recommendations was accompanied with several additional requirements.

The additional requirements were to repeat the sampling protocol set forth in the approved RFI Sampling Plan (May, 1990) biennially. This additional sampling is intended to monitor potential migration of hazardous constituents from these SWMUs during the duration of their active service.

Giant understands the logic of continued sampling to document potential migration but has some reservations about the frequency of sampling and the true potential for migration of hazardous constituents.

It was determined in the RFI sampling (1990-1992) that migration of hazardous constituents had not occurred in any of the previously mentioned SWMUs and that water saturation had not occurred below five feet. This observation, coupled with the fact that hazardous constituents are not released to the three SWMUs, indicates that future contamination due to migration of hazardous constituents is virtually impossible.

Based on this knowledge, Giant proposes to sample SWMUs #1, #2, and #13, using the protocol set forth in the approved RFI Sampling Plan, every five years, beginning in 1995, with annual reports due on December 31 of the sample year. This sampling will adequately

demonstrate migration, if any, of hazardous constituents. Giant appreciates your prompt attention to this proposal, as this will expedite completion of any responsibilities of Giant to fully characterize and monitor SWMUs #1, #2, and #13.

If you require additional information, please contact me at (505) 722-0227.

Sincerely,

Lynn Shelton
Senior Environmental Coordinator
Giant Refining Company

TLS:sp

cc w/attachment: David C. Pavlich, Giant
Kim Bullerdick, Giant
Rich Mayer, USEPA
Kathleen Cisneros, NMED

TLS\ADEPA894

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

September 30, 1994

Nancy Morlock
Hazardous Waste Management Division
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Quarterly Progress Report

Dear Ms. Morlock:

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

Giant has completed the additional sampling requirements as directed by the January 7, 1994 letter from the Hazardous Waste Management Division of Region VI, USEPA, with the notable exception of three sample points. At Tank 451, the drilling rig was too large to maneuver into the limited space around the tank, particularly in a safe manner. A portable pneumatic rig will be employed on October 24 or 25 to complete that boring. The photoionization detector (PID) that was used for this RFI event malfunctioned and we were unable to take readings around the leaded gasoline tanks. Consequently, Giant did not drill deep enough to get two "clean" samples. Giant has contracted Precision Engineering, Inc. to drill two additional borings to depths as needed to produce clean samples. This will occur on October 24 or 25.

Results of the sampling and analysis of those three sites will be submitted to USEPA on or before December 1, 1994.

Giant proceeded with all additional sampling and analysis needed to fulfill the requirements of closure of SWMU No. 10 - <u>The Sludge Pits</u> as set forth in the January 7, 1994 letter from your office.

Giant has, essentially, completed the "Report on Additional FRI Sampling" and will submit it on October 1, 1994.

During the fourth quarter of 1994, Giant will continue dirt work and sampling on SWMU No. 8 as closure of that SWMU continues. Giant will also be developing correction action plans for SWMUs as indicated in the "Report on Additional RFI Sampling".

Surveys of several SWMUs were made by registered surveyors in the third quarter of 1994. Copies of those survey plats will be submitted in the fourth quarter of 1994.

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

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

Sincerely,

John Stokes

John Stokes
Refinery Manager
Giant Refining Company

JJS/TLS:sp

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

David Pavlich, Health, Safety, and Environmental Manager
Giant Refining Company

TLS\USEPA930

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

June 28, 1994

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

Re: Quarterly Progress Report

Dear Mr. Mayer:

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

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

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

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

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

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

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

Sincerely,

John Stokes
Refinery Manager

JJS/TLS:sp

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

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

GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

March 24, 1994

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

Re: Quarterly Progress Report

Dear Mr. Mayer:

Giant Refining Company - Ciniza (Giant) is submitting this Quarterly Progress Report as required by the May 31, 1990 RFI Workplan approval and HSWA Permit Condition C.4., Page 11.

Giant has reviewed the "Additional Requirements" of the Phase I, II, and III approval letters and will be scheduling a meeting with EPA in the near future to discuss those requirements.

Implementation of the Corrective Action Plan (CAP) for the "Railroad Rack Lagoon" (SWMU #8) can proceed now that weather conditions will support bioremediation activities.

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

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

Sincerely,

John Stokes
Refinery Manager

JJS/TLS:sp

cc: Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.
David Pavlich, Health/Safety Environmental Manager, Giant Refining

3.0 STATISTICAL ANALYSIS

3.1 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 nine metals analyzed, of from two to twelve values at each of two depths.

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

a) Calculate the mean, X, and the standard deviation, SD, from the background data. (If a measurement was listed as non-detectable (ND), then the value used was one-half of the detection limit.)

b) Construct the one-sided upper tolerance as TL = X + KS where K is the one-sided normal tolerance factor.

c) The tolerance interval is the interval {O,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 the 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 probably occurred.

3.2 Notes on the Statistical Analysis

In order to construct the upper tolerance limit, the background data is assumed to be 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 samples were normally distributed. No other tests of normality were performed.

If the standard deviation of the background data is zero (i.e., all values are the same), then the tolerance interval is not particularly useful. In that case the upper tolerance limit is identical to the common value of the background data values and <u>any</u> observation coming from compliance samples which exceeds that upper tolerance limit must be taken as evidence of contamination. This was the situation for the following metals (and depths):

a) Cadmium (> 5.0 feet) - Six measurements, all of which were 0.3 mg/kg.

b) Mercury (> 5.0 feet) - Six measurements, all of which were non-detectable.

For these metals and depths an analysis of variance would ordinarily be used in place of the tolerance interval method for the data being reported. However, none of the metals listed above were present in detectable amounts in the compliance samples. This demonstrates that no contamination has occurred and additional statistical tests were not performed.

The analytical results reported under the sample column in the tolerance interval test are in mg/kg.

Background Data - Tolerance Interval

Arsenic, greater than five feet

Data: 6.2, 5.8, 7.6, 2.8, 7.2, 0.6, 0.3, 0.3, 0.6, 1.1, 0.3

Mean: 3.18

SD: 2.97

Upper Tolerance Limit: 11.54

Coefficient of Variance: 0.93

Barium, greater than five feet
Data: 180, 280, 250, 170, 320, 280, 270, 330, 270, 260, 220, 270
Mean: 258.33
SD: 48.40
Upper Tolerance Limit: 390.75
Coefficient of Variation: 0.18

Beryllium, greater than five feet
Data: 1.3, 1.2, 1.3, 1.0, 0.8, 1.3, 1.1, 1.2, 1.2, 1.3, 1.2, 0.8
Mean: 1.14
SD: 0.18
Upper Tolerance Limit: 1.63
Coefficient of Variation: 0.15

Cadmium, greater than five feet
Data: 0.3, 0.3, 0.3, 0.3, 0.3, 0.3
Mean: 0.30
SD: 0.00
Upper Tolerance Limit: 0.30
Coefficient of Variation: 0.00

Chromium, greater than five feet
Data: 7, 4, 7, 3, 3, 5, 4, 5, 4, 4, 3, 4
Mean: 4.42
SD: 1.38
Upper Tolerance Limit: 8.20
Coefficient of Variation: 0.30

Lead, greater than five feet
Data: 12, 11, 12, 9, 9, 10
Mean: 10.5
SD: 1.38
Upper Tolerance Limit: 15.62
Coefficient of Variation: 0.12

Mercury, greater than five feet
Data: ND, ND, ND, ND, ND, ND
Mean: -
SD: 0.00
Upper Tolerance Limit: -
Coefficient of Variation: 0.00

Nickel, greater than five feet
Data: 10, 7, 10, 5, 7, 9, 7, 9, 8, 8, 7, 6
Mean: 7.75
SD: 1.54
Upper Tolerance Limit: 11.96
Coefficient of Variation: 0.19

Vanadium, greater than five feet
Data: 16, 13, 15, 11, 8.7, 13, 13, 12, 11, 11, 10, 9
Mean: 12.06
SD: 2.25
Upper Tolerance Limit: 18.22
Coefficient of Variation: 0.18

RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0404V6.0	Arsenic	nd	Within the tolerance limit.
	Barium	130.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	11.0	Exceeds the tolerance limit by 36.99%.
	Lead	15.0	Within the tolerance limit.
	Nickel	16.0	Exceeds the tolerance limit by 35.59%.
	Vanadium	5.4	Within the tolerance limit.
RFIO4O4V10.0	Arsenic	nd	Within the tolerance limit.
	Barium	240.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.7	Within the tolerance limit.
	Lead	11.0	Within the tolerance limit.
	Nickel	10.0	Within the tolerance limit.
	Vanadium	3.7	Within the tolerance limit.
RFI0404V10.0D	Arsenic	nd	Within the tolerance limit.
	Barium	260.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.3	Within the tolerance limit.
	Lead	12.0	Within the tolerance limit.
	Nickel	11.0	Within the tolerance limit.
	Vanadium	4.7	Within the tolerance limit.
RFI0405V6.0	Arsenic	nd	Within the tolerance limit.
	Barium	170.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	12.0	Exceeds the tolerance limit by 49.44%.
	Lead	15.0	Within the tolerance limit.
	Nickel	18.0	Exceeds the tolerance limit by 52.54%.
	Vanadium	6.5	Within the tolerance limit.

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0405V10.0	Arsenic	nd	Within the tolerance limit.
	Barium	230.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	5.2	Within the tolerance limit.
	Lead	12.0	Within the tolerance limit.
	Nickel	9.2	Within the tolerance limit.
	Vanadium	4.0	Within the tolerance limit.
RFI0406V6.0	Arsenic	nd	Within the tolerance limit.
	Barium	150.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	10.0	Exceeds the tolerance limit by 24.53%.
	Lead	15.0	Within the tolerance limit.
	Nickel	18.0	Exceeds the tolerance limit by 52.54%.
	Vanadium	6.4	Within the tolerance limit.
RFI0406V10.0	Arsenic	nd	Within the tolerance limit.
	Barium	220.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.9	Exceeds the tolerance limit by 23.29%.
	Lead	13.0	Within the tolerance limit.
	Nickel	9.5	Within the tolerance limit.
	Vanadium	4.6	Within the tolerance limit.

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RFI

COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0513V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	140.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.5	Within the tolerance limit.
	Lead	11.0	Within the tolerance limit.
	Nickel	10.0	Within the tolerance limit.
	Vanadium	4.0	Within the tolerance limit.
RFI0513V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	360.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	10.0	Exceeds the tolerance limit by 21.95%.
	Lead	14.0	Within the tolerance limit.
	Nickel	11.0	Within the tolerance limit.
	Vanadium	11.0	Within the tolerance limit.
RFI0513V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	310.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.1	Exceeds the tolerance limit by 10.98%.
	Lead	12.0	Within the tolerance limit.
	Nickel	12.0	Exceeds the tolerance limit by .33%.
	Vanadium	6.2	Within the tolerance limit.
RFI0514V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	190.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.7	Exceeds the tolerance limit by 10.29%.
	Lead	13.0	Within the tolerance limit.
	Nickel	12.0	Exceeds the tolerance limit by .33%.
	Vanadium	5.0	Within the tolerance limit.

RFI

COMPLIANCE DATA

GIANT REFINING COMPANY – CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0514V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	510.0	Exceeds the tolerance limit by 30.52%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	5.1	Within the tolerance limit.
	Lead	11.0	Within the tolerance limit.
	Nickel	7.9	Within the tolerance limit.
	Vanadium	7.0	Within the tolerance limit.
RFI0514V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	320.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	14.0	Exceeds the tolerance limit by 70.73%.
	Lead	15.0	Within the tolerance limit.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	8.2	Within the tolerance limit.
RFI0515V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	140.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	18.0	Exceeds the tolerance limit by 119.51%.
	Lead	14.0	Within the tolerance limit.
	Nickel	13.0	Exceeds the tolerance limit by 8.70%.
	Vanadium	6.7	Within the tolerance limit.
RFI0515V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	140.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	11.0	Exceeds the tolerance limit by 34.15%.
	Lead	15.0	Within the tolerance limit.
	Nickel	14.0	Exceeds the tolerance limit by 17.06%.
	Vanadium	5.4	Within the tolerance limit.

RFI

COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0515V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	380.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	13.0	Exceeds the tolerance limit by 59.54%.
	Lead	14.0	Within the tolerance limit.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	8.1	Within the tolerance limit.
RFI0516V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	370.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.7	Exceeds the tolerance limit by 18.29%.
	Lead	16.0	Exceeds the tolerance limit by 2.43%.
	Nickel	13.0	Exceeds the tolerance limit by 8.70%.
	Vanadium	5.8	Within the tolerance limit.
RFI0516V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	240.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	5.2	Within the tolerance limit.
	Lead	12.0	Within the tolerance limit.
	Nickel	9.7	Within the tolerance limit.
	Vanadium	3.4	Within the tolerance limit.
RFI0516V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	160.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.0	Within the tolerance limit.
	Lead	14.0	Within the tolerance limit.
	Nickel	11.0	Within the tolerance limit.
	Vanadium	3.5	Within the tolerance limit.

RFI
COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0517V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	490.0	Exceeds the tolerance limit by 25.40%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	5.9	Within the tolerance limit.
	Lead	11.0	Within the tolerance limit.
	Nickel	9.2	Within the tolerance limit.
	Vanadium	3.8	Within the tolerance limit.
RFI0517V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	200.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	3.6	Within the tolerance limit.
	Lead	9.7	Within the tolerance limit.
	Nickel	7.5	Within the tolerance limit.
	Vanadium	2.8	Within the tolerance limit.
RFI0517V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	270.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.3	Exceeds the tolerance limit by 13.41%.
	Lead	15.0	Within the tolerance limit.
	Nickel	14.0	Exceeds the tolerance limit by 17.06%.
	Vanadium	4.8	Within the tolerance limit.
RFI0518V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	210.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.8	Exceeds the tolerance limit by 7.32%.
	Lead	13.0	Within the tolerance limit.
	Nickel	13.0	Exceeds the tolerance limit by 8.70%.
	Vanadium	3.8	Within the tolerance limit.

RFI

COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0518V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	100.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	4.8	Within the tolerance limit.
	Lead	9.6	Within the tolerance limit.
	Nickel	7.9	Within the tolerance limit.
	Vanadium	3.7	Within the tolerance limit.
RFI0518V16.0D	Arsenic	nd	Within the tolerance limit.
	Barium	110.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	5.3	Within the tolerance limit.
	Lead	11.0	Within the tolerance limit.
	Nickel	7.6	Within the tolerance limit.
	Vanadium	3.4	Within the tolerance limit.
RFI0518V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	200.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.7	Within the tolerance limit.
	Lead	12.0	Within the tolerance limit.
	Nickel	9.4	Within the tolerance limit.
	Vanadium	4.2	Within the tolerance limit.
RFI0519V11.0	Arsenic	nd	Within the tolerance limit.
	Barium	300.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.9	Exceeds the tolerance limit by 20.73%.
	Lead	15.0	Within the tolerance limit.
	Nickel	14.0	Exceeds the tolerance limit by 17.06%.
	Vanadium	nd	Within the tolerance limit.

RFI

COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI0519V16.0	Arsenic	nd	Within the tolerance limit.
	Barium	300.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.9	Within the tolerance limit.
	Lead	18.0	Exceeds the tolerance limit by 15.24.
	Nickel	15.0	Exceeds the tolerance limit by 25.42%.
	Vanadium	nd	Within the tolerance limit.
RFI0519V20.0	Arsenic	nd	Within the tolerance limit.
	Barium	390.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	16.0	Exceeds the tolerance limit by 95.12%.
	Lead	16.0	Exceeds the tolerance limit by 2.43%.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	2.8	Within the tolerance limit.

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COMPLIANCE DATA

GIANT REFINING COMPANY – CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI1014V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	370.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.2	Equals the tolerance limit.
	Lead	15.0	Within the tolerance limit.
	Nickel	17.0	Exceeds the tolerance limit by 42.14%.
	Vanadium	4.1	Within the tolerance limit.
RFI1014V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	1100.0	Exceeds the tolerance limit by 181.51%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.1	Exceeds the tolerance limit by 10.98%.
	Lead	11.0	Within the tolerance limit.
	Nickel	18.0	Exceeds the tolerance limit by 50.5%.
	Vanadium	5.3	Within the tolerance limit.
RFI1015V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	360.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	14.0	Exceeds the tolerance limit by 70.73%.
	Lead	17.0	Exceeds the tolerance limit by 8.83%.
	Nickel	18.0	Exceeds the tolerance limit by 50.5%.
	Vanadium	5.2	Within the tolerance limit.
RFI1015V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	190.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.0	Within the tolerance limit.
	Lead	14.0	Within the tolerance limit.
	Nickel	18.0	Exceeds the tolerance limit by 50.5%.
	Vanadium	4.8	Within the tolerance limit.

RFI REPORT
COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI1016V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	310.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	10.0	Exceeds the tolerance limit by 21.95%.
	Lead	19.0	Exceeds the tolerance limit by 21.64%.
	Nickel	19.0	Exceeds the tolerance limit by 58.86%.
	Vanadium	nd	Within the tolerance limit.
RFI1016V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	340.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	14.0	Exceeds the tolerance limit by 70.73%.
	Lead	16.0	Exceeds the tolerance limit by 2.43%.
	Nickel	20.0	Exceeds the tolerance limit by 67.22%.
	Vanadium	4.6	Within the tolerance limit.
RFI1017V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	420.0	Exceeds the tolerance limit by 7.49%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.2	Equals the tolerance limit.
	Lead	17.0	Exceeds the tolerance limit by 8.83%.
	Nickel	19.0	Exceeds the tolerance limit by 58.86%.
	Vanadium	3.4	Within the tolerance limit.
RFI1017V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	610.0	Exceeds the tolerance limit by 56.11%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	12.0	Exceeds the tolerance limit by 46.34%.
	Lead	15.0	Within the tolerance limit.
	Nickel	18.0	Exceeds the tolerance limit by 50.50%.
	Vanadium	9.5	Within the tolerance limit.

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GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI1018V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	410.0	Exceeds the tolerance limit by 4.93%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	7.6	Within the tolerance limit.
	Lead	14.0	Within the tolerance limit.
	Nickel	17.0	Exceeds the tolerance limit by 42.14%.
	Vanadium	4.4	Within the tolerance limit.
RFI1018V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	690.0	Exceeds the tolerance limit by 76.58%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.4	Exceeds the tolerance limit by 2.44%.
	Lead	17.0	Exceeds the tolerance limit by 8.83%.
	Nickel	15.0	Exceeds the tolerance limit by 25.42%.
	Vanadium	4.0	Within the tolerance limit.
RFI1019V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	400.0	Exceeds the tolerance limit by 2.37%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	12.0	Exceeds the tolerance limit by 46.34%.
	Lead	9.0	Within the tolerance limit.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	5.5	Within the tolerance limit.
RFI1019V19.0D	Arsenic	nd	Within the tolerance limit.
	Barium	370.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.5	Exceeds the tolerance limit by 3.66%.
	Lead	17.0	Exceeds the tolerance limit by 8.83%.
	Nickel	13.0	Exceeds the tolerance limit by 8.70%.
	Vanadium	nd	Within the tolerance limit.

RFI REPORT
COMPLIANCE DATA

GIANT REFINING COMPANY - CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI1019V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	630.0	Exceeds the tolerance limit by 61.23%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	8.9	Exceeds the tolerance limit by 8.54%.
	Lead	20.0	Exceeds the tolerance limit by 28.04%.
	Nickel	17.0	Exceeds the tolerance limit by 42.14%.
	Vanadium	3.3	Within the tolerance limit.
RFI1020V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	400.0	Exceeds the tolerance limit by 2.37%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	11.0	Exceeds the tolerance limit by 2.12%.
	Lead	16.0	Exceeds the tolerance limit by 2.43%.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	4.3	Within the tolerance limit.
RFI1020V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	369.0	Within the tolerance limit.
	Beryllium	nd	Within the tolerance limit.
	Chromium	14.0	Exceeds the tolerance limit by 70.73%.
	Lead	20.0	Exceeds the tolerance limit by 28.04%.
	Nickel	19.0	Exceeds the tolerance limit by 58.86%.
	Vanadium	5.0	Within the tolerance limit.
RFI1021V19.0	Arsenic	nd	Within the tolerance limit.
	Barium	520.0	Exceeds the tolerance limit by 33.08%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	13.0	Exceeds the tolerance limit by 58.54%.
	Lead	19.0	Exceeds the tolerance limit by 21.64%.
	Nickel	16.0	Exceeds the tolerance limit by 33.78%.
	Vanadium	6.8	Within the tolerance limit.

RFI REPORT
COMPLIANCE DATA

GIANT REFINING COMPANY – CINIZA

SAMPLE NUMBER	METAL	SAMPLE DATA	NOTE
RFI1021V25.0	Arsenic	nd	Within the tolerance limit.
	Barium	680.0	Exceeds the tolerance limit by 74.02%.
	Beryllium	nd	Within the tolerance limit.
	Chromium	9.4	Exceeds the tolerance limit by 14.63%.
	Lead	20.0	Exceeds the tolerance limit by 28.04%.
	Nickel	17.0	Exceeds the tolerance limit by 42.14%.
	Vanadium	4.7	Within the tolerance limit.

TLS 9/94

4.0 SUMMARY AND DISCUSSION OF SWMUs

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

4.1 SWMU No. 4 - Old Burn Pit

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

4.1.1 Methods

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

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

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

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

4.1.2 Results

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

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

4.1.3 Recommendations

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

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

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

4.2 SWMU No. 5 - Landfill Areas

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

4.2.1 Methods

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

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

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

4.2.2 Results

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

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

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

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

4.2.3 Recommendations

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

4.3 SWMU No. 6 - Tank Farm

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

4.3.1 Methods

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

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

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

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

4.3.2 Results

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

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

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

4.3.3 Recommendations

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

October 24, 1994.

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

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

4.4 SWMU No. 7 - Fire Training Area

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

4.4.1 Methods

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

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

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

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

4.4.2 Results

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

4.4.3 Recommendations

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

4.5 SWMU No. 10 - Sludge Pits

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

4.5.1 Methods

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

these data were recorded on the data management forms.

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

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

4.5.2 Results

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

4.5.3 Recommendations

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

4.6 SWMU No. 11 - Secondary Skimmer

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

4.6.1 Methods

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

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

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

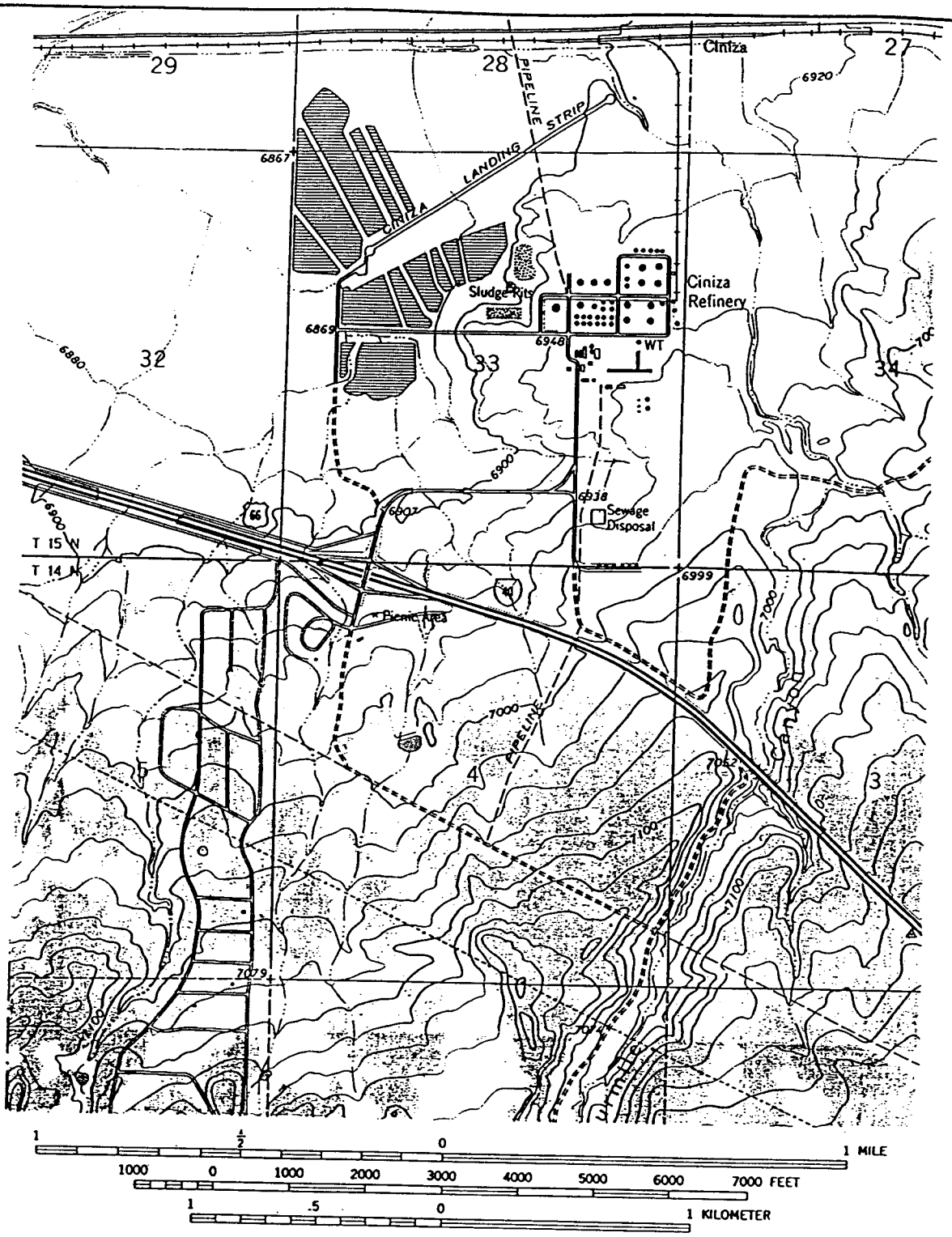
4.6.2 Results

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

4.6.3 Recommendations

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

As such, Giant proposes no further action.



CINIZA QUADRANGLE
NEW MEXICO-MC KINLEY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION

FIGURE 1

LOCATION MAP

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

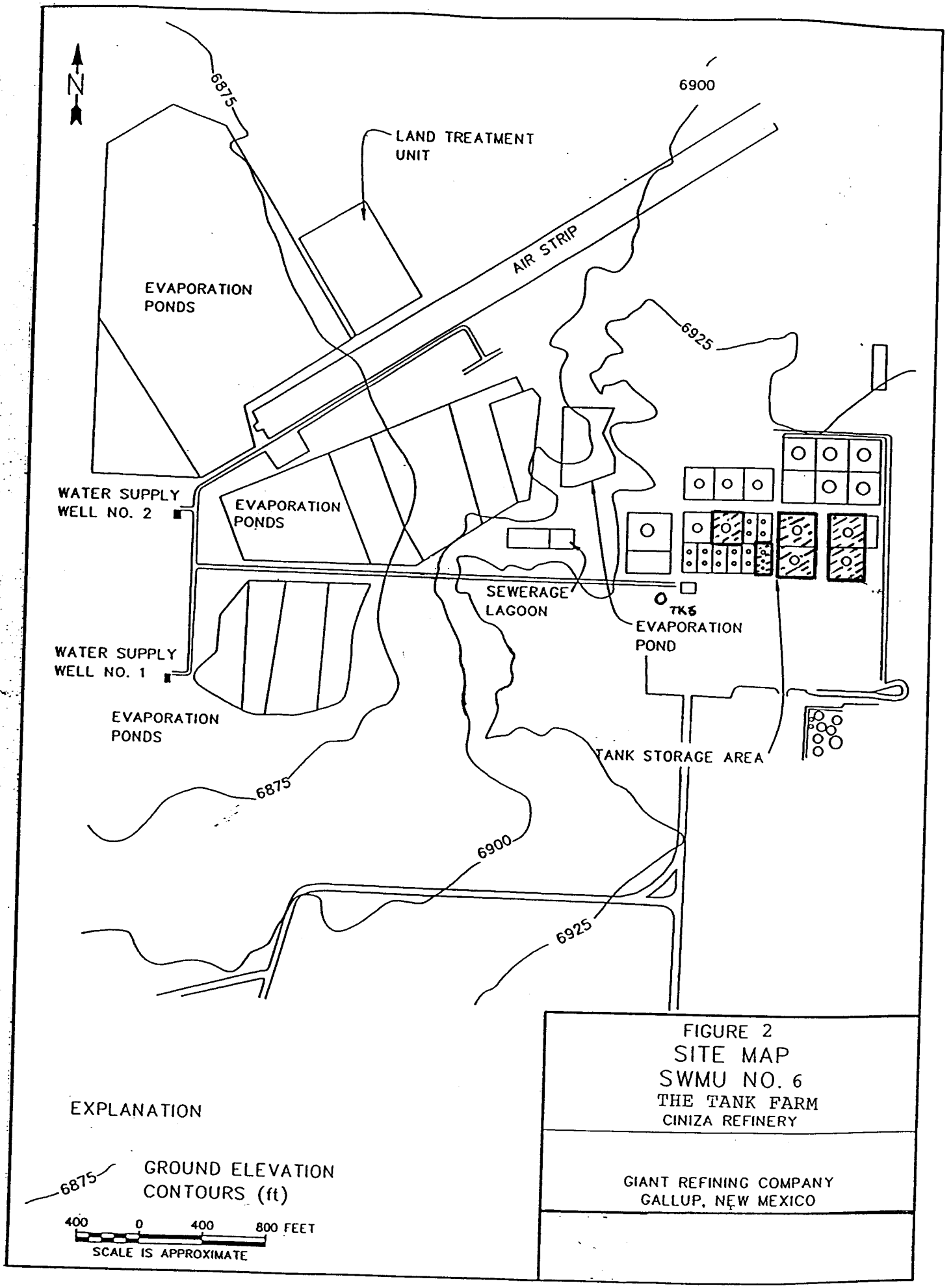


FIGURE 2
SITE MAP
SWMU NO. 6
THE TANK FARM
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

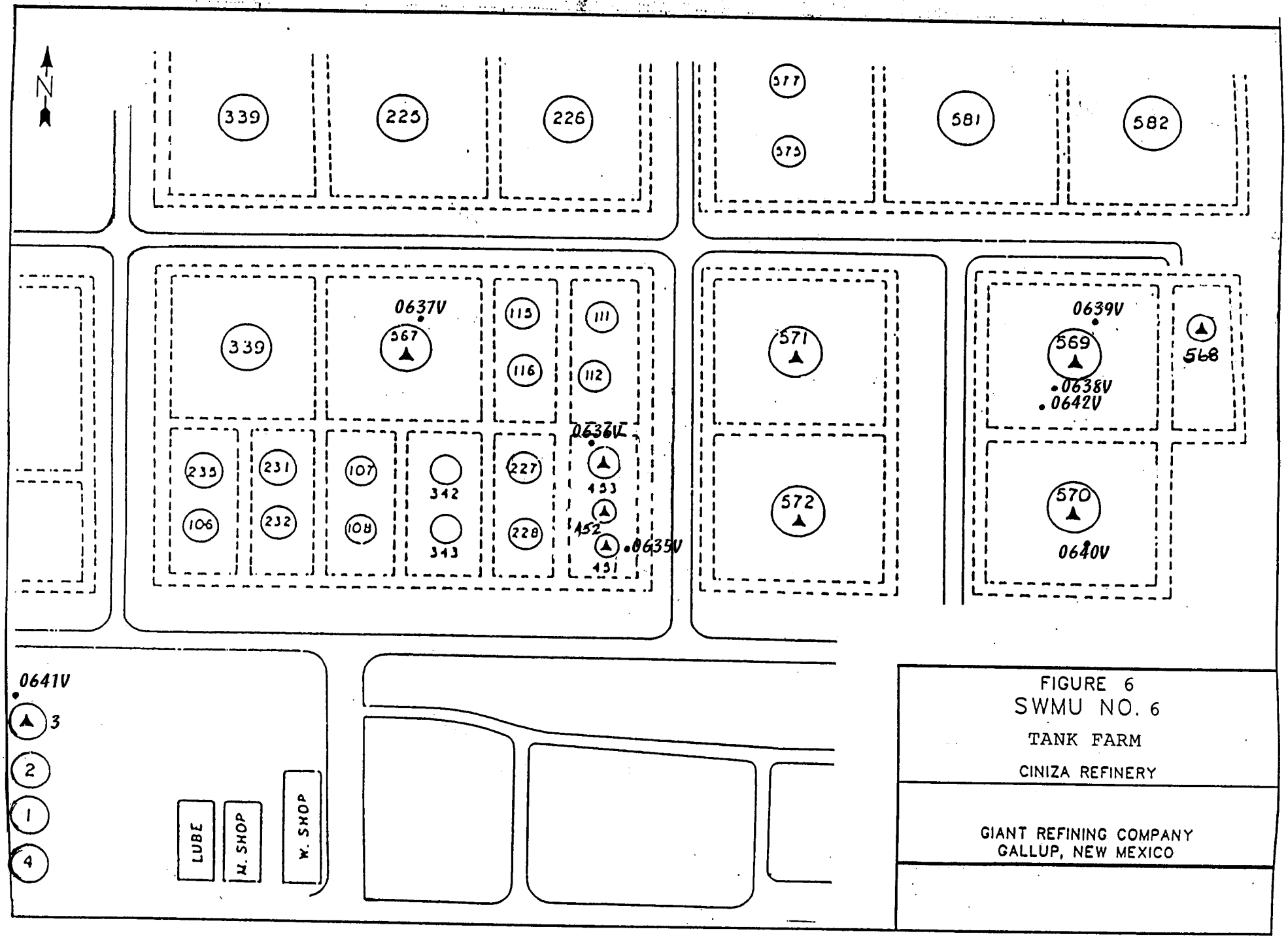


FIGURE 6
SWMU NO. 6
TANK FARM
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

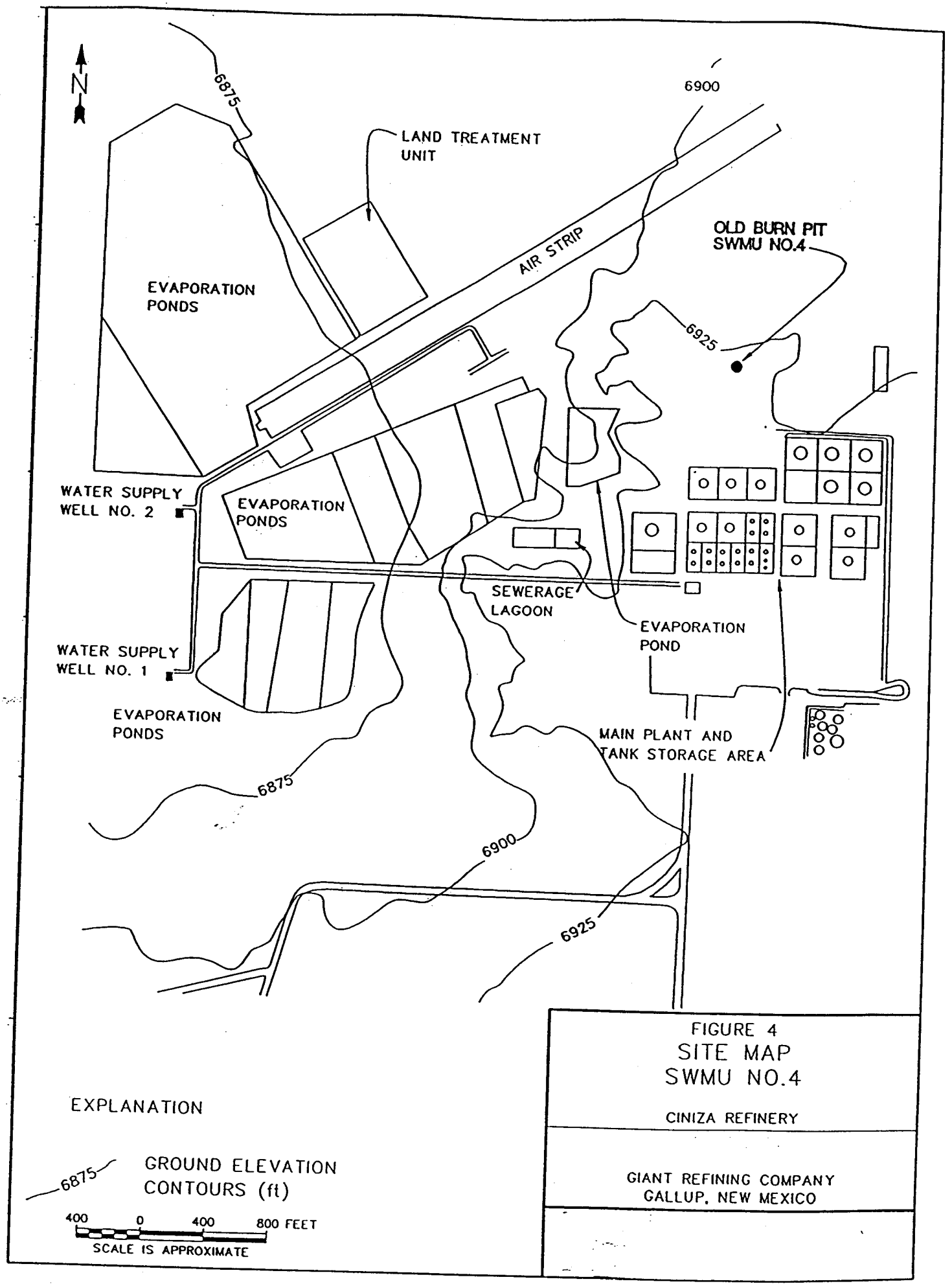
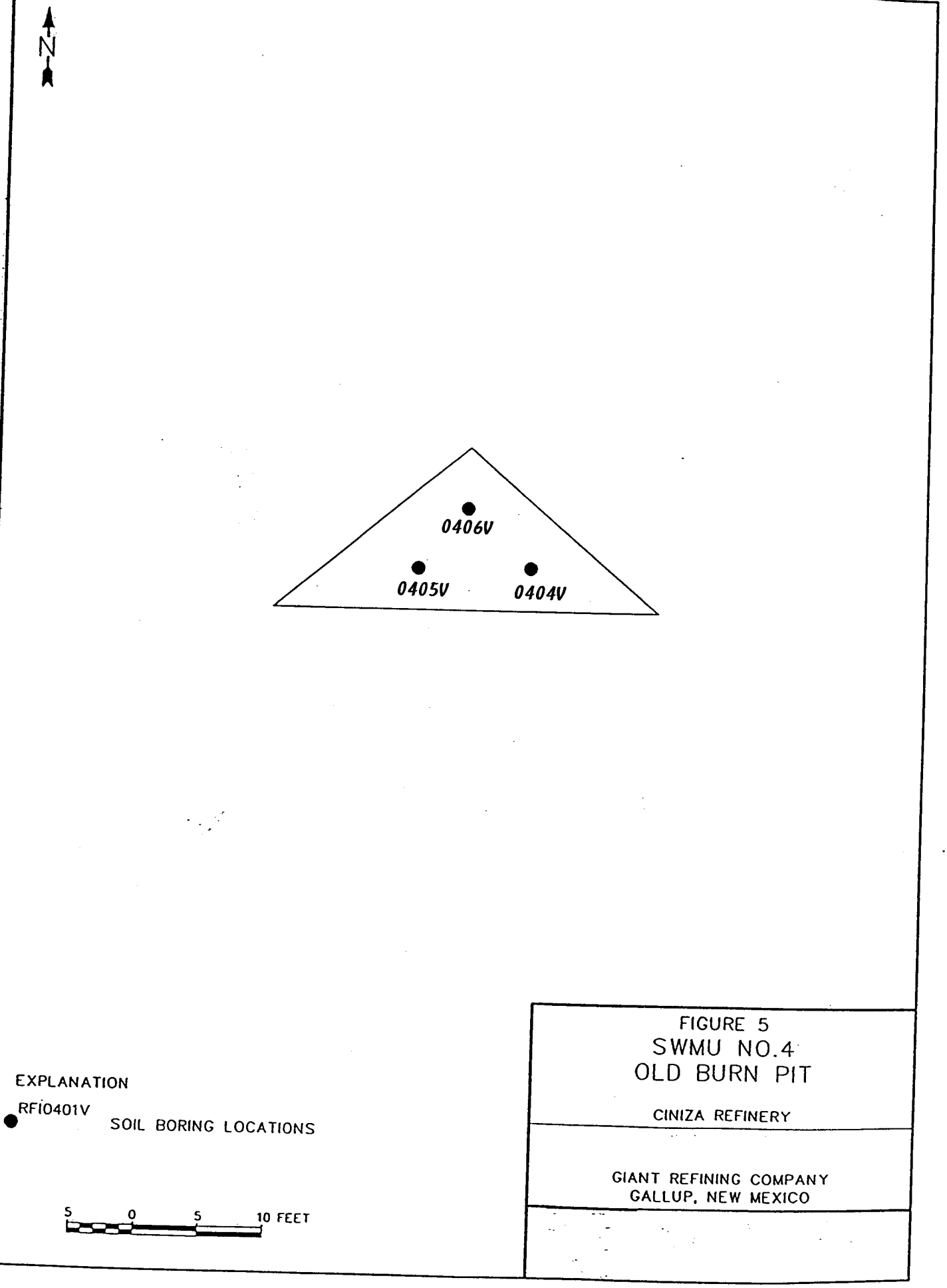


FIGURE 4
SITE MAP
SWMU NO.4

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO


N
0406V
0405V
0404V
EXPLANATION
RFI0401V
SOIL BORING LOCATIONS
5 0 5 10 FEET
FIGURE 5
SWMU NO.4
OLD BURN PIT
CINIZA REFINERY
GIANT REFINING COMPANY
GALLUP, NEW MEXICO

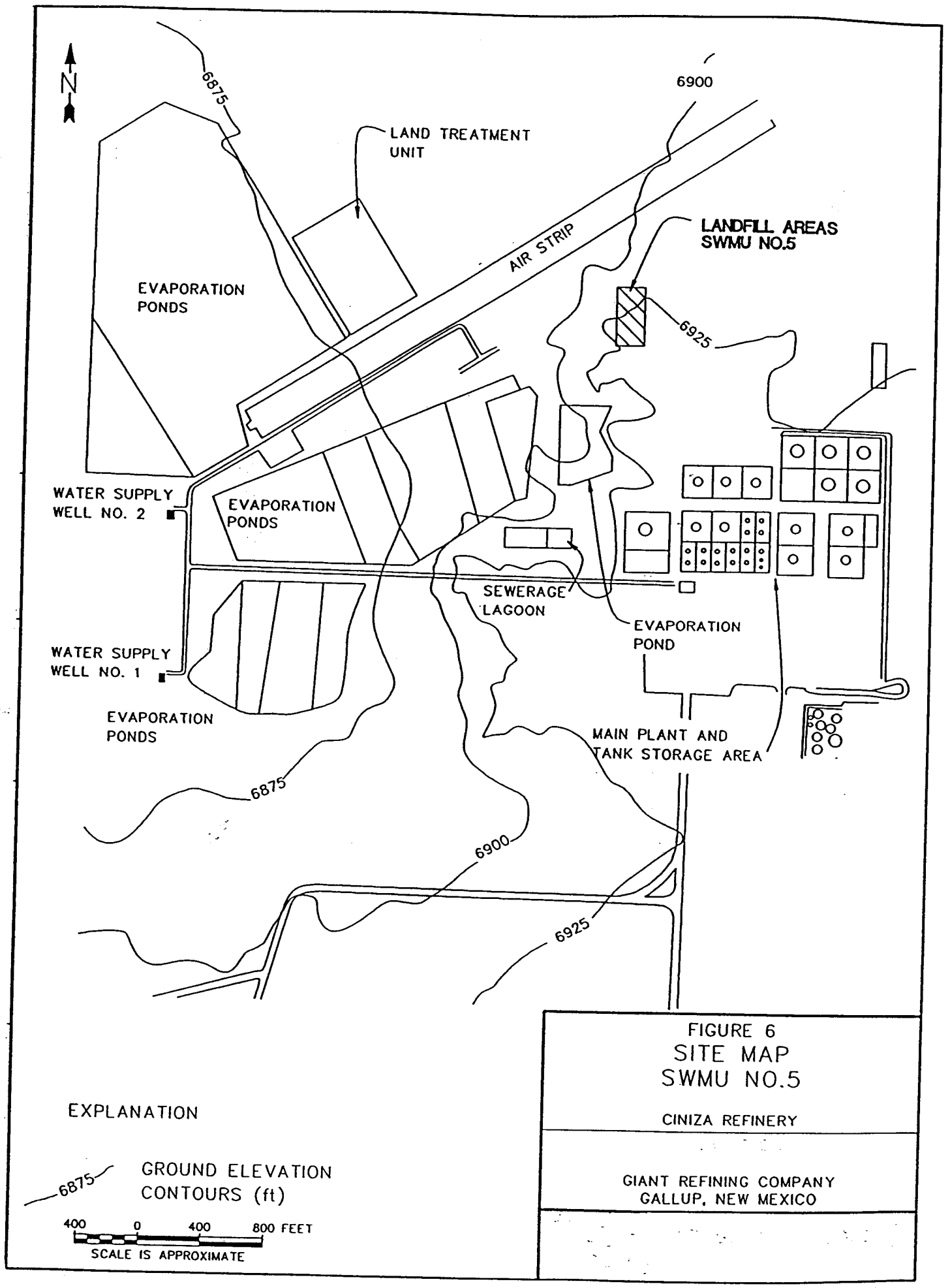


FIGURE 6
SITE MAP
SWMU NO.5

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

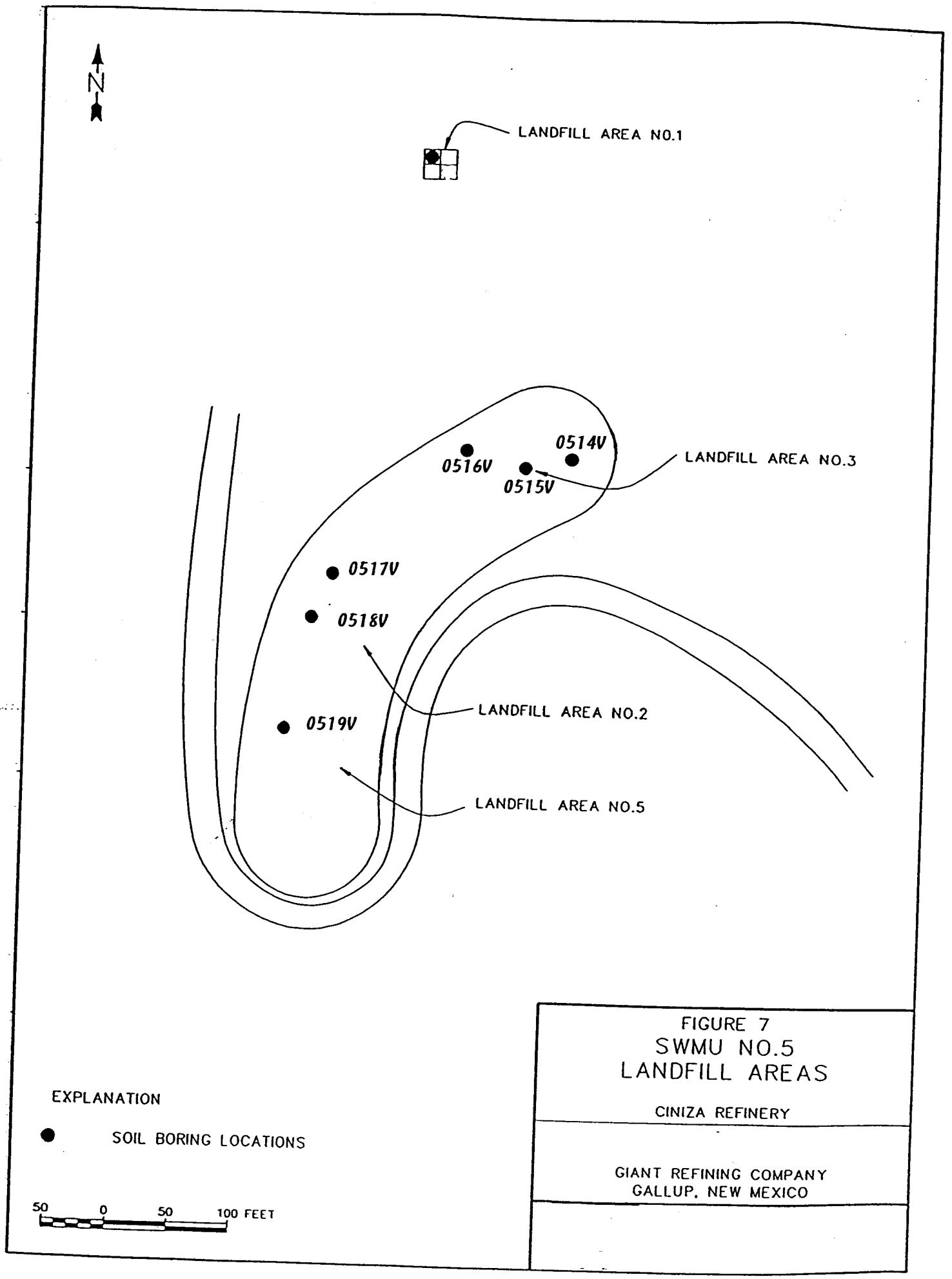


FIGURE 7
SWMU NO.5
LANDFILL AREAS

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

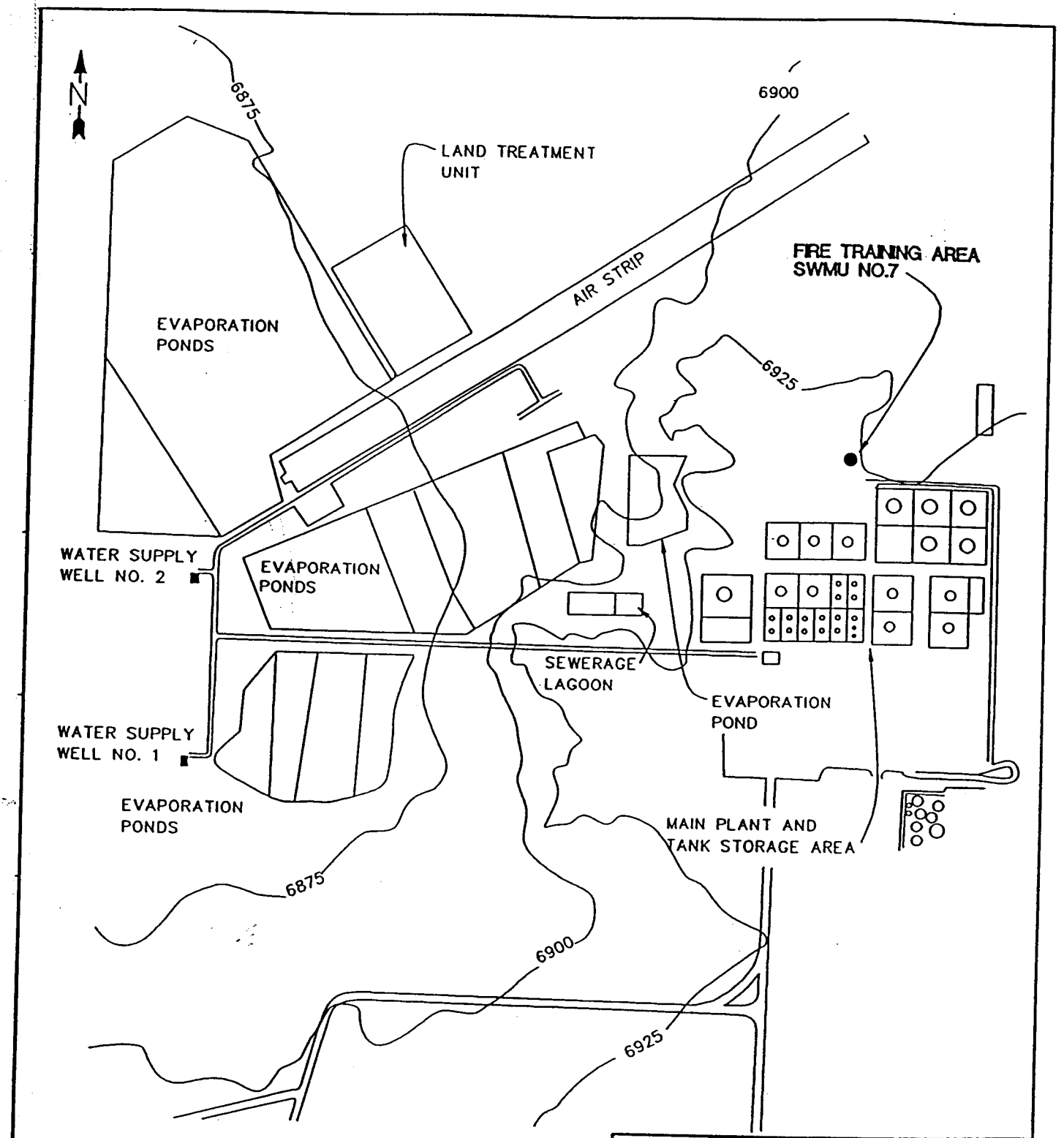


FIGURE 8
SITE MAP
SWMU NO.7

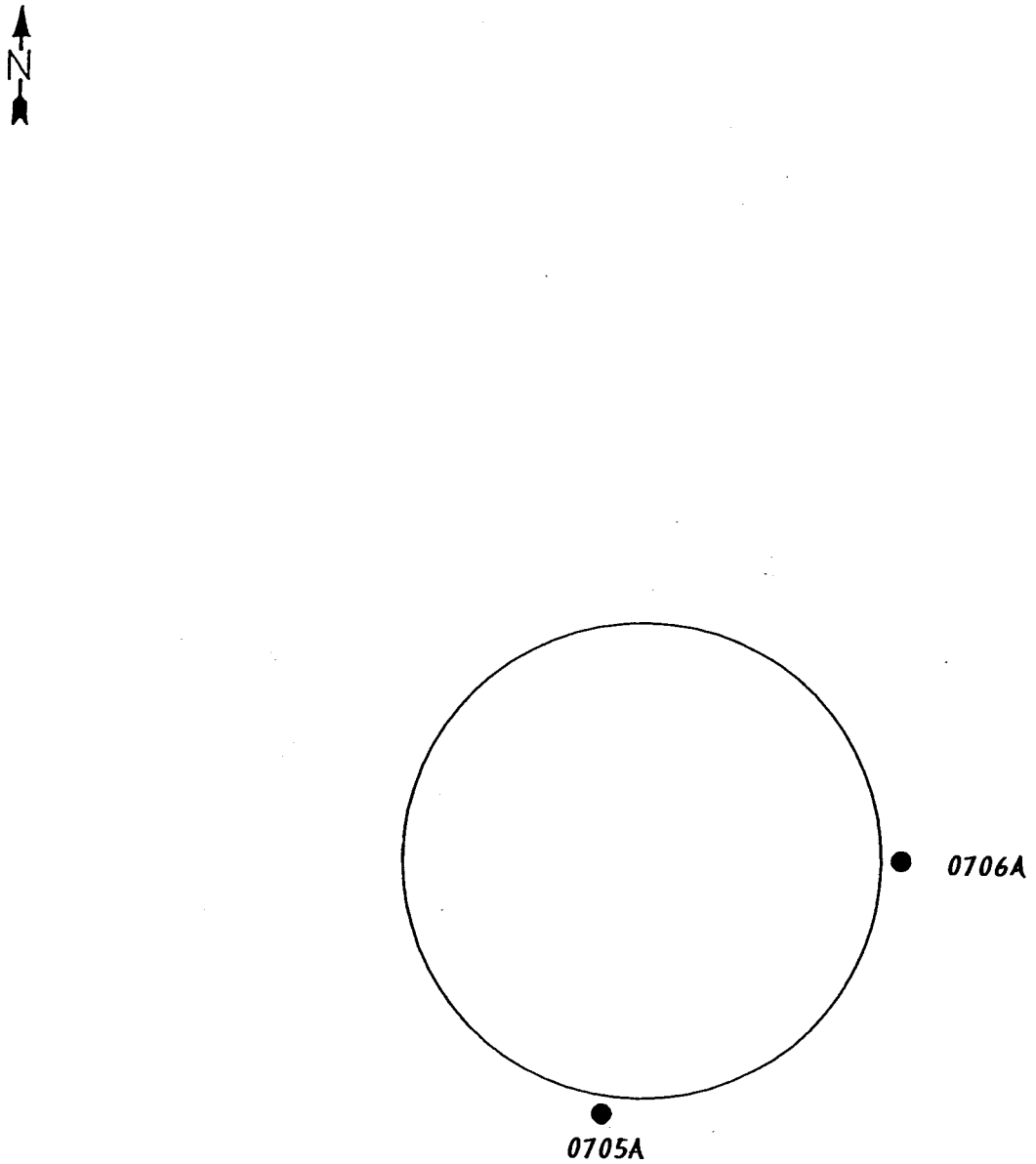
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

EXPLANATION

6875 GROUND ELEVATION CONTOURS (ft)

400 0 400 800 FEET
SCALE IS APPROXIMATE



EXRLANATION

● SOIL BORING LOCATIONS

10 0 10 20 FEET

FIGURE 9
SWMU NO.7
FIRE TRAINING AREA

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

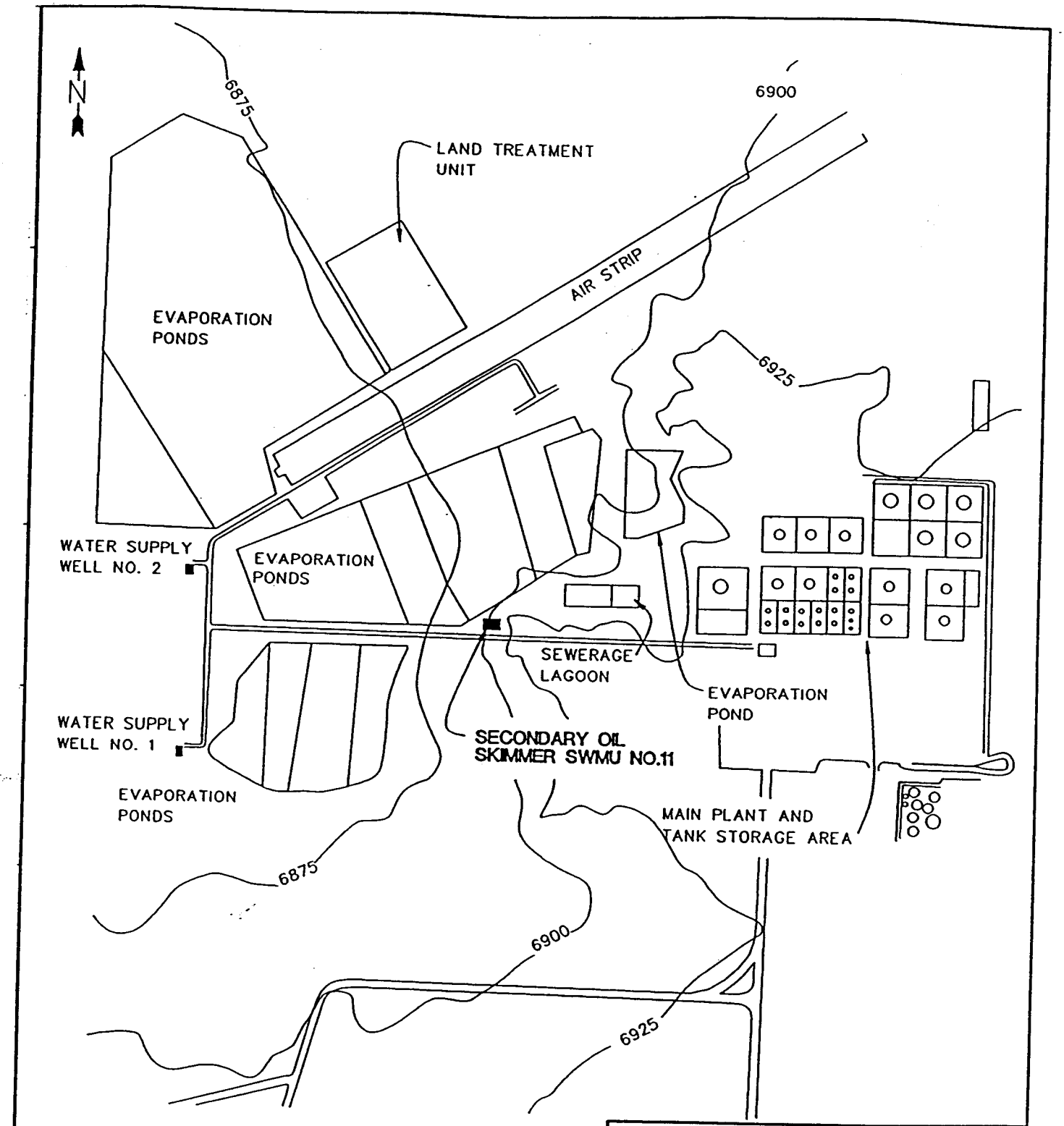


FIGURE 10
SITE MAP
SWMU NO.11

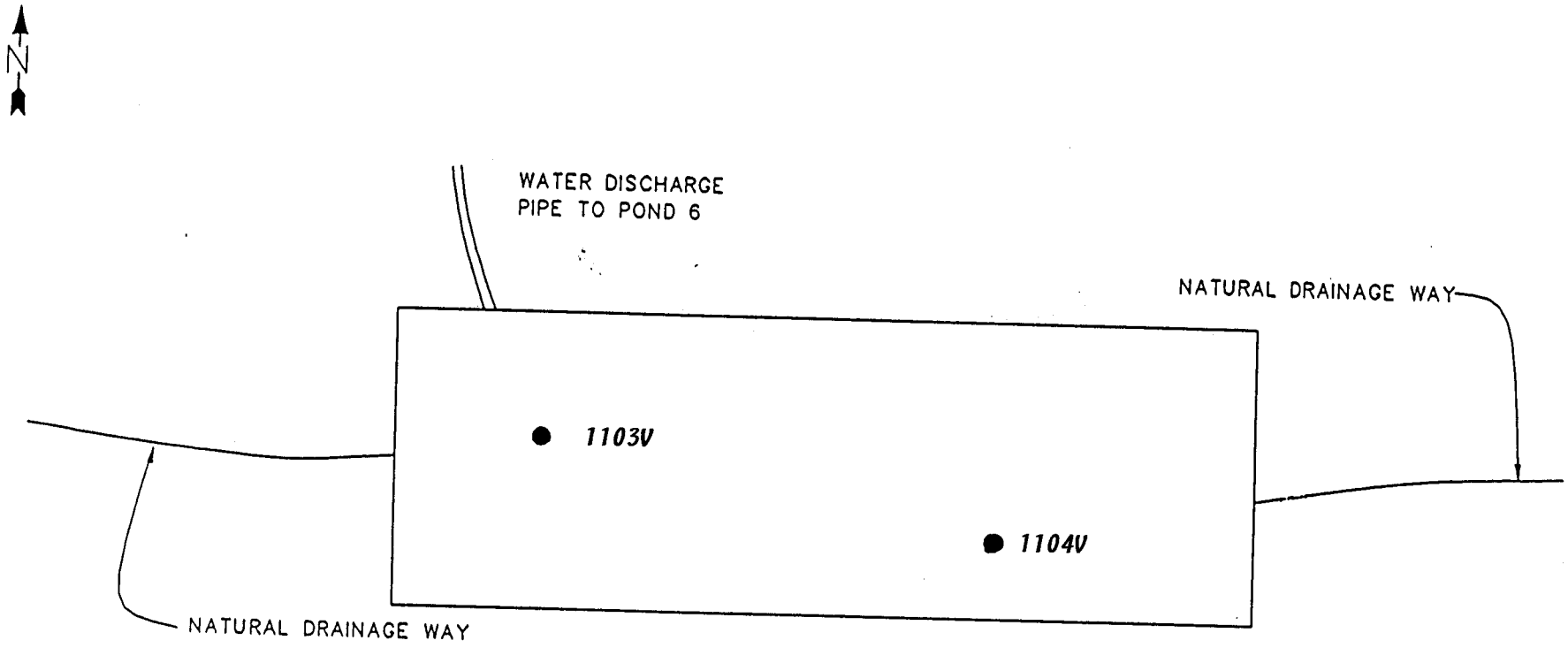
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

EXPLANATION

6875 GROUND ELEVATION CONTOURS (ft)

400 0 400 800 FEET
SCALE IS APPROXIMATE



EXPLANATION

● SOIL BORING LOCATIONS

2.5 0 2.5 5 FEET

FIGURE 11
SWMU NO.11
SECONDARY OIL SKIMMER

CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

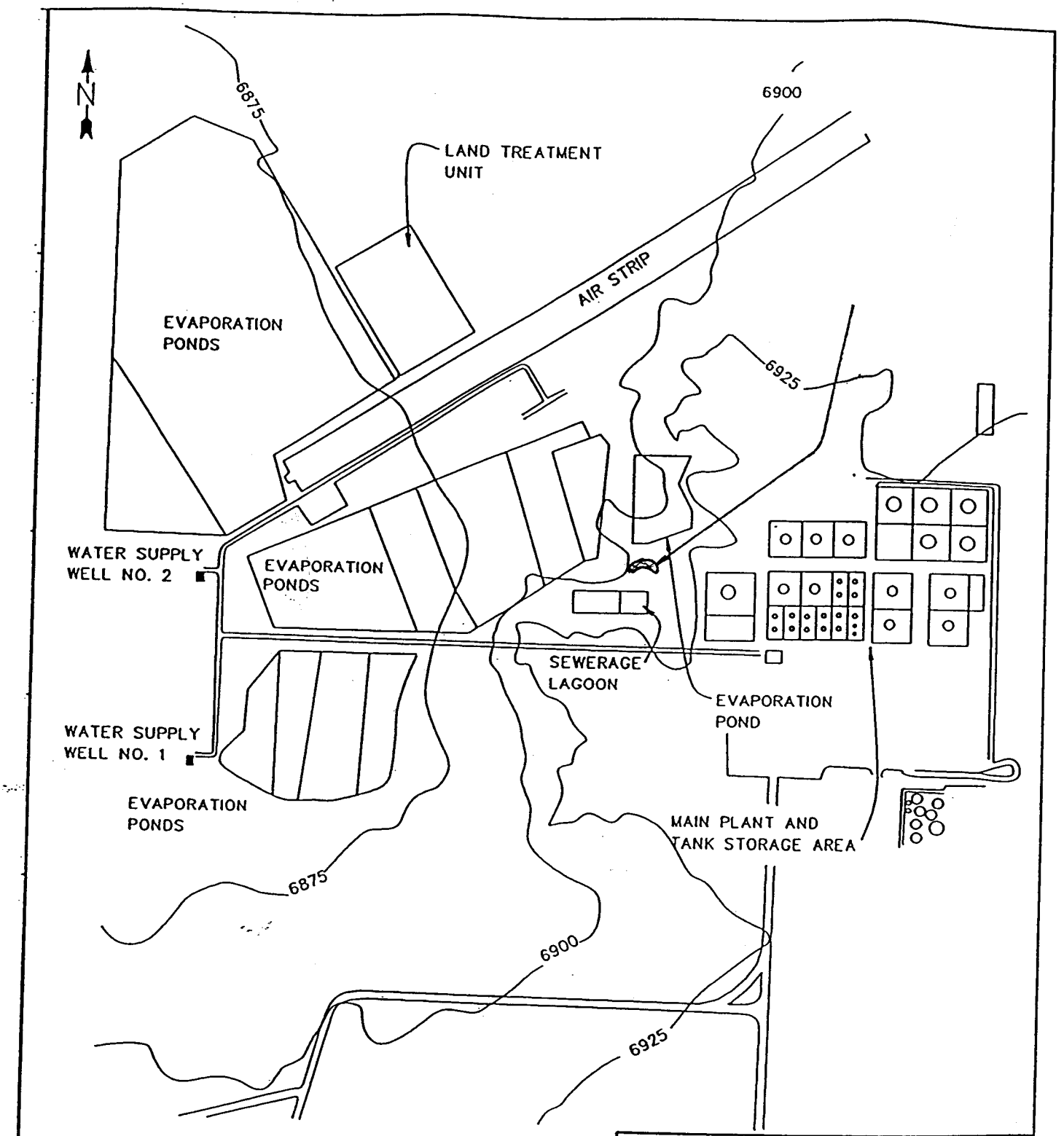


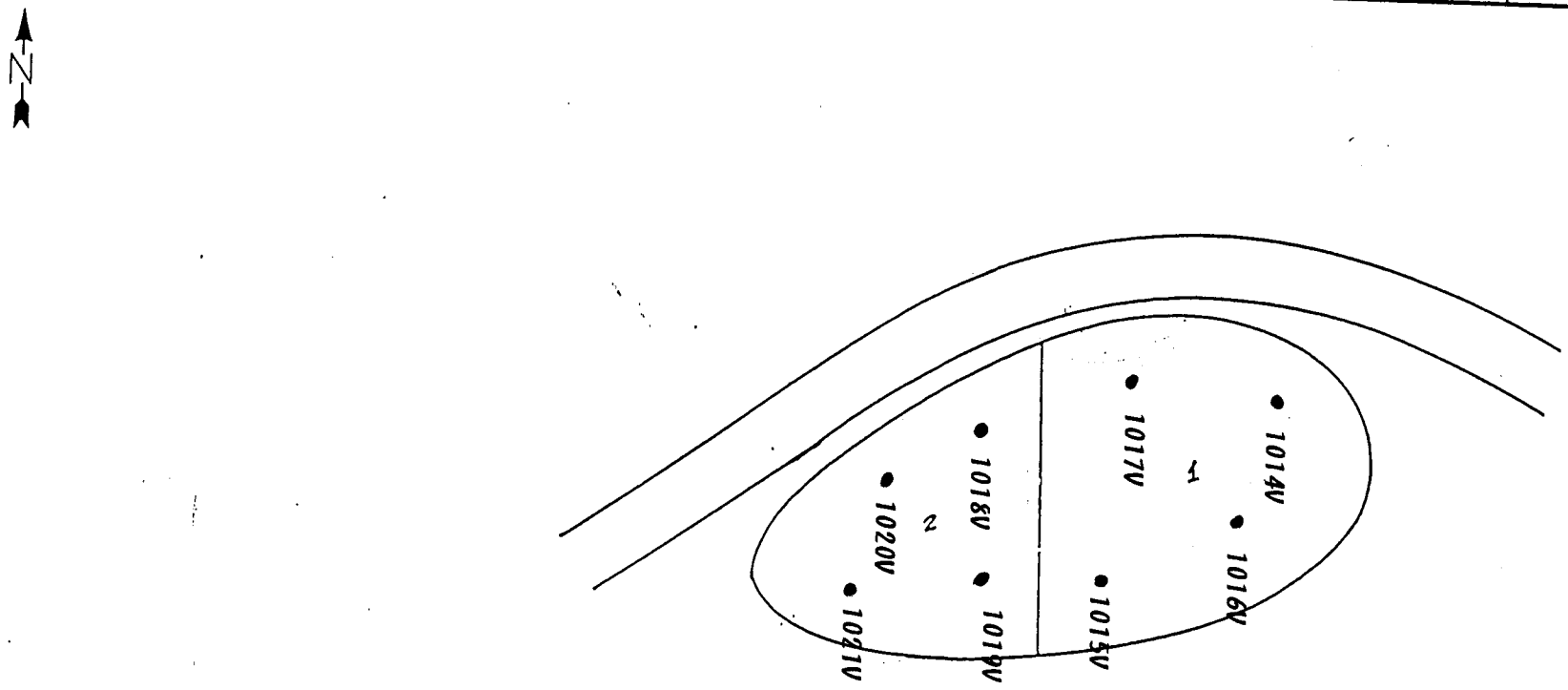
FIGURE 12
SITE MAP
SWMU NO. 10
SLUDGE PITS
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

EXPLANATION

6875 GROUND ELEVATION CONTOURS (ft)

400 0 400 800 FEET
SCALE IS APPROXIMATE



EXPLANATION

● SOIL BORING LOCATIONS

0 25 50 75 100
Scale in Feet

FIGURE 13
SWMU NO. 10
SLUDGE PITS
CINIZA REFINERY

GIANT REFINING COMPANY
GALLUP, NEW MEXICO

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 07/28/94	Technician: Walt Toomer

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip–Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/28/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / A. Arnold / L. Begay		
Sampling Method:	Coring		
Sample Number:	RFI 0513V.11.0	Sample Time/Description: (Include PID Reading)	9:15 PID = 0 Clay/silty
Sample Number:	RFI 0513 V.16.0	Sample Time/Description: (Include PID Reading)	9:25 PID = 230 Clay/Sand
Sample Number:	RFI 0513 V20.0	Sample Time/Description: (Include PID Reading)	9:38 PID = 0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, East winds 5mph, Temp 80°F		
Field Observations:	Miscellaneous Debris (2.8-5.0') (metal, wood, glass) PID 500-750		

RFI DATA MANAGEMENT

Sample location:	SWMU#5	Sample Date:	07/28/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / A. Arnold / L. Begay / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI0514V11.0	Sample Time/Description: (Include PID Reading)	10:15 PID=0 Clay/Silty
Sample Number:	RFI0514V16.0	Sample Time/Description: (Include PID Reading)	10:30 PID=0 Clay/Silty
Sample Number:	RFI0514V20.0	Sample Time/Description: (Include PID Reading)	10:40 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, West Wind 5mph, Partly cloudy, Temp 85°F		
Field Observations:	Miscellaneous Debris (0. - 2.5') PID=0 (wood, rubber, plastic)		

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/28/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / L. Begay / A. Arnold / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI 0515 V11.0	Sample Time/Description: (Include PID Reading)	11:30 PID=0 Clay/Sand
Sample Number:	RFI 0515 V16.0	Sample Time/Description: (Include PID Reading)	11:50 PID=0 Clay/Sand
Sample Number:	RFI 0515 V20.0	Sample Time/Description: (Include PID Reading)	12:00 PID=0 Clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, West Winds 5mph, Partly Cloudy, Temp 87°F		
Field Observations:	Debris 6.0'		

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/28/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	D. Gearheart / L. Begay / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI05116V11.0	Sample Time/Description: (Include PID Reading)	1445 PID=0 Clay/Sand
Sample Number:	RFI05116V16.0	Sample Time/Description: (Include PID Reading)	1455 PID=0 Clay/Sand
Sample Number:	RFI05116V20.0	Sample Time/Description: (Include PID Reading)	1500 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Cloudy, East Winds 5mph, 75°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/28/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / L. Begay / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI0517V11.0	Sample Time/Description: (Include PID Reading)	1535 PID=0 Clay/Sand
Sample Number:	RFI0517V16.0	Sample Time/Description: (Include PID Reading)	1545 PID=0 Clay/Sand
Sample Number:	RFI0517V20.0	Sample Time/Description: (Include PID Reading)	1555 PID=0 Clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Cloudy, northeast wind 5mph, 85°F		
Field Observations:			

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 07/29/94	Technician: Lance Begay

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip–Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/29/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / L. Begay / M. Simpson / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI0518V11.0	Sample Time/Description: (Include PID Reading)	0847 PID=0 Clay/Sand
Sample Number:	RFI0518V16.0	Sample Time/Description: (Include PID Reading)	0857 PID=0 Sand/Clay
Sample Number:	RFI0518V20.0	Sample Time/Description: (Include PID Reading)	0904 PID=0 Clay/Sand
Sample Number:	*RFI0518V16.0D	Sample Time/Description: (Include PID Reading)	0857
Sample Number:	*RFI0518V11.0E	Sample Time/Description: (Include PID Reading)	0847
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, East wind 5mph, 75°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #5	Sample Date:	07/29/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / L. Begay / M. Simpson / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI 0519 V11.0	Sample Time/Description: (Include PID Reading)	0945 PID=0 Clay/Shale
Sample Number:	RFI 0519 V16.0	Sample Time/Description: (Include PID Reading)	1000 PID=0 Clay/Shale
Sample Number:	RFI 0519 V20.0	Sample Time/Description: (Include PID Reading)	1005 PID=0 Clay/Shale
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, East wind 5mph, 78°F		
Field Observations:	Wind has changed 5-10mph Westerly, 1000		

RFI DATA MANAGEMENT

Sample location:	SWMU #4	Sample Date:	07/29/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	J. Gearheart / L. Begay / M. Simpson / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI0404V6.0	Sample Time/Description: (Include PID Reading)	1330 PID=0 Clay/Sand
Sample Number:	RFI0404V10.0	Sample Time/Description: (Include PID Reading)	1340 PID=0 Clay/Sand
Sample Number:	RFI0404V10.0D	Sample Time/Description: (Include PID Reading)	1340 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat, Bare		
Weather Conditions:	Clear, East wind 5mph, 80°F		
Field Observations:	1.3-1.7 asphaltic		

RFI DATA MANAGEMENT

Sample location:	SWMU #4	Sample Date:	07/29/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Luchetti / M. Simpson / W. Toomer / L. Begay		
Sampling Method:	Coring		
Sample Number:	RFI 0405V6.0	Sample Time/Description: (Include PID Reading)	1415 PID=0 Clay/Sand
Sample Number:	RFI 0405V10.0	Sample Time/Description: (Include PID Reading)	1420 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat		
Weather Conditions:	Clear, East wind 5mph, 80°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #4	Sample Date:	07/29/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	M. Simpson / W. Toomer / N. Luchetti / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI04006V16.0	Sample Time/Description: (Include PID Reading)	1450 clay PID=0
Sample Number:	RFI04006V10.0	Sample Time/Description: (Include PID Reading)	1500 Sand PID=0
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, East wind, 80°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/26/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / J. Gearheart / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI 0513V11.0	Sample Time/Description: (Include PID Reading)	10:55AM PID=0 moist Clay
Sample Number:	0513 V16.0	Sample Time/Description: (Include PID Reading)	11:05AM PID=0
Sample Number:	0513 V20.0	Sample Time/Description: (Include PID Reading)	11:15AM PID=0 Dry Clay / Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat fill dirt, Brush		
Weather Conditions:	Clear, Calm, 85°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/26/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W Tormer / J. Gearheart / M. Simpson		
Sampling Method:	Coring		
Sample Number:	1014 VA.0	Sample Time/Description: (Include PID Reading)	12:05pm PID=0 Clay/Sand
Sample Number:	RFI 1014 V250	Sample Time/Description: (Include PID Reading)	12:15pm PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:			
Weather Conditions:	Clear, Calm, 85°F		
Field Observations:	6-8ft 200-900 PPM w/ PID		

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/26/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / J. Gearheart / L. Begay		
Sampling Method:	Coring		
Sample Number:	RFI 1015 V19.0	Sample Time/Description: (Include PID Reading)	1455 PID=0 Shaley/clay
Sample Number:	RFI 1015 V25.0	Sample Time/Description: (Include PID Reading)	1506 PID=0 Shaley clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat w/ Brush		
Weather Conditions:	Passing Storms		
Field Observations:	Encountered layer of Black soil at 5-10' PID = 250 PPM		

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/26/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / L. Begay / J. Gearheart / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI 10116V19.0	Sample Time/Description: (Include PID Reading)	1610 PID=0 Clay/Sand
Sample Number:	RFI 10116V25.0	Sample Time/Description: (Include PID Reading)	1630 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat / Brush		
Weather Conditions:	Passing Storms West wind 5-10 mph.		
Field Observations:	Encountered Black soil at depth 3.3-9.1 PID=120-200 PPM		

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/26/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI1017V9.0	Sample Time/Description: (Include PID Reading)	1737 PID=0 Clay/sand
Sample Number:	RFI1017V25.0	Sample Time/Description: (Include PID Reading)	1745 PID=0 Clay/sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Level / Brush		
Weather Conditions:	Partly Cloudy, no wind, 90°F		
Field Observations:	Black soil at 2.5' PID=60-220 ppm again at 4-6' 200ppm 11.1-12.8' 220 ppm		

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 07/27/94 **Technician:** W. Toomer

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip-Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/27/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / L. Begay / J. Gearheart / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI 1018 V19.0	Sample Time/Description: (Include PID Reading)	1040 PID=0 Clay/Sand
Sample Number:	RFI 1018 V25.0	Sample Time/Description: (Include PID Reading)	1050 PID=0 Clay/Sand
Sample Number:	RFI 1018 V25.0E	Sample Time/Description: (Include PID Reading)	1100 Auger Rinsant Sample
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat with grass		
Weather Conditions:	Clear, Sunny, 85°F, 5-10 mph winds SW		
Field Observations:	Black soil encountered at 2.5 - 3' PID = 220PPM 7.1 - 7.6 9.1 - 9.7' sand lens w/ strong odor PID=0		

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/27/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / L. Begay / J. Gearheart / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI1019V19.0	Sample Time/Description: (Include PID Reading)	1145 PID=0 Clay/Shale
Sample Number:	RFI1019V25.0	Sample Time/Description: (Include PID Reading)	1150 PID=0 Clay/Shale
Sample Number:	RFI1019V19.00	Sample Time/Description: (Include PID Reading)	1145 PID=0 Clay/Shale
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat, Dry		
Weather Conditions:	Clear, Sunny		
Field Observations:	PID = 34 PPM at 7FT		

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/27/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / L. Bogay / J. Gearheart / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI1020V9.0	Sample Time/Description: (Include PID Reading)	1420 PID = 0 Clay/Shale
Sample Number:	RFI1020V25.0	Sample Time/Description: (Include PID Reading)	1425 PID=0 Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat, dry		
Weather Conditions:	Cloudy, wind SW 10 mph, 90°F		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #10	Sample Date:	07/27/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / L. Begay / D. Gearheart / M. Simpson / A. Arnold		
Sampling Method:	Coring		
Sample Number:	RFI 1021 V19.0	Sample Time/Description: (Include PID Reading)	1520 PID=0 Shale/Clay
Sample Number:	RFI 1021 V25.0	Sample Time/Description: (Include PID Reading)	1530 PID=0 Shale/Clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Flat, Dry		
Weather Conditions:	Cloudy, 90°F SW Winds 10-15 mph		
Field Observations:			

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 08/9/94 **Technician:** A. Arnold

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip-Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/09/94
Sample Type:	SOIL		
Team Leader:	LynnShelton		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson / D. Paulich		
Sampling Method:	Coring		
Sample Number:	RFI0640V160	Sample Time/Description: (Include PID Reading)	1200 Sand/clay
Sample Number:	RFI0640V240	Sample Time/Description: (Include PID Reading)	1215 Clay/sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Tank Farm - Level		
Weather Conditions:	Cloudy, 75°F, No Wind		
Field Observations:	6'-11': Black soil PID 220PPM w/Bag 11.9-14.9: Black soil		

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/09/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson / N. Luchetti		
Sampling Method:	Coring		
Sample Number:	RFI0642V2000	Sample Time/Description: (Include PID Reading)	3:40PM Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Level Tank Farm		
Weather Conditions:	Overcast, no wind, 78°F		
Field Observations:	4-5ft. odor of reformate normal color. 5-7' mild odor of reformate.		

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/09/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson / N. Luchetti		
Sampling Method:	Coring		
Sample Number:	RFI 0639V16.0	Sample Time/Description: (Include PID Reading)	5:25 pm Clay/sand
Sample Number:	RFI 0639V25.0	Sample Time/Description: (Include PID Reading)	5:35 pm Clay/sand/rock
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Level Sand - Tank Farm		
Weather Conditions:	Overcast, 75°F		
Field Observations:	Discolored Clay/Sand 3-4' light odor trace of Biomass		

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/09/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson / N. Luchetti		
Sampling Method:	Coring		
Sample Number:	RFI0638V1600	Sample Time/Description: (Include PID Reading)	4:35 pm Clay/Sand
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Tank farm		
Weather Conditions:	Overcast, 75°F		
Field Observations:	5' Sand no oder trace of Biomass.		

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 08/10/94 **Technician:** W. Toomer

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip-Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #11	Sample Date:	08/10/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / M. Simpson / A. Arnold / L. Shelton		
Sampling Method:	Coring		
Sample Number:	RFI 1104V6.0	Sample Time/Description: (Include PID Reading)	9:20 AM Sand/clay/rock
Sample Number:	RFI 1104V10.0	Sample Time/Description: (Include PID Reading)	9:30 AM Sand/clay/rock
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Level Sand		
Weather Conditions:	Partly cloudy, 80°F		
Field Observations:	First 5ft. fill dirt 6ft. discolored clay/sand/rock		

RFI DATA MANAGEMENT

Sample location:	SWMU#11	Sample Date:	08/10/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / M. Simpson / A. Arnda / L. Shelton.		
Sampling Method:	Coring		
Sample Number:	RFI1103V6.0	Sample Time/Description: (Include PID Reading)	10:00 Am Clay
Sample Number:	RFI1103V10.0	Sample Time/Description: (Include PID Reading)	10:10 Am Clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	level		
Weather Conditions:	Partly Cloudy, 82°F		
Field Observations:	First 5' Black fillsand		

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/10/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Tarmer / A. Arnold / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI0637V16.0	Sample Time/Description: (Include PID Reading)	12:00PM Clay/sand
Sample Number:	RFI0637V16.00	Sample Time/Description: (Include PID Reading)	12:00 Clay/sand
Sample Number:	RFI0637V20.0	Sample Time/Description: (Include PID Reading)	12:10PM Shale
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	level		
Weather Conditions:	Partly cloudy, 85°F		
Field Observations:	First 5.' discolored sand, NO oder.		

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	8.10.98
Sample Type:	SOIL		
Team Leader:	LYNN SHELTON		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson		
Sampling Method:			
Sample Number:	RFI 06360V16.0	Sample Time/Description: (Include PID Reading)	1450 SAND ~~NO ODOR PID 0~~
Sample Number:	RFI 06360V20.0	Sample Time/Description: (Include PID Reading)	1500 CLAY ~~NO ODOR~~
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	LEVEL SAND TANK FARM		
Weather Conditions:	Sunny SMALL BREEZE 82°F		
Field Observations:	~~3FT - 15 STRONG GAS ODOR 10 FT CLEAN~~		

FIELD EQUIPMENT CHECKLIST
Soil and Sludge Sampling

Date: 8/11/94 **Technician:** W. Toomer

	ITEM
✓	PID Meter
✓	Site Specific SWMU Workplan
✓	Generic Sampling Plan
✓	Site Map with Sample Locations
✓	Sample Bottles
✓	Ice Chests
✓	Trip Blanks
✓	Propanol
✓	Deionized Water
✓	Squeeze Bottles
✓	Personal Protective Equipment
✓	Chain of Custody
✓	Plastic Bags
✓	Disposable Gloves
✓	Paper Towels
✓	Packing Tape
✓	Waterproof Pens
✓	Blue Ice
✓	Zip–Lock Bags, 1 gallon
✓	Stainless Steel Pan
✓	Stainless Steel Spatula

RFI DATA MANAGEMENT

Sample location:	SWMU #6	Sample Date:	08/11/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / A. Arnold / M. Simpson		
Sampling Method:	Coring		
Sample Number:	RFI 0641V160	Sample Time/Description: (Include PID Reading)	9:30 AM Sand/clay
Sample Number:	RFI 0641V190	Sample Time/Description: (Include PID Reading)	9:40 AM Sat. Sand/clay
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Irregular, bare (Next to tank)		
Weather Conditions:	Over cast, 69°F Breeze, moist		
Field Observations:			

RFI DATA MANAGEMENT

Sample location:	SWMU #7	Sample Date:	08/11/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Toomer / M. Simpson / A. Arnold / L. Shelton		
Sampling Method:	Coring		
Sample Number:	RFI0705A7.0	Sample Time/Description: (Include PID Reading)	11:10AM Clay/sand
Sample Number:	RFI0705A11.0	Sample Time/Description: (Include PID Reading)	11:20AM Clay/sand
Sample Number:	RFI0705A11.0D	Sample Time/Description: (Include PID Reading)	↑ Duplicate
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Bare, Slope at 2°		
Weather Conditions:	Overcast, Breeze, 78°F, M0134		
Field Observations:	Band of strained soil at 1.0ft (<2")		

RFI DATA MANAGEMENT

Sample location:	SWMU #7	Sample Date:	08/11/94
Sample Type:	SOIL		
Team Leader:	Lynn Shelton		
Sample Personnel:	W. Tourner / M. Simpson / A. Arnold / L. Shelton		
Sampling Method:	Coring		
Sample Number:	RFI0706A7.0	Sample Time/Description: (Include PID Reading)	10:35 Clay/sand
Sample Number:	RFI0706A11.0	Sample Time/Description: (Include PID Reading)	10:45 Clay/sand
Sample Number:	RFI.0706A11.0E	Sample Time/Description: (Include PID Reading)	Equipment Rinse - Splitspoon
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Sample Number:		Sample Time/Description: (Include PID Reading)	
Surface Terrain:	Bare Slope at 30°		
Weather Conditions:	Overcast, Breeze, 75°F, Moist		
Field Observations:	Small Band <1" of Stained Soil at 4.1 ft.		

RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

ANALYTICAL DATA

REPORTING LEVELS

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

GIANT REFINING COMPANY CINIZA

SWMU #4 TOTAL METALS

PARAMETER	DETECTION LIMIT	CORING NUMBER 04V6.0	04V10.0	04V10.0D	05V6.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	11	7.7	7.3	12
Lead	5.0	15	11	12	15
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	130	240	260	170
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	16	10	11	18
Vanadium	2.5	5.4	3.7	4.7	6.5

		05V10.0	06V6.0	06V10.0
Cadmium	2.5	<2.5	<2.5	<2.5
Chromium	2.5	5.2	10	9.9
Lead	5.0	12	15	13
Mercury	0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5
Barium	5.0	230	150	220
Beryllium	2.5	<2.5	<2.5	<2.5
Nickel	2.5	9.2	18	9.5
Vanadium	2.5	4.0	6.4	4.6

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GIANT REFINING COMPANY CINIZA

SWMU #4 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 04V6.0	04V10.0	04V10.0D	05V6.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl Ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl Ethyl Ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

		05V10.0	06V6.0	06V10.0
Benzene	0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5
Chloroethylvinyl Ether	1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5
1,2–Dichloroethane	5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5
Methyl Ethyl Ketone	1.0	<1.0	1.2	<1.0
Styrene	0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5

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GIANT REFINING COMPANY CINIZA

SWMU #4 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 04V6.0	04V10.0	04V10.0D	05V6.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-btyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0	<25.0

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GIANT REFINING COMPANY CINIZA

SWMU #4 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	05V10.0	06V6.0	06V10.0
Anthracene	5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0
Di-n-btyl phthalate	5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0

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RFI COMPLIANCE DATA

GIANT REFINING COMPANY – CINIZA

SWMU #5 TOTAL METALS

PARAMETER	DETECTION LIMIT	CORING NUMBER 0513V11.0	0513V16.0	0513V20.0	0514V11.0	0514V16.0	0514V20.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	7.5	10	9.1	9.7	5.1	14
Lead	5.0	11	14	12	13	11	15
Mercury	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	140	360	310	190	510	320
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	10	11	12	12	7.9	16
Vanadium	2.5	4	11	6.2	5	7	8.2

		0515V11.0	0515V16.0	0515V20.0	0516V11.0	0516V16.0	0516V20.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	18	11	13	9.7	5.2	7
Lead	5.0	14	15	14	16	12	14
Mercury	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	140	140	380	370	240	160
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	13	14	16	13	9.7	11
Vanadium	2.5	6.7	5.4	8.1	5.8	3.4	3.5

		0517V11.0	0517V16.0	0517V20.0	0518V11.0	0518V16.0	0518V16.0D
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	5.9	3.6	9.3	8.8	4.8	5.3
Lead	5.0	11	9.7	15	13	9.6	11
Mercury	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	490	200	270	210	100	110
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	9.2	7.5	14	13	7.9	7.6
Vanadium	2.5	3.8	2.8	4.8	3.8	3.7	3.4

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 TOTAL METALS, cont.

PARAMETER	DETECTION LIMIT	CORING NUMBER 0518V20.0	0519V11.0	0519V16.0	0519V20.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	7.7	9.9	7.9	16
Lead	5.0	12	15	18	16
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	2.9
Barium	5.0	200	300	300	390
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	9.4	14	15	16
Vanadium	2.5	4.2	<2.5	<2.5	2.8

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 0513V11.0	0513V16.0	0513V20.0	0514V11.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	0.6	<0.5	<0.5

		0514V16.0	0514V20.0	0515V11.0	0515V16.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	2.0	<0.5

		0515V20.0	0516V11.0	0516V16.0	0516V20.0
Benzene	0.5	<0.5	<0.5	<10.0	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<10.0	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<10.0	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<20.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<10.0	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<10.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<100	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<10.0	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<100	<1.0
Styrene	0.5	<0.5	<0.5	<10.0	<0.5
Toluene	0.5	<0.5	<0.5	<10.0	<0.5
Xylenes	0.5	<0.5	<0.5	<10.0	<0.5

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8240/8260 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0517V11.0	0517V16.0	0517V20.0	0518V11.0
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	<1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	<0.5	<0.5	<0.5	<0.5	<0.5

		0518V11.0E*	0518V16.0	0518V16.0D	0518V20.0
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	<1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	<0.5	<0.5	<0.5	<0.5	<0.5

*Equipment Rinsate

		0519V11.0	0519V20.0
Benzene	<0.5	<0.5	<0.5
Carbon Disulfide	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5
Chloroethylvinyl ether	<1.0	<1.0	<1.0
1,2–Dibromoethane	<0.5	<0.5	<0.5
1,4–Dichloroethane	<5.0	<5.0	<5.0
1,4–Dioxane	<50.0	<50.0	<50.0
Ethylbenzene	<0.5	<0.5	<0.5
Methyl ethyl ketone	<1.0	<1.0	<1.0
Styrene	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5
Xylenes	<0.5	<0.5	<0.5

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8240/8260 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0517V11.0	0517V16.0	0517V20.0	0518V11.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

		0518V11.0E*	0518V16.0	0518V16.0D	0518V20.0
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	<1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	<0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	<50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	<0.5	<0.5	<0.5	<0.5	<0.5

*Equipment Rinsate

		0519V11.0	0519V20.0
Benzene	<0.5	<0.5	<0.5
Carbon Disulfide	<0.5	<0.5	<0.5
Chlorobenzene	<0.5	<0.5	<0.5
Chloroethylvinyl ether	<1.0	<1.0	<1.0
1,2–Dibromoethane	<0.5	<0.5	<0.5
1,4–Dichloroethane	<5.0	<5.0	<5.0
1,4–Dioxane	<50.0	<50.0	<50.0
Ethylbenzene	<0.5	<0.5	<0.5
Methyl ethyl ketone	<1.0	<1.0	<1.0
Styrene	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5
Xylenes	<0.5	<0.5	<0.5

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 0513V11.0	0513V16.0	0513V20.0	0514V11.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	9.6	<5.0	<5.0	<5.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0514V16.0	0514V20.0	0515V11.0	0515V16.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0515V20.0	0516V11.0	0516V16.0	0516V20.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	13	<5.0	7.5	13.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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SWMU #5 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0517V11.0	0517V16.0	0517V20.0	0518V11.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #5 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0518V16.0	518V16.0	0518V20.0	0519V11.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA CINIZA

SWMU #5 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	0519V20.0
Anthracene	5.0	<5.0
Benzenethiol	5.0	<5.0
Benzo(a)anthracene	5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0
Benzo(a)pyrene	5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0
Chrysene	5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0
Di-n-butyl phthalate	5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0
Diethyl phthalate	5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0
Dimethyl phthalate	5.0	<5.0
2,4-Dinitrophenol	25.0	<25.
Di-n-octyl phalate	5.0	<5.0
Flouranthene	5.0	<5.0
Indene	5.0	<5.0
Methylchrysene	5.0	<5.0
1-Methylnaphthalene	5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0
3-Methylphenol	5.0	<5.0
4-Methylphenol	5.0	<5.0
Naphthalene	5.0	<5.0
4-Nitrophenol	25.0	<25.
Phenanthrene	5.0	<5.0
Phenol	5.0	<5.0
Pyrene	5.0	<5.0
Pyridine	10.0	<10.
Quinoline	25.0	<25.

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GIANT REFINING COMPANY CINIZA

SWMU #6 8020 BTEX

PARAMETER	DETECTION LIMIT	CORING NUMBER 0636V16.0	0636V20.0	0637V16.0	0637V16.0D
Benzene	10.0	<10	10	<10	<10
Ethylbenzene	10.0	26	13	600	63
Toluene	10.0	13	10	1100	170
Xylenes	3.0	42	19	8300	1300

		0637V20.0	0638V16.0	0639V16.0	0639V25.0
Benzene	10.0	<10	<10	3000	190
Ethylbenzene	10.0	110	150	160000	15000
Toluene	10.0	73	170	68000	14000
Xylenes	3.0	50	1400	370000	83000

		0640V16.0	0640V24.0	0641V16.0	0641V19.0
Benzene	10.0	4600	290	800*	ND*
Ethylbenzene	10.0	77000	37000	1800*	ND*
Toluene	10.0	37000	23000	500*	ND*
Xylenes	3.0	200000	130000	5400*	500*

*8240 SKINNER LIST

		0642V20.0
Benzene	10.0	<10
Ethylbenzene	10.0	450
Toluene	10.0	460
Xylenes	3.0	2600

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SWMU #7 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 0705A7.0	0705A11.0	0705A11.0D	0706A7.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinylether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl Ethyl Ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	DETECTION LIMIT	0706A11.0	0706A11.0E*
Benzene	0.5	<0.5	1.5
Carbon Disulfide	0.5	<0.5	---
Chlorobenzene	0.5	<0.5	---
Chloroethylvinylether	1.0	<1.0	---
1,2–Dibromoethane	0.5	<0.5	---
1,2–Dichloroethane	5.0	<5.0	---
1,4–Dioxane	50.0	<50.0	---
Ethylbenzene	0.5	<0.5	<1.0
Methyl Ethyl Ketone	1.0	<1.0	---
Styrene	0.5	<0.5	---
Toluene	0.5	<0.5	2.3
Xylenes	0.5	<0.5	1.9

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*Equipment Rinse – 8020 BTEX, ug/L

RFI COMPLIANCE DATA GI GIANT REFINING COMPANY

SWMU #7 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 0705A7.0	0705A11.0	0705A11.0D
Anthracene	5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0
Di-n-butyl phthalate	5.0	<5.0	<5.0	6.2
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #7 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	CORING NUMBER 0706A7.0	0706A11.0
Anthracene	5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0
Di-n-butyl phthalate	5.0	5.2	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #7 **OIL & GREASE / TPH**

PARAMETER	DETECTION LIMIT	CORING NUMBER 0705A7.0	0705A11.0	0705A11.0D
Oil & Grease	10.0	<10	<10	<10
Total Petroleum Hydrocarbon	10.0	<10	<10	<10

PARAMETER	DETECTION LIMIT	0706A7.0	0706A11.0
Oil & Grease	10.0	<10	<10
Total Petroleum Hydrocarbon	10.0	<10	<10

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #10 TOTAL METALS

PARAMETER	DETECTION LIMIT	CORING NUMBER 1014V19.0	1014V25.0	1015V19.0	1015V25.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	8.2	9.1	14	8
Lead	5.0	15	11	17	14
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	370	1100	360	190
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	17	18	18	18
Vanadium	2.5	4.1	5.3	5.2	4.8

PARAMETER	DETECTION LIMIT	1016V19.0	1016V25.0	1017V19.0	1017V25.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	10	14	8.2	12
Lead	5.0	19	16	17	15
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	310	340	420	610
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	19	20	19	18
Vanadium	2.5	<2.5	4.6	3.4	9.5

PARAMETER	DETECTION LIMIT	1018V19.0	1018V25.0	1019V19.0	1019V19.0D
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	7.6	8.4	12	8.5
Lead	5.0	14	17	19	17
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	410	690	400	370
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	17	15	16	13
Vanadium	2.5	4.4	4.0	5.5	<2.5

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #10 TOTAL METALS

PARAMETER	DETECTION LIMIT	1019V25.0	1020V19.0	1020V25.0	1021V19.0
Cadmium	2.5	<2.5	<2.5	<2.5	<2.5
Chromium	2.5	8.9	11	14	13
Lead	5.0	20	16	20	19
Mercury	0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	2.5	<2.5	<2.5	<2.5	<2.5
Barium	5.0	630	400	360	520
Beryllium	2.5	<2.5	<2.5	<2.5	<2.5
Nickel	2.5	17	16	19	16
Vanadium	2.5	3.3	4.3	5.0	6.8

PARAMETER	DETECTION LIMIT	1021V25.0
Cadmium	2.5	<2.5
Chromium	2.5	9.4
Lead	5.0	20
Mercury	0.25	<0.25
Arsenic	2.5	<2.5
Barium	5.0	680
Beryllium	2.5	<2.5
Nickel	2.5	17
Vanadium	2.5	4.7

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #10 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 1014V19.0	1014V25.0	1015V19.0	1015V25.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	DETECTION LIMIT	1016V19.0	1016V25.0	1017V19.0	1017V25.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	DETECTION LIMIT	1018V19.0	1018V25.0	1018V25.0E*	1019V19.0
Benzene	0.5	<0.5	<0.5	<10.0	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<10.0	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<10.0	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<20.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<10.0	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<10.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<100	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<10.0	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<100	<1.0
Styrene	0.5	<0.5	<0.5	<10.0	<0.5
Toluene	0.5	<0.5	<0.5	<10.0	<0.5
Xylenes	0.5	<0.5	<0.5	<10.0	<0.5

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*Equipment Rinsate

RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #10 8240/8260 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	1019V19.0D	1019V25.0	1020V19.0	1020V25.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	<0.5	<0.5

PARAMETER	DETECTION LIMIT	1021V19.0	1021V25.0
Benzene	0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5
Chloroethylvinyl ether	1.0	<1.0	<1.0
1,2–Dibromoethane	0.5	<0.5	<0.5
1,4–Dichloroethane	5.0	<5.0	<5.0
1,4–Dioxane	50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5
Methyl ethyl ketone	1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #10 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 1014V19.0	1014V25.0	1015V19.0	1015V25.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-butyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di-n-octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #10 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	1016V19.0	1016V25.0	1017V19.0	1017V25.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-butyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di-n-octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY – CINIZA

SWMU #10 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	1018V19.0	1018V25.0	1019V19.0	1019V19.0D
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2–ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di–n–butyl phthalate	5.0	13	<5.0	<5.0	<5.0
1,2–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4–Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12–Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di–n–octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1–Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4–Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4–Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4–Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #10 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	1019V25.0	1020V19.0	1020V25.0	1021V19.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-butyl phthalate	5.0	11	<5.0	<5.0	11
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	25.0	<25.	<25.	<25.	<25.
Di-n-octyl phalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.	<25.	<25.	<25.
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyridine	10.0	<10.	<10.	<10.	<10.
Quinoline	25.0	<25.	<25.	<25.	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #10 8270 SKINNER LIST, cont.

PARAMETER	DETECTION LIMIT	1021V25.0
Anthracene	5.0	<5.0
Benzenethiol	5.0	<5.0
Benzo(a)anthracene	5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0
Benzo(a)pyrene	5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0
Butyl benzyl phthalate	5.0	<5.0
Chrysene	5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0
Di-n-butyl phthalate	5.0	11
1,2-Dichlorobenzene	5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0
Diethyl phthalate	5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0
Dimethyl phthalate	5.0	<5.0
2,4-Dinitrophenol	25.0	<25.
Di-n-octyl phalate	5.0	<5.0
Flouranthene	5.0	<5.0
Indene	5.0	<5.0
Methylchrysene	5.0	<5.0
1-Methylnaphthalene	5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0
3-Methylphenol	5.0	<5.0
4-Methylphenol	5.0	<5.0
Naphthalene	5.0	<5.0
4-Nitrophenol	25.0	<25.
Phenanthrene	5.0	<5.0
Phenol	5.0	<5.0
Pyrene	5.0	<5.0
Pyridine	10.0	<10.
Quinoline	25.0	<25.

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #11 8240/8260 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING 1103V6.0	1103V10.0	1104V6.0	1104V10.0
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Carbon Disulfide	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroethylvinyl Ether	1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dioxane	50.0	<50.0	<50.0	<50.0	<50.0
Ethylbenzene	0.5	<0.5	<0.5	1.6	<0.5
Methyl Ethyl Ketone	1.0	<1.0	<1.0	<1.0	<1.0
Styrene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	0.5	<0.5	<0.5	5.1	0.5

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RFI COMPLIANCE DATA GIANT REFINING COMPANY - CINIZA

SWMU #11 8270 SKINNER LIST

PARAMETER	DETECTION LIMIT	CORING NUMBER 1103V6.0	1103V10.0	1104V6.0	1104V10.0
Anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzenethiol	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(b)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(k)flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Bis(2-ethylhexyl) phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Butyl Benzyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Chrysene	5.0	<5.0	<5.0	<5.0	<5.0
Dibenz(a,j)acridine	5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	5.0	<5.0	<5.0	<5.0	<5.0
Di-n-btyl phthalate	5.0	<5.0	<5.0	16	<5.0
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0	<5.0
Diethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
7,12-Dimethylbenz(a) anthracene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Dimethyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dinitrophenol	5.0	<25.0	<25.0	<25.0	<25.0
Di-n-octyl phthalate	5.0	<5.0	<5.0	<5.0	<5.0
Flouranthene	5.0	<5.0	<5.0	<5.0	<5.0
Indene	5.0	<5.0	<5.0	<5.0	<5.0
Methylchrysene	5.0	<5.0	<5.0	<5.0	<5.0
1-Methylnaphthalene	5.0	<5.0	<5.0	<5.0	<5.0
2,4-Dimethylphenol	5.0	<5.0	<5.0	<5.0	<5.0
3-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
4-Methylphenol	5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	5.0	<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	25.0	<25.0	<25.0	<25.0	<25.0
Phenanthrene	5.0	<5.0	<5.0	<5.0	<5.0
Phenol	5.0	<5.0	<5.0	<5.0	<5.0
Pyrene	5.0	<5.0	<5.0	<5.0	<5.0
Pyroline	10.0	<10.0	<10.0	<10.0	<10.0
Quinoline	25.0	<25.0	<25.0	<25.0	<25.0

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SHEET 1 OF 3

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0404

Water Level NOT ENCOUNT. Date: 07/29/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
	0.5		/*//*/		C	CLAY, SANDY, DAMP, VERY SOFT, BROWN				
	1.0		SSSSSS		C	FCC CATALYST(SILICA)				
			/*//*/		C	CLAY, SANDY, MOIST, SOFT, YELLOW STAINED/RED				
			/*//*/		C	BROWN				
			/*//*/	2.5	C					
	2.9		/*//*/		C					
			/*/*/*		C	CLAY, VERY SANDY, MOIST, VERY SOFT, RED BROWN				
			/*/*/*		C					
			/*/*/*		C					
	5.0		/*/*/*	5	C					
			//////		C	CLAY, WET TO MOIST, FIRM, RED BROWN				
			//////		C					
			//////		C					
			//////		C					
			//////	7.5	C					
			//////		C					
			//////		C					
	8.8		//////		C					
			0*		C	SAND, SLIGHTLY GRAVELLY, DAMP, MODERATELY				
	10.0		**0***	10	C	DENSE, BROWN				
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 3

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0405

Water Level NOT ENCOUNT. Date: 07/29/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			SSSSSS		C	FCC CATALYST(SILICA)				
			SSSSSS		C					
	1.4		SSSSSS		C					
			/-*/-*		C	CLAY, SILTY, SANDY, WET, SOFT, YELLOW GRADING				
			/-*/-*	2.5	C	TO BLACK AT 3'				
	3.3		/-*/-*		C					
	3.8		AAAAAA		C	ASPHALT BURN RESIDUE				
	4.0		/*//*/		C	CLAY, SANDY, MOIST, SOFT, YELLOW BROWN				
			*0**0*		C	SAND, SCATTERED HIGHLY WEATHERED GRAVEL, MOIST				
			*0**0*	5	C	MODERATELY DENSE, YELLOW BROWN, FREE SURFACE				
	5.4		*0**0*		C	FLUID				
			//////		C	CLAY, WET, FIRM TO STIFF, RED BROWN				
			//////		C					
			//////		C					
			//////	7.5	C					
			//////		C					
			//////		C					
	8.8		//////		C					
			*-**-*		C	SAND, SILTY, MOIST, MODERATELY DENSE, LIGHT				
	10.0		*-**-*	10	C	BROWN				
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 3 OF 3

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0406

Water Level NOT ENCOUNT. Date: 07/29/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-*/-*		C	CLAY, SANDY, SILTY, MOIST, FIRM, BROWN, SOME				
			/-*/-*		C	FCC CATALYST SILICA LENSES				
			/-*/-*		C					
			/-*/-*		C					
	2.6		/-*/-*	2.5	C					
			SSSSSS		C	FCC CATALYST(SILICA)				
	3.4		SSSSSS		C					
			/*-/*-		C	CLAY, SANDY, SILTY, MOIST, FIRM, YELLOW				
	4.6		/*-/*-		C	STAINING BROWN MATRIX				
			AAAAAA	5	C	ASPHALTIC BURN RISIDUE				
	5.4		AAAAAA		C					
	5.8				C	SANDSTONE, FRIABLE, MOIST, HARD, BROWN RED				
			//////		C	CLAY, WET, STIFF, BROWN TO RED				
			//////		C					
			//////	7.5	C					
			//////		C					
	8.6		//////		C					
			/*/*/*		C	CLAY/SAND, INTERBEDS(1" THICK), MOIST, STIFF/				
			/*/*/*		C	MODEERATELY DENSE, BROWN				
	10.0		/*/*/*	10	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 1 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0513

Water Level NOT ENCOUNT. Date: 07/28/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
	0.5		/*/0*/		C	CLAY, SANDY, GRAVELLY, DRY, LOOSE, BROWN				
			/*/0*/		C					
			/*/0*/		C					
	2.0		/*/0*/		C					
			*0**0*	2.5	C	SAND, GRAVELLY(FINE), DRY TO DAMP, LOOSE, RED				
	2.8		*0**0*		C	BROWN, MISC. BLACK DEBRIS AS WOOD PIECES				
			*/**/*		C	SAND, CLAYEY, SOME MEDIUM GRAVEL, FILL, MOIST,				
			*/**/*		C	RED BROWN, BURNED WOOD AND GLASS DEBRIS, 4'-5'				
			*/**/*		C	APPEARS BURNED FROM 5 TO 6.1'				
			*/**/*	5	C					
			*/**/*		C					
	6.1		*/**/*		C					
			/-//-/		C	CLAY, SILTY, WET, FIRM, RED BROWN, OCCASIONAL				
			/-//-/		C	SANDY SEAMS 4" THICK(DRY)				
			/-//-/	7.5	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	10	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	12.8		/-//-/		C					
	13.1		*/**/*		C	SAND,SILTY,MOIST,DENSE,MULTICOLORED, LAMINATED				
			*0**0*		C	SAND, GRAVELLY, MOIST, DENSE				
			*0**0*		C					
			*0**0*		C					
			*0**0*	15	C					
	15.4		*0**0*		C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, RED, SAND SEAM AT 16'				
			/-//-/		C	AND 18'				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	20.0		/-//-/	20	C	GRAVELLY AT 20'				
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0514

Water Level NOT ENCOUNT. Date: 07/28/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			//*///		C	CLAY, SILTY, SLIGHTY SANDY, MOIST, SOFT TO				
			//*///		C	FIRM, BROWN				
			//*///		C					
			//*///		C					
	2.5		//*///	2.5	C					
			/*//*/		C	CLAY, SANDY, SCATTERED FINE GRAVEL, FILL,				
			/*//*/		C	MOIST, BROWN, TRASH DEBRIS, PVC, RUBBER WASHER				
			/*//*/		C	WOOD, SOME METAL/ALUMINUM COATED WITH ASBESTOS				
			/*//*/		C					
			/*//*/	5	C					
			/*//*/		C					
			/*//*/		C					
	6.4		/*//*/		C					
			/-*/-*		C	CLAY, SILTY, SANDY, MOIST, STIFF, RED BROWN				
			/-*/-*	7.5	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	10	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C	1" SAND SEAMS FROM 12.4' TO 13.4'				
	13.4		/-*/-*		C					
			******		C	SAND, FINE TO MEDIUM, LAMINATED, MOIST, DENSE,				
			******		C	BROWN TO MULTI COLORED				
	14.8		******	15	C					
			*0**0*		C	SAND, GRAVELLY, MOIST, DENSE, MULTI COLORED				
	15.8		*0**0*		C	GRAVEL, BROWN MATRIX, YELLOW SEAM AT 15.1'				
			//-///		C	CLAY, SLIGHTLY SILTY, WET, STIFF, RED				
			//-///		C					
			//-///		C					
			//-///		C					
			//-///		C					
			//-///		C					
			//-///		C					
			//-///	20	C					
			//-///							
			//-///							
	21.5		//-///							
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 3 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0515

Water Level NOT ENCOUNT. Date: 07/28/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-/0-/		C	CLAY, SILTY, SCATTERED GRAVEL, MOIST, HARD,				
			/-//-/		C	BROWN				
	1.8		/-/0-/		C					
	2.1		******		C	SAND, MEDIUM, MOIST TO DAMP, DENSE, RED BROWN				
			/-*/-*	2.5	C	CLAY, SILTY, SANDY, OCCASIONAL GRAVEL, MOIST,				
			/-*/-*		C	HARD, BROWN				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	5	C					
	5.3		/-*/-*		C					
	6.2		/-//-/		C	CLAY, SILTY, WET, YELLOW STAIN, RED BROWN				
	6.5		*-/*-/		C	SAND, SILTY, CLAYEY,SOFT,BLACK, GRADES TO CLAY				
			//////		C	CLAY, WET, SOFT, RED BROWN, SOME BLACK				
			//////	7.5	C	MOTTLING				
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////	10	C					
	10.4		//////		C					
	10.6		FGFGFG		C	FIBERGLASS INSULATION				
			/*//*/		C	CLAY, SANDY, MOIST TO WET, SOFT, RED BROWN,				
			/*//*/		C	GRADES SANDIER				
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/	15	C					
			/*//*/		C					
	15.8		/*//*/		C					
			/-*/-*		C	CLAY, SILTY, SANDY, WET, SOFT, RED BROWN				
	17.1		/-*/-*		C					
			/-//*/		C	CLAY, SLIGHTLY SILTY, SLIGHTLY SANDY, WET,				
			/-//*/		C	STIFF TO HARD, RED BROWN				
			/-//*/		C					
			/-//*/		C					
			/-//*/		C					
	20.0		/-//*/	20	C	ONE 3" ROCK AT 19.7'				
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 4 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0516

Water Level NOT ENCOUNT. Date: 07/28/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	**CLAY**, SILTY, SOME CARBONATE NODULES, DAMP TO				
			/-/+-/		C	MOIST, HARD, BROWN, GRADES SANDIER				
			/-//-/		C					
			/-/+-/		C					
			/-//-/	2.5	C					
			/-//-/		C					
			/-/+-/		C					
			/-//-/		C					
			/-/+-/		C					
			/-//-/	5	C					
			/-//-/		C					
			/-/+-/		C					
			/-//-/		C					
			/-/+-/		C					
			/-//-/	7.5	C					
			/-//-/		C					
			/-/+-/		C					
	9.0		/-//-/		C					
			*0**0*		C	**SAND**, MULTICOLORED FINE GRAVEL, DRY TO DAMP,				
	10.2		*0**0*	10	C	DENSE				
			//-///		C	**CLAY**, SLIGHTLY SANDY, SOME CARBONATE NODULES,				
			//-/+/		C	SOME SAND PARTINGS, MOIST, HARD, BROWN,				
			//-///		C					
			//-///		C					
			//-/+/		C					
			//-///		C					
			//-/+/		C					
			//-///		C					
			//-///		C					
			//-/+/	15	C					
			//-///		C					
			//-/+/		C					
			//-///		C					
			//-///		C					
			//-/+/		C					
			//-///		C					
			//-/+/		C					
			//-///		C					
			//-///		C					
	20.0		//-///	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 5 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0517

Water Level NOT ENCOUNT. Date: 07/28/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	CLAY, SANDY, SCATTERED CARBONATE NODULES,				
			/*+/*/		C	OCCASINAL FINE GRAVEL, DAMP, BROWN				
			/*//*/		C					
			/*//*/		C					
			/*+/*/	2.5	C					
	2.75		/*//*/		C					
			/*/+*/		C	CLAY, SANDY, BLOCKY STRUCTURE, CARBONATE				
			/*//*/		C	NODULES, MOIST, HARD, RED BROWN, GRADES SANDY				
			/*/+*/		C					
	4.7		/*//*/	5	C					
			0*		C	SAND, FINE, SLIGHTLY GRAVELLY, DRY, LOOSE,				
			0*		C	LIGHT BROWN				
			0*		C					
	6.8		**0***		C					
			///+//	7.5	C	CLAY, SCATTERED CARBONATE NODULES, MASSIVE,				
			//////		C	TO MOIST, HARD, DARK RED BROWN				
			///+//		C					
			//////		C					
	9.5		///+//		C					
			*/**/*	10	C	SAND, FINE, CLAYEY, SLABBY(POKER CHIP), MOIST				
			*/**/*		C	TO DAMP, DENSE RED BROWN				
			*/**/*		C					
			*/**/*		C					
	12.2		*/**/*		C					
			/*//*/		C	CLAY, SANDY, MOIST, HARD, RED BROWN				
			/*//*/		C					
			/*//*/		C					
	13.9		/*//*/		C					
			******		C	SAND, FINE, DRY, DENSE, LIGHT BROWN				
			******	15	C					
			******		C					
			******		C					
			******		C					
			******		C					
			******		C					
			******		C					
	17.8		******		C					
			/-//-/		C	CLAY, SILTY, MASSIVE, MOIST, HARD, RED BROWN				
			/-//-/		C					
			/-//-/		C					
	20.0		/-//-/	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 6 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0518

Water Level NOT ENCOUNT. Date: 07/29/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//*/		C	CLAY, SILTY, SANDY, MOIST, SOFT, BROWN				
			/-//*/		C					
			/-//*/		C					
			/-//*/		C					
	2.5		/-//*/	2.5	C					
			/-//-/		C	CLAY, SILTY, SCATTERED FINE GRAVEL, OCCASIONAL				
			/-/0-/		C	CARBONATE NODULES, MOIST STIFF BROWN				
			/-//-/		C					
			/-/0-/		C					
	5.0		/-//-/	5	C					
			/-/+-/		C	CLAY, SILTY, CARBONATE NODULES, BLOCKY				
			/-/+-/		C	STRUCTURE(<1 CM), SOME SAND PARTINGS, MOIST,				
			/-/+-/		C	HARD				
			/-/+-/		C					
			/-/+-/	7.5	C					
			/-/+-/		C					
			/-/+-/		C					
			/*/+*/		C	GRADES SANDIER AT 8.5'				
	9.7		/*/+*/		C					
			***/**	10	C	SAND, SLIGHTLY CLAYEY, GRADATIONAL CONTACTS,				
			***/**		C	MOIST, LOOSE TO MODERATELY DENSE, BROWN				
			***/**		C					
			***/**		C					
			***/**		C					
			***/**		C					
			***/**		C					
			***/**		C					
			***/**		C					
			***/**		C					
			***/**	15	C					
			***/**		C	MORE CLAYEY AT 15'				
			***/**		C					
			***/**		C					
	17.0		***/**		C					
			/*//0/		C	CLAY, SANDY, SCATTERED FINE GRAVEL, WET, SOFT				
			/*//0/		C	TO FIRM, RED BROWN				
			/*//0/		C					
			/*//0/		C					
			/*//0/		C					
			/*//0/	20	C					
			/*//0/		C					
			/*//0/		C					
	21.5		/*//0/		C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 7 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0519

Water Level NOT ENCOUNT. Date: 07/29/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	CLAY, SANDY, OCCASIONAL FINE GRAVEL, ROOT				
			/*/0*/		C	DEBRIS, MOIST TO WET, SOFT, BROWN				
			/*//*/		C					
			/*/0*/		C					
			/*//*/	2.5	C					
			/*/0*/		C					
	3.7		/*//*/		C					
			/*//*/		C	CLAY, SANDY, ROOT, PLANT, & WOOD DEBRIS, WET,				
			/*//*/		C	VERY SOFT, BROWN				
			/*//*/	5	C					
			/*//*/		C					
	6.1		/*//*/		C					
			*/**/*		C	SAND, CLAYEY, WATER BEARING, VERY LOOSE, BROWN				
			*/**/*		C					
			*/**/*	7.5	C					
			*/**/*		C					
			*/**/*		C					
	9.2		*/**/*		C					
			//////		C	CLAY, SHALEY, BLOCKY, MOIST NOT WATER BEARING,				
			//////	10	C	HARD, PURPLE BROWN, SOME GREY CLAY MOTTLING				
			//////		C					
			//////		C					
			//////		C	FRIABLE AT 11'				
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////	15	C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
	20.0		//////	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 1 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0636

Water Level NOT ENCOUNT. Date: 08/10/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	CLAY, SLIGHTLY SANDY, SCATTERED FINE GRAVEL,				
			/*/0*/		C	WET, VERY SOFT, BROWN				
			/*//*/		C					
			/*/0*/		C					
			/*//*/	2.5	C					
			/*/0*/		C					
			/*//*/		C					
			/*/0*/		C					
			/*//*/		C					
			/*/0*/	5	C					
	5.5		/*//*/		C					
			*/**/*		C	SAND, CLAYEY, SLIGHTLY GRAVELLY, MOIST TO WET,				
			*/*0/*		C	MODERATELY DENSE, GREY BROWN, SANDY CLAY				
			*/**/*		C	INTERBEDS 4" THICK				
			*/*0/*	7.5	C					
			*/**/*		C					
			*/*0/*		C					
			*/**/*		C					
			*/*0/*		C					
	10.1		*/**/*	10	C					
			*/**/*		C	SAND, FINE, CLAYEY, WET, LOOSE				
	10.9		*/**/*		C					
			*0/*0*		C	SAND, MEDIUM, GRAVELLY(FINE), SLIGHTLY CLAYEY,				
			*0/*0*		C	MOIST, DENSE, MULTICOLORED				
			*0/*0*		C					
			*0/*0*		C					
			*0/*0*		C					
			*0/*0*		C					
			*0/*0*		C					
			*0/*0*	15	C					
			*0/*0*		C					
			*0/*0*		C					
	16.4		*0/*0*		C					
			//*///		C	CLAY, SLIGHTLY SANDY, WET, STIFF, BROWN				
	17.6		//*///		C					
			/*//*/		C	CLAY, SANDY(FINE), WET, STIFF, LIGHT BROWN				
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
	20.0		/*//*/	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0637

Water Level NOT ENCOUNT. Date: 08/10/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	CLAY, SANDY, WET, SOFT, BROWN, SOME YELLOW				
			/*//*/		C	MOTTLING, RUST LAYER AT 1.2'				
			/*//*/		C	GRADES MORE CLAYEY				
			/*//*/		C					
			/*//*/	2.5	C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/	5	C					
	5.6		/*//*/		C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, DARK BROWN				
	6.4		/-//-/		C					
			/*/*/*		C	CLAY, VERY SANDY, WET, SOFT, GREY BROWN, BLACK				
	7.5		/*/*/*	7.5	C	MOTTLING				
			***/**		C	SAND, FINE, SLIGHTLY CLAYEY, WET, MODERATELY				
			***/**		C	DENSE, GREY BROWN LAMINATED				
			***/**		C					
			***/**		C					
	9.7		***/**	10	C					
			***0**		C	SAND, MEDIUM, SCATTERD FINE GRAVEL, MOIST,				
			***0**		C	GREY				
			***0**		C					
			***0**		C					
			***0**		C	SOME LARGER GRAVEL(2") BELOW 12'				
			***0**		C					
			***0**		C					
			***0**		C					
			***0**		C					
			***0**	15	C					
			***0**		C					
	15.9		***0**		C					
			******		C	SAND, FINE, MOIST, DENSE, BROWN				
			******		C					
	17.4		******		C					
			S*SS*S		C	SHALE, SANDY, MOIST, VERY HARD, RED GREY,				
			S*SS*S		C	LAMINATED, MASSIVE				
			S*SS*S		C					
			S*SS*S		C					
	20.0		S*SS*S	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 3 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0638

Water Level NOT ENCOUNT. Date: 08/09/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	CLAY, SILTY, SCATTERED GRAVEL, WET, VERY SOFT,				
			/-/0/-		C	BROWN				
			/-//-/		C					
			/-/0/-		C					
			/-//-/	2.5	C					
			/-/0/-		C					
			/-//-/		C					
			/-/0/-		C					
			/-//-/		C					
			/-/0/-	5	C					
			/-//-/		C					
			/-/0/-		C					
			/-//-/		C					
	6.8		/-//-/		C					
			/*/*/*	7.5	C	CLAY, VERY SANDY, SILTY, WET, SOFT				
	7.7		/*/*/*		C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, BROWN, BLOCKY STRUC-				
			/-//-/		C	TURE, OCCASIONAL 2" SAND SEAMS				
	9.6		/-//-/		C					
			*/**/*	10	C	SAND, CLAYEY, MOIST, MODERATELY DENSE, BROWN				
			*/**/*		C					
			*/**/*		C					
	11.3		*/**/*		C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, BROWN, FINE BLOCKY				
			/-//-/		C	(<1 CM), SAND SEAMS AT 12.1' & 13.3'				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	15.0		/-//-/	15	C					
			*/**/*		C	SAND, CLAYEY, WET, MODERATELY DENSE, BROWN				
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C	MORE CLAYEY AT 17'				
	18.2		*/**/*		C					
	TOTAL DEPTH									
				20						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 4 OF 7 PRECISION ENGINEERING, INC. File No. 94-114

Boring Location _____ LOG OF TEST BORINGS Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0639 Water Level NOT ENCOUNT. Date: 08/09/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			0/00/0		C	**GRAVEL**, CLAYEY, MOIST, DENSE, FILL				
			0/00/0		C					
	1.5		0/00/0		C					
			/*//*/		C	**CLAY**, SANDY, WET, STIFF, BROWN				
			/*//*/	2.5	C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/	5.0	C					
			/*//*/		C	SAND SEAMS AT 5'(GREY)				
	6.0		/*//*/		C					
			/-//-/		C	**CLAY**, SILTY, WET, STIFF, BROWN				
	7.0		/-//-/		C					
			/*//*/	7.5	C	**CLAY**, SANDY, WET, SOFT, BROWN				
			/*//*/		C					
	8.4		/*//*/		C					
			/-//-/		C	**CLAY**, SILTY, WET, STIFF, BROWN				
			/-//-/		C					
			/-//-/	10	C					
			/-//-/		C					
	11.1		/-//-/		C					
			//////		C	**CLAY**, WET, STIFF, BROWN				
			//////		C					
			//////		C					
	12.9		//////		C					
			/*/*/*		C	**CLAY**, VERY SANDY, SILTY, WET, STIFF				
			/*/*/*		C					
	20.0		/*/*/*		C					
			*-**-*	15	C	**SAND**, FINE, SILTY, MOIST, OCCASIONAL THIN CLAY				
			*-**-*		C	ZONES, BROWN				
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
			*-**-*		C					
	20.0		*-**-*	20	C					
			*0**0*		C	**SAND**, MEDIUM, GRAVELLY(FINE) MOIST, DENSE,				
			*0**0*		C	LIGHT BROWN				
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
	25.0		*0**0*	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger Logged By: WHK

SHEET 5 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0640

Water Level NOT ENCOUNT. Date: 08/09/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-0/-0		C	CLAY, SILTY, GRAVELLY, DRY, SOFT, RED BROWN				
	1.0		/-0/-0		C					
			/-//-/		C	CLAY, SILTY, SLIGHTLY GRAVELLY, WET, VERY SOFT				
			/-/0-/		C	RED BROWN				
			/-//-/	2.5	C					
			/-/0-/		C					
			/-//-/		C					
			/-/0-/		C					
			/-//-/		C					
			/-/0-/	5.0	C					
			/-//-/		C					
	6.0		/-//-/		C					
			/-//-/		C	CLAY, SILTY, SLIGHTLY SANDY, WET, VERY SOFT,				
			/-/*-/		C	BLACK/GREY MOTTLING				
			/-//-/	7.5	C					
			/-/*-/		C					
			/-//-/		C					
			/-/*-/		C					
			/-//-/		C					
			/-/*-/	10	C					
			/-//-/		C					
	10.9		/-//-/		C					
			/*-/*-		C	CLAY, SANDY, SILTY, WET, SOFT TO FIRM, GREY				
			/*-/*-		C	BROWN, OCCASIONAL FINE SAND INTERBEDS				
			/*-/*-		C					
			/*-/*-		C					
	13.8		/*-/*-		C					
			/-//-/		C	CLAY, SILTY, WET, FIRM, RED BROWN				
	14.5		/-//-/		C					
			*-**-*	15	C	SAND, SILTY, MOIST, MODERATELY DENSE, GREY				
	15.9		*-**-*		C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, RED BROWN				
			/-//-/		C					
	17.6		/-//-/		C					
			/*//*/		C	CLAY, SANDY, WET, FIRM, RED BROWN				
	19.2		/*//*/		C					
	19.7		//////		C	CLAY, WET, STIFF, RED BROWN				
	20.0		*/**/*	20	C	SAND, FINE, CLAYEY, MODERATELY DENSE,RED BROWN				
			/-//-/		C	CLAY, SILTY, WET, STIFF, RED BROWN,FINE BLOCKY				
	21.2		/-//-/		C					
			*/**/*		C	SAND, CLAYEY, MOIST, MODERATELY DENSE, RED				
			*/**/*		C	BROWN, OCCASIONAL INTERBEDDED(<1 CM)CLAY SEAMS				
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
	25.0		*/**/*	25	C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, BROWN, FINE BLOCKY				
			/-//-/		C					
	27.0		/-//-/		C					
			*/**/*		C	SAND, MEDIUM, CLAYEY, OCCASIONAL FINE GRAVEL,				
			*/**/*		C	MOIST, DENSE, RED BROWN				
			*/**/*		C					
			*/**/*		C					
	30.0		*/**/*	30	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 6 OF 7 PRECISION ENGINEERING, INC. File No. 94-114

Boring Location _____ LOG OF TEST BORINGS Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0641 Water Level NOT ENCOUNT. Date: 08/11/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.'
	0.4		/0//0/		C	CLAY, GRAVELLY, WET, SOFT, BROWN				
	0.8		******		C	SAND, FINE, MOIST, LOOSE, ORANGE				
			/*//*/		C	CLAY, SANDY, WET, FIRM, RED BROWN, OCCASIONAL				
			/*//*/		C	1" SAND SEAMS				
	2.4		/*//*/	2.5	C					
			*0**0*		C	SAND, FINE, GRAVELLY, WET, LOOSE, BROWN W/GREY				
			*0**0*		C	AND BLACK STREAKS, SHARP CONTACTS				
			*0**0*		C					
			*0**0*		C					
			*0**0*	5	C					
			*0**0*		C					
	6.1		*0**0*		C					
			//////		C	CLAY, OCCASIONAL CARBONATE NODULES CCI-1, WET,				
			//+///		C	STIFF, BROWN				
			//////	7.5	C					
			//+///		C					
			//////		C					
			//+///		C					
			//////		C					
			//+///	10	C					
			//////		C					
	11.2		//////		C					
	11.4		*0**0*		C	SAND, GRAVELLY, MOIST, LOOSE, BROWN				
			//*///		C	CLAY, SLIGHTLY SANDY, WET, STIFF, BROWN				
			//*///		C					
			//*///		C					
			//*///		C					
	13.8		//*///		C					
			/*//*/		C	CLAY, SANDY, WET, FIRM, BROWN				
			/*//*/	15	C					
	15.3		/*//*/		C					
			*/**/*		C	SAND, CLAYEY, WET, SOFT, BROWN				
			*/**/*		C					
			*/**/*		C					
			*/**/*		C	WATER BEARING FROM 17' TO 17.5'				
	18.1		*/**/*		C					
			/*//*/		C	CLAY, SANDY, WET, SOFT, BROWN, INTERBEDDED				
	19.0		/*//*/		C	GRAVELLEY SAND ZONES 1/2" THICK				
	TOTAL DEPTH									
				20						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger Logged By: WHK

SHEET 7 OF 7

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0642

Water Level NOT ENCOUNT. Date: 08/09/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	CLAY, SILTY, MOIST, SOFT, BROWN, GRAVELLY ON				
	1.2		/-//-/		C	SURFACE				
			//////		C	CLAY, WET, SOFT, BROWN, 1/2" SAND SEAM AT 1.2'				
			//////		C					
	2.6		//////	2.5	C					
			/*-/*-		C	CLAY, SANDY, SILTY, FIRM, BROWN, FINE BLOCKY				
			/*-/*-		C					
			/*-/*-		C					
			/*-/*-		C					
			/*-/*-	5	C					
			/*-/*-		C					
			/*-/*-		C					
	6.5		/*-/*-		C					
	7.0		//////		C	CLAY, SILTY, WET, STIFF, BROWN				
	7.7		*/**/*	7.5	C	SAND, CLAYEY, MOIST, MODERATELY DENSE, BROWN				
			//////		C	CLAY, WET, STIFF, BROWN				
	8.6		//////		C					
			//*///		C	CLAY, SLIGHTLY SANDY, WET, STIFF, BROWN				
	9.6		//*///		C					
			//*/	10	C	CLAY, VERY SANDY, WET, STIFF, BROWN				
			//*/		C					
	11.1		*/*/*/		C					
			/-//-/		C	CLAY, SILTY, WET, STIFF, BROWN,SLIGHTLY BLOCKY				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	13.4		/-//-/		C					
			/*//*/		C	CLAY, SANDY, WET, STIFF, BROWN, BLOCKY ~ 3"				
			/*//*/		C					
	14.7		/*//*/	15	C					
			*/**/*		C	SAND, CLAYEY, WET, MODERATELY DENSE, BROWN				
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C					
			*/**/*		C	SOME BLOCKY CLAY INTERBEDS TO 4" FROM 19' TO				
	20.0		*/**/*	20	C	20"				
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 1 OF 2

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0705

Water Level NOT ENCOUNT. Date: 08/11/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/0//0/		C	CLAY, GRAVELLY, WET, STIFF, BROWN, SOME BLACK				
			/0//0/		C	STREAKS				
			/0//0/		C					
	2.0		/0//0/		C					
			/*//*/	2.5	C	CLAY, SANDY, WET, STIFF, BROWN				
	3.0		/*//*/		C					
			//*///		C	CLAY, SLIGHTLY SANDY, WET, STIFF, BROWN,				
			//*///		C	BLOCKY, SOME CARBONATE NODULES AND CARBONATE				
			//*///		C	INFILLING				
			//*///	5	C					
			//*///		C					
			//*///		C					
	6.5		//*///		C					
			/*//*/		C	CLAY, SANDY, MOIST TO WET, STIFF, BROWN,				
	7.6		/*//*/	7.5	C	BLOCKY, 2" SAND SEAMS EVERY 7"				
			*/**/*		C	SAND, CLAYEY, MOIST TO WET, MODERATELY DENSE,				
			*/**/*		C	BROWN				
	8.8		*/**/*		C					
	9.5		**/***		C	SAND, SLIGHTLY CLAYEY, MOIST, MODERATELY DENSE				
			*0**0*	10	C	SAND, GRAVELLY(FINE), MOIST, DENSE, BROWN				
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
			*0**0*		C					
	12.3		*0**0*		C					
	TOTAL DEPTH									
				15						
				20						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 2

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 0706

Water Level NOT ENCOUNT. Date: 08/11/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/0/0		C	SAND, CLAYEY, GRAVELLY(UP TO 2"), MOIST, DENSE				
			/0/0		C	BROWN TO GREEN				
	1.5		*/0*/0		C					
			/0//0/		C	CLAY, GRAVELLYY, WET, STIFF, BROWN				
			/0//0/	2.5	C					
			/0//0/		C					
			/0//0/		C					
			/0//0/		C					
	4.5		/0//0/		C					
			//*///	5	C	CLAY, SLIGHTY SANDY, MOIST, HARD, BROWN, FINE				
			//*///		C	BLOCKY(< 0.5 CM), CARBONATE INFILLING IN				
			//*///		C	JOINTS				
			//*///		C					
			//*///		C					
			//*///	7.5	C					
	7.8		//*///		C					
			/*//*/		C	CLAY, SANDY, MOIST TO WET, STIFF, BROWN				
			/*//*/		C					
	9.7		/*//*/		C					
	10.0		*0**0*	10	C	SAND, GRAVELLY(FINE), MOIST, DENSE, BROWN				
			//////		C	CLAY, WET, STIFF, BROWN				
			//////		C					
			//////		C					
	11.9		//////		C					
			/*//*/		C	CLAY, SANDY, WET, STIFF, BROWN				
	12.8		/*//*/		C					
	13.1		******		C	SAND, FINE, MOIST, LOOSE, BROWN				
	TOTAL DEPTH									
				15						
				20						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 1 OF 9

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1013

Water Level NOT ENCOUNT. Date: 07/26/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*/0*/		C	CLAY, SANDY, SLIGHTLY GRAVELLY, DAMP, SOFT,				
			/*/0*/		C	RED BROWN				
			/*/0*/		C					
	2.0		/*/0*/		C					
			/-//-/	2.5	C	CLAY, SILTY, WET, SOFT, MOTTLED BLACK				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	5	C					
	5.5		/-//-/		C					
			/*//*/		C	CLAY, SANDY(MEDIUM), WET, BROWN				
	6.4		/*//*/		C					
	6.8		*-**-*		C	SAND, FINE, SILTY, WET, SHARP CONTACTS				
			/-//-/	7.5	C	CLAY, SILTY, WET, SOFT, RED BROWN, SOME DARK				
			/-//-/		C	STAINING IN THIN VARIED SILTY LENSES				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	10	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	12.3		/-//-/		C					
			/*-/*-		C	CLAY, SANDY(FINE), SILTY, MOIST TO WET, FIRM,				
			/*-/*-		C	RED BROWN, THIN BEDDING PLANES(< 1 CM)				
			/*-/*-		C					
			/*-/*-		C					
			/*-/*-	15	C	GRADES LESS SANDY				
			/*-/*-		C					
	15.8		/*-/*-		C					
	16.6		/-//-/		C	CLAY, SILTY, WET, FIRM, RED BROWN				
			/S//S/		C	CLAY, SHALEY, MOIST TO WET, FISSLE, DARK RED				
			/S//S/		C	BROWN, GREY SANDY STREAKS, MORE MASSIVE AND				
			/S//S/		C	SANDY BELOW 18.3'				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	20.0		/S//S/	20	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 9

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1014

Water Level NOT ENCOUNT. Date: 07/26/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-*/-*		C	CLAY, SILTY, SANDY(FINE),MOIST, SOFT,RED BROWN				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	2.5	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	5.0	C					
			/-*/-*		C					
			/-*/-*		C					
	6.5		/-*/-*		C					
	7.0		/-//-/		C	CLAY, SILTY, WET, SOFT, RED BROWN				
			/-*/-*	7.5	C	CLAY, SILTY, SANDY, WET, SOFT, 7 TO 8.5' BLACK				
			/-*/-*		C	8.5 TO 10' RED BROWN				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
	10.0		/-*/-*	10	C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, RED BROWN				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	13.1		/-//-/		C					
			-*--*-		C	SILT, SANDY, WET, SOFT, RED TO DARK BROWN				
	13.8		-*--*-		C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, RED BROWN, 1" SAND				
	15.1		/-//-/	15	C	SEAM AT 14.6'				
	15.7		*/**/*		C	SAND, CLAYEY, WET, LOOSE, BROWN				
			/-//-/		C	CLAY, SILTY, WET, FIRM, RED BROWN				
			/-//-/		C	GRADES SHALEY				
	17.0		/-//-/		C					
			/S//S/		C	CLAY, SHALEY, DAMP TO MOIST, HARD, RED BROWN,				
			/S//S/		C	THIN GREY SILTY STREAKS(FEW BELOW 18.5')				
			/S//S/		C					
			/S*/S/		C	GRADES SANDY AND BLOCKY				
			/S*/S/		C					
			/S*/S/	20	C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C	SLICKEN SIDED JOINT AT 24.1				
	25.0		/S*/S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 3 OF 9

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1015

Water Level NOT ENCOUNT. Date: 07/26/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-*/-*		C	CLAY, SILTY, SANDY(FINE), OCCASIONAL GRAVEL,				
			/-*/-*		C	MOIST TO WET, SOFT, BROWN				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	2.5	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
	4.5		/-*/-*		C					
			/-/0-/	5.0	C	CLAY, SILTY, SCATTERED FINE GRAVEL, WET, VERY				
			/-/0-/		C	SOFT, BLACK				
			/-/0-/		C					
	6.5		/-/0-/		C					
			/*//*/		C	CLAY, SANDY, WET, VERY SOFT, WHERE SANDY FREE				
			/*//*/	7.5	C	FLUID AND BLACK				
			/*//*/		C	3.6" CLAY ZONES AT 7.5', BLACK BROWN				
			/*//*/		C					
			/*//*/		C					
			/*//*/		C					
			/*//*/	10	C					
	10.4		/*//*/		C					
			/-//-/		C	CLAY, SILTY, SOFT, RED BROWN				
			/-//-/		C					
			/-//-/		C					
	12.4		/-//-/		C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, RED BROWN, INTERBEDDED				
			/-//-/		C	SILTS & FINE SAND(BLACK STAIN)				
			/-//-/		C					
			/-//-/		C					
	15.0		/-//-/	15	C					
			/*/*/*		C	CLAY, VERY SANDY, RED BROWN, GRADES SANDIER				
			/*/*/*		C					
			/*/*/*		C					
	17.0		/*/*/*		C					
			/S//S/		C	CLAY, SHALEY, MOIST, HARD, RED BROWN, WEAK				
			/S//S/		C	LAMINATIONS AT ~ 1 CM INTERVALS, GREY IS CLAY,				
			/S//S/		C	FISSILE TO BLOCKY, OCCASIONAL THIN SANDIER				
			/S//S/		C	SEAMS(<4")				
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 4 OF 9

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1016

Water Level NOT ENCOUNT. Date: 07/26/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	**CLAY**, SILTY, OCCASIONAL FINE GRAVEL, MOIST,				
			/-//-/		C	SOFT TO FIRM, BROWN				
			/-//-/		C					
			/-//-/		C					
			/-//-/	2.5	C					
			/-//-/		C					
	3.3		/-//-/		C					
			-/-/-/		C	**SILT/CLAY**, WET, VERY SOFT, BLACK				
			/-/-/-		C					
			-/-/-/	5.0	C					
			/-/-/-		C					
	5.8		-/-/-/		C					
			/-//-/		C	**CLAY**, SILTY, WET, VERY SOFT, BLACK MOTTLING				
			/-//-/		C					
			/-//-/	7.5	C					
			/-//-/		C					
			/-//-/		C					
	9.1		/-//-/		C					
			*/**/*		C	**SAND**, CLAYEY, WET, VERY LOOSE, BROWN				
	9.8		*/**/*	10	C					
			//////		C	**CLAY**, WET, SOFT, SOME SAND LENSES(<1 CM)				
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////	15	C					
			//////		C					
			//////		C					
			//////		C					
	16.9		//////		C					
			/S//S/		C	**CLAY**, SHALEY, MOIST, HARD, RED, SOME GREY CLAY				
			/S//S/		C	MOTTLING, FISSILE TO BLOCKY(<1 CM)				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1017

Water Level NOT ENCOUNT. Date: 07/26/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-*/-*		C	CLAY, SILTY, SANDY, DAMP TO MOIST, FIRM, BROWN				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
	2.5		/-*/-*	2.5	C					
			/-*/-*		C	CLAY, SILTY, SANDY, WET, VERY SOFT, BLACK				
			/-*/-*		C	BROWN MOTTLED, BLACK FROM 4 TO 6'				
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*	5.0	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C	SOME FINE GRAVEL AT 6' AND SCATTERED BLACK				
			/-*/-*		C	BROWN MOTTLING				
			/-*/-*	7.5	C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
			/-*/-*		C					
	10.0		/-*/-*	10	C					
			/0//0/		C	CLAY, GRAVELLY, WET, LOOSE, RED BROWN, SOME				
	11.1		/0//0/		C	FREE FLUID				
			//////		C	CLAY, WET, FIRM, RED BROWN				
			//////		C					
			//////		C					
	12.8		//////		C					
	13.4		******		C	SAND, FINE, WET, LOOSE, BROWN TO GREY				
			/-//-/		C	CLAY, SILTY, WET, SOFT, RED BROWN, WEAK				
			/-//-/		C	MOTTLING(BLACK SPECKS), GRADES LESS SILTY				
			/-//-/	15	C					
			/-//-/		C					
	15.8		/-//-/		C					
			//////		C	CLAY, WET, FIRM, RED				
	16.8		//////		C					
			/S//S/		C	CLAY, SHALEY, RED, SOME GREY CLAY MOTTLING,				
			/S//S/		C	FISSILE TO FINE BLOCKY(<1 CM), SOME RED/GREY				
			/S//S/		C	LAMINATIONS				
			/S//S/		C					
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C	SOME SAND PARTINGS AT 24'				
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1018

Water Level NOT ENCOUNT. Date: 07/27/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	CLAY, SILTY, DAMP TO MOIST, FIRM, BROWN				
			/-//-/		C					
			/-//-/		C					
	1.8		/-//-/		C					
			/-/0-/	2.5	C	CLAY, SILTY, SCATTERED GRAVEL, WET, VERY SOFT,				
			/-/0-/		C	BROWN, MOTTLED BLACK				
			/-/0-/		C					
			/-/0-/		C					
			/-/0-/		C					
			/-/0-/	5.0	C					
			/-/0-/		C					
	6.2		/-/0-/		C					
			/-//-/		C	CLAY, SILTY, WET, VERY SOFT, RED BROWN				
	7.1		/-//-/		C					
	7.6		/-*/-*	7.5	C	CLAY, SANDY, SILTY, VERY SOFT, BROWN, SOME DRK				
			//////		C	STREAKING ON BEDDING, FREE FLUID IN BEDDING				
			//////		C	CLAY, WET, SOFT, RED BROWN,SOME BLACK MOTTLING				
	9.1		//////		C					
	9.7		*/**/*		C	SAND, CLAYEY, MOIST TO WET, LOOSE,YELLOW BROWN				
			//////	10	C	CLAY, WET, FIRM, RED BROWN				
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////		C					
	15.2		//////	15	C					
			/*//*/		C	CLAY, SANDY, WATER BEARING, VERY SOFT, BROWN,				
	15.9		/*//*/		C	SAND LAMINATIONS(<0.5 CM)				
			/S//S/		C	CLAY, SHALEY, MOIST, HARD, RED TO PURPLE BROWN				
			/S//S/		C	SOME GREY CLAY MOTTLING,FISSLE AND FINE BLOCKY				
			/S//S/		C	(<1 CM)				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C	GRADES SANDIER BELOW 22.1'				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1019

Water Level NOT ENCOUNT. Date: 07/27/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	CLAY, SILTY, MOIST, FIRM TO STIFF, BROWN				
			/-//-/		C					
	1.5		/-//-/		C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, BROWN				
			/-//-/	2.5	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	5.0	C					
			/-//-/		C					
	6.0		/-//-/		C					
			/-//-/		C	CLAY, SILTY, WET, VERY SOFT, BROWN, SAND SEAMS				
	6.8		/-//-/		C	(~1 CM), WATER BEARING				
	7.2		/*/*/*	7.5	C	CLAY, VERY SANDY, WET, VERY SOFT, GREY				
			/-//-/		C	CLAY, SILTY, WET, SOFT TO FIRM, RED BROWN,				
			/-//-/		C	WEAK BLACK MOTTLING				
			/-//-/		C					
			/-//-/		C					
			/-//-/	10	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	12.0		/-//-/		C					
	12.5		*/*/*/		C	SAND, CLAYEY, WET, LOOSE, BROWN				
			/-//-/		C	CLAY, SILTY, WET, FIRM TO STIFF, BROWN				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	15	C					
			/-//-/		C					
	16.0		/-//-/		C					
			/S//S/		C	CLAY, SHALEY, MOIST, HARD TO VERY HARD, RED				
			/S//S/		C	BROWN, FISSLE AND FINE BLOCKY(<1 CM), SOME				
			/S//S/		C	GREY CLAY MOTTLING				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1020

Water Level NOT ENCOUNT. Date: 07/27/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-//-/		C	**CLAY**, SILTY, MOIST TO WET, SOFT, BROWN				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	2.5	C					
	3.0		/-//-/		C					
			/-//-/		C	**CLAY**, SILTY, WET, SOFT, BROWN				
			/-//-/		C	DARK SPOT AT 3.3'				
			/-//-/		C					
			/-//-/	5.0	C					
			/-//-/		C					
	6.0		/-//-/		C					
			//*/		C	**SAND**, CLAYEY, WET, LOOSE, BROWN				
	6.7		*/*/*/		C					
			//////	7.5	C	**CLAY**, WET, FIRM TO STIFF, BROWN				
			//////		C					
			//////		C					
			//////		C					
			//////		C					
			//////	10	C					
			//////		C					
			//////		C					
	11.8		//////		C					
			/*//*/		C	**CLAY**, SANDY, WET, SOFT, BROWN				
	12.4		/*//*/		C					
			//////		C	**CLAY**, WET, FIRM TO STIFF, BROWN				
	13.5		//////		C					
	13.9		/*//*/		C	**CLAY**, SANDY(FINE TO MEDIUM), WET, HARD, BROWN				
			/S//S/		C	**CLAY**, SHALEY, HARD, BROWN TO RED BROWN, THIN				
			/S//S/	15	C	LAMINATIONS, FISSLE AND FINE BLOCKY(<1 CM),				
			/S//S/		C	SOME GREY CLAY MOTTLING				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S*/S/		C	GRADES SANDIER				
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/	20	C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
			/S*/S/		C					
	25.0		/S*/S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1021

Water Level NOT ENCOUNT. Date: 07/27/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/-*/-/		C	CLAY, SILTY, SLIGHTLY SANDY, WET, FIRM, BROWN				
			/-*/-/		C					
	1.7		/-*/-/		C					
			/-//-/		C	CLAY, SILTY, WET, SOFT, BROWN, BLACK AT 1.8 TO				
	2.4		/-//-/	2.5	C	1.9'				
			/*//*/		C	CLAY, SANDY(APPEARS TO BE IN <0.5 CM STINGS),				
			/*//*/		C	SOFT TO VERY SOFT, BROWN				
			/*//*/		C					
			/*//*/		C					
	5.0		/*//*/	5.0	C					
			//////		C	CLAY, WET, SOFT, BROWN				
	6.1		//////		C					
			*/**/*		C	SAND, CLAYEY, WET(POSSIBLY WATER BEARING),				
	6.8		*/**/*		C	LOOSE, SHARP CONTACT				
			/-//-/	7.5	C	CLAY, SILTY, RARE SAND STRINGER(<0.5 CM), WET,				
			/-//-/		C	FIRM TO STIFF, RED BROWN				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/	10	C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C	SAND STRINGER ~ 1" AT 11' & 13'				
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
			/-//-/		C					
	13.9		/-//-/		C					
			/S//S/		C	CLAY, SHALEY, HARD, RED TO RED BROWN, FISSLE				
			/S//S/	15	C	AND BLOCKY(<1 CM), SOME GREY MOTTLING, GRADES				
			/S//S/		C	SANDIER				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/	20	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	25.0		/S//S/	25	C					
	TOTAL DEPTH									

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 1 OF 2

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location CINIZA REFINERY

Elevation EXISTING

Boring Number: RFI 1103

Water Level NOT ENCOUNT. Date: 08/10/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	**CLAY**, SANDY, DRY, VERY SOFT, BROWN				
			/*//*/		C					
	1.5		/*//*/		C					
			//*///		C	**CLAY**, SLIGHTLY SANDY WET, VERY SOFT,GREY BLACK				
			//*///	2.5	C					
			//*///		C					
			//*///		C					
			//*///		C					
			//*///		C					
			//*///	5.0	C					
			//*///		C					
			//*///		C					
			//*///		C					
			//*///		C					
	7.5		//*///	7.5	C					
			/*/*/*		C	**CLAY**, VERY SANDY, WET, STIFF, RED BROWN				
	8.5		/*/*/*		C					
			/S//S/		C	**CLAY**, SHALEY, HARD, WET, RED TO RED BROWN,				
			/S//S/		C	BLOCKY, SOME GREY CLAY STREAKING AND MOTTLING				
			/S//S/	10	C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	15.0		/S//S/	15	C					
	TOTAL DEPTH									
				20						
				25						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK

SHEET 2 OF 2

PRECISION ENGINEERING, INC.

File No. 94-114

Boring Location

LOG OF TEST BORINGS

Location GIANT REFINERY

Elevation EXISTING

Boring Number: RFI 1104

Water Level NOT ENCOUNT. Date: 08/10/94

LAB #	DEPTH	BLOWS/N	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE,CONDITION,COLOR,GRAINSIZE,ETC.)	%M	LL	PI	CLASS.
			/*//*/		C	**CLAY**, SANDY, DRY, VERY SOFT, BROWN				
			/*//*/		C					
			/*//*/		C					
			//*///		C					
	2.5		//*///	2.5	C					
			//*///		C	**CLAY**, VERY SANDY, WET, VERY SOFT, BROWN				
			//*///		C					
			/*/*/*		C					
			//*///		C					
	5.0		//*///	5.0	C					
			//*///		C	**CLAY**, WET, SOFT, RED BROWN				
	5.7		//*///		C					
			//*///		C	**CLAY**, WET, VERY SOFT, GREY/BLACK				
	7.2		//*///		C					
			//*///	7.5	C	**CLAY**, SANDY, WET, SOFT, BLACK				
	7.9		//*///		C					
			/*/*/*		C	**SAND**, CLAYEY, WET, MODERATELY DENSE, BROWN,				
			/S//S/		C	SLIGHT GREY STREAKS TO 9.5',				
			/S//S/		C					
	9.8		/S//S/	10	C					
			/S//S/		C	**CLAY**, SILTY, VERY SLIGHTLY SANDY, WET, HARD,				
	10.7		/S//S/		C	RED BROWN				
			/S//S/		C	**CLAY**, SHALEY, WET, HARD, RED BROWN, BLOCKY,				
			/S//S/		C	GREY CLAY MOTTLING				
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
			/S//S/		C					
	15.0		/S//S/	15	C					
	TOTAL DEPTH									
				20						
				25						

Size & Type of Boring: 4-1/4" ID Hollow Stemmed Auger

Logged By: WHK