DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action

Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Giant Refining Company
Facility Address: Route 3, Box 7 Gallup NM 87301
Facility EPA ID #: NMD00033~~311~~ 211

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

__X_ If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available, skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives that are currently being used as Program measures for the Government Performance and Results Act of 1993, (GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	___	_X_	___	
Air (indoors)[2]	___	___	_NA	
Surface Soil (e.g., <2 ft	_X_	___	___	BETX and TPH
Surface Water	___	___	___	
Sediment	___	___	_NA	
Subsurf. Soil (e.g., >2 ft)	_X_	___	___	BETX and TPH
Air (outdoors)	___	___	_NA	

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Groundwater contamination is present beneath the refinery facility; however, based on information provided in the [RCRA Post-closure Care Permit Application, Part B Volumes I – III (Giant Refining Company, 2000), groundwater contamination has not migrated off site and the affected aquifer is limited in capacity and not currently used by the refinery or any surrounding properites therefore human exposures are controlled for the purposes of this survey.

Petroleum-related surface soil contamination is known to be present at the following SWMUs: Aeration Basin, Evaporation Ponds, Evaporation Ponds Ditch, Fire Training Area, Railroad Rack Lagoon and the API Separator. Human exposures are controlled at these locations by restricting access to the units, implementation of health and safety SOPs and by monitoring work activities at the SWMU locations and throughout the refinery [RCRA Post-closure Care Permit Application, Part B Volumes I – III (Giant Refining Company, 2000), and Giant Refining Company Safe Work Procedures and Operating Procedures (2000) [Standard Operating Procedures (SOPs)] for Performing Work at Ciniza Refinery].

Petroleum-related subsurface soil contamination is known to be present at the following SWMUs: Aeration Basin, Evaporation Ponds, Tank Farm, Railroad Rack Lagoon, API Separator and Sludge Pits. Human exposures are controlled at these locations by restricting access to these locations, implementation of health and safety SOPs and by monitoring work activities at the SWMU locations and throughout the refinery [RCRA Post-closure Care Permit Application, Part B Volumes I – III (Giant Refining Company, 2000), and Giant Refining Company Safe Work Procedures and Operating Procedures (2000) [SOPs] for Performing Work at Ciniza Refinery]

REGULATED UNIT SUMMARY

The Land Treatment Unit (LTU) is the only regulated unit at the Ciniza Refinery. The LTU is undergoing post-closure care under a Post-closure Care Permit issued in September 2000. Final revegetation is anticipated to be completed in July 2001. Post-closure soil sampling and groundwater monitoring will be conducted periodically for 30 years. [RCRA Post-closure Care Permit Application, Part B Volumes I – III (Giant Refining Company, 2000)]

SOLID WASTE MANAGEMENT UNIT SUMMARY

A SWMU Assessment Report is currently being prepared by Giant Refining Company in compliance with the Post-closure Care Permit, Module IV (NMED, 2000). The following summary provides a description of the status of the SWMUs at the Ciniza Refinery [RCRA Post-closure Care Permit Application, Part B Volumes I – III (Giant Refining Company, 2000)]:

SWMU #1 - Aeration Basins - the Aeration Basins are operating wastewater treatment aeration ponds. The ponds are being evaluated for status as aggressive biological treatment units as defined in 40 CFR 261.31(b)(2). Further investigation will likely be required to evaluate petroleum-related subsurface soil and groundwater contamination. Human exposures at the Aeration Ponds are controlled by compliance with state and federal regulations implemented through the Giant Refinery health and safety SOPs, adherence to Giant's SOPs for performing work at the facility and by controlling access to the unit.

SWMU #2 – Evaporation Ponds – the Evaporation Ponds are part of the operating wastewater treatment system. The units are used for evaporation of treated water. The ponds will not be considered as RCRA-regulated units providing that the treatment methods used in the aeration ponds located upstream of the evaporation ponds meet the requirements for aggressive biologic treatment units as defined in 40 CFR 261.31(b)(2). Further investigation may be required to evaluate petroleum-related subsurface soil and groundwater contamination. Human exposures are controlled by Giant Refinery SOPs for performing work at the facility and by controlling access to the unit which is located to the west of the refinery process areas.

SWMU #3 – Empty Container Storage Area – this unit was investigated in 1993 and recommended for No Further Action (NFA) by the Ciniza Refinery. EPA approved the NFA determination in a letter dated January 7, 1994. NMED will review the investigation and NFA determination as part of the SWMU assessment required by the Post-closure Care Permit. Subsurface contamination may be present at the unit; however, surface contamination is not present therefore human exposures are controlled at the unit as part of the construction work permit requirements and restrictions included in the Giant Refinery SOPs.

SWMU #4 – Old Burn Pit – the Old Burn Pit assessment report is in preparation as part of the SWMU assessment required in the Post-closure Care Permit. An engineered cover has been placed on the unit therefore human exposures have been controlled at SWMU #4.

SWMU #5 – Landfill Areas – the Landfill areas have not been recommended for NFA by Ciniza to date. The landfills were capped with an engineered cover in 1993 upon approval by EPA of a voluntary corrective action plan for the landfills. Human exposures are controlled at the unit by the engineered cover. NMED will evaluate the need for further corrective action at the units upon receipt of the SWMU Assessment Report required by the Post-closure Care Permit.

SWMU #6 – Tank Farm-Leaded Gasoline Tanks – the tank farm assessment is in preparation as part of the SWMU assessment required in the Post-closure Care Permit. Interim measures consisting of recovery of phase-separated hydrocarbons have been conducted for the previous six years and are ongoing on an intermittent basis. Separate-phase hydrocarbon thickness generally has been reduced to a sheen. Petroleum-related contamination is present in subsurface soils and groundwater. Based on the available data, petroleum-related contamination is not present in surface soils at the Tank Farm therefore incidental human exposures are currently controlled at this unit. Potential human exposures via excavation and construction activities are controlled by Giant Refinery restrictions and requirements for performing work at the refinery and the health and safety SOPs required within the refinery facility.

SWMU #7 – Fire Training Area – the Fire Training area remains in use. Previous investigations have detected diesel-range hydrocarbon contamination in soils at depths less than 5 feet below the ground

surface. Petroleum-related surface soil contamination is present at the Fire Training Area; however, a concrete cap has been emplaced beneath the training structures and equipment in order to contain any releases of diesel fuel that may occur during the training exercises. In addition, human exposures are controlled by limiting access to the Fire Training Area to those occasions when training is actively taking place and by implementing the Giant Refinery Health and Safety SOPs as part of the training exercises. The Fire Training Area will be evaluated in the SWMU assessment required in the Post-closure Care Permit.

SWMU #8 – Railroad Rack Lagoon – the Railroad Rack Lagoon is currently undergoing corrective action. Corrective action at the unit consists of excavation and removal of contaminated soils. Human exposures are controlled by limiting access to the Railroad Rack Lagoon and implementation of health and safety procedures in accordance with the Giant Refinery SOPs for performing work within the refinery facility. Groundwater contamination has not been detected in the vicinity of the Railroad Rack Lagoon to date.

SWMU #9 – Inactive Landfarm and Drainage Ditch – land treatment of oily waste was discontinued in the early 1980s at this unit. A site investigation was conducted in the early 1990s that included soil sampling and analyses. Relatively low concentrations of organic compounds and metals were detected during the investigation. The results of the investigation and the need for further site assessment will be discussed in the SWMU assessment required in the Post-closure Care Permit. The site has naturally revegetated since land farming activities were discontinued. Human exposures are controlled at the unit by the facility access restrictions outlined in the Giant Refinery SOPs and by the vegetative cover on the unit that acts as a dust suppression mechanism.

SWMU #10 – Sludge Pits – the sludge contained in the Sludge Pits was removed in 1980 and the excavation was backfilled with clean soil. The pits were then capped with a layer of clean soil and revegetated. The evaluation of residual hydrocarbons in subsurface soils has been completed and will be submitted as part of the SWMU assessment required by the Post-closure Care Permit. Human exposures are controlled by the presence of the clean soil cap, by restricted access to the unit and by the construction restrictions and health and safety requirements included in the Giant Refinery SOPs for performing work within the refinery facility.

SWMU #11 – Secondary Oil Skimmer – the Secondary Oil Skimmer has been removed. Residual petroleum-related contamination is present in surface and subsurface soils in the vicinity of the location of the former Secondary Oil Skimmer. Giant Refining Company has recommended excavation and removal of the contaminated soils. Human exposures are controlled by limiting access to the location of the former Secondary Oil Skimmer and by the health and safety procedures and work restrictions outlined in the Giant Refinery SOPs for performing work within the refinery facility.

SWMU #12 – Contact Wastewater Collection System – Giant Refining Company is in the process of upgrading the wastewater collection system that includes replacement of piping and the separation of the storm water and wastewater collection systems. Human exposures are controlled by limiting access to the Contact Wastewater Collection System, limiting access to the excavations and work areas exposed during the replacement of piping and ancillary equipment and by implementing the health and safety procedures outlined in the Giant Refinery SOPs for performing work within the refinery facility.

SWMU #13 – Drainage Ditch Between the API Evaporation Ponds and the Neutralization Tank Evaporation Ponds – this Ditch conveys water to the northernmost evaporation ponds at the refinery. The Ditch is being evaluated in conjunction with the Evaporation Ponds. Further investigation may be required to evaluate petroleum-related subsurface soil and groundwater contamination. Human exposures are controlled by Giant Refinery SOPs for performing work at the refinery facility and by controlling access to the unit which is located to the west of the refinery process areas.

SWMU #14 – API Separator – the API Separator is an active wastewater treatment unit. This SWMU was added to the list of SWMUs at the Ciniza Refinery in the Post-closure Care Permit issued in September 2000. Giant Refining Company is required to characterize the nature and extent of contamination in the vicinity of the API Separator as a condition of the Corrective Action Module of the Post-closure Care Permit. Human exposures are controlled by implementation of the Giant Refinery SOPs for health and safety compliance and for performing work at the facility and by limiting access to the unit.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
~~Groundwater~~	___	___	___	___	___	___	___
~~Air (indoors)~~	___	___	___	___	___	___	___
Soil (surface, e.g., <2 ft)	_No	_No	_No	_Yes	_No	_No	_No
~~Surface Water~~	___	___	___	___	___	___	___
~~Sediment~~	___	___	___	___	___	___	___
Soil (subsurface e.g., >2 ft)	_No	_No	_No	_Yes	_No	_No	_No
~~Air (outdoors)~~	___	___	___	___	___	___	___

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): _____

There is potential for worker exposure during excavation activities at the refinery process areas and at the following SWMUs: Aeration Basin, Evaporation Ponds, Evaporation Ponds Drainage Ditch, Fire Training Area, Railroad Rack Lagoon, Contact Wastewater Collection System and API Separator [RCRA Post-closure Care Permit Application, Part B Volumes I – III, (Giant Refining Company, 2000).

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

There is one potentially complete exposure pathway at the Facility. The potentially complete exposure pathway scenario is that of a trench worker exposed during construction activities. Human exposures are controlled during excavation and construction activities by restricting access and activities within the refinery facility, requiring work permits that limit excavation and construction activities, implementing procedures that require conformance with health and safety requirements and by monitoring work activities throughout the refinery. Proper notification of encounters with contaminated media are part of the facility SOPs, interim measures and remedial action are required to be implemented if contamination in any media is encountered (Giant Refining Company Safe Work Procedures (2000) [SOPs] for compliance with Federal OSHA and New Mexico OSHA Health and Safety Standards and the Giant Refining Company Operating Procedures (2000) [SOPs] for performing work at the Giant Refining Company, Ciniza refinery)

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):_____

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_YE_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the _____ _____ facility, EPA ID #_____, located at _____ under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____
(print)
(title)

Supervisor (signature) _____ Date 6/8/01
(print) STEPHEN POLCN
(title) WRPS I
(EPA Region or State) New Mexico

Locations where References may be found:

Giant Refining Company, Ciniza Refinery, McKinley County, New Mexico
U.S.Interstate 40, Exit 17

New Mexico Environment Department Hazardous Waste Bureau
2905 Rodeo Park Drive East Building 1, Santa Fe New Mexico 87505

Contact telephone and e-mail numbers

(name) Dave Cobrain
(phone #)
(e-mail) david_cobrain@nmenv.state.nm.us

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.