DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

NM ENVIRONMENT DEPARTMENT
RECEIVED
JUL 09 2001
DISTRICT 1 OFFICE

Current Human Exposures Under Control

Facility Name: *_Holloman Air Force Base_____*
Facility Address: *_49 CES/CEV, 550 Tabosa Ave_____*
Facility EPA ID #: *_Holloman AFB, NM 88330-8458_____*

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 which 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)?

Varies from site to site; mainly groundwater and soils impacted.
See attached table, "TABLE H-1: CA725 - Question 2 and 6 Responses"

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			**See attached table, Table H-1**
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft	X			
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			
Air (outdoors)		X		

For SWMUs/AOCs with response "NONE" under "Media" column on Table H-1:

__X__ 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.

For SWMUs/AOCs with response OTHER THAN "NONE" under "Media" column on Table H-1: SWMUs 39, 82, 104, 105, 108, 115, 116, 127, 135, 137, 170, 197, 229, 113A, 113B, AOC-L, AOC-T and AOC-V:

_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.

For SWMU 183:

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

Rationale and Reference(s): Forty-seven SWMU/AOCs were evaluated from Holloman AFB's HSWA permit. All units are on Table A.1 of the permit. Also, they are all located within the base's boundaries. All units have been remediated, have institutional controls (e.g., land restrictions, caps, etc…), or are in the process of being remediated with an appropriate system in place.

In general, groundwater, surface soil, and subsurface soils have been investigated. The investigations were conducted under the Department of Defense's Installation Restoration Program (also known as the Environmental Restoration Program) and HAFB's RCRA Corrective Action Program. At least one quantitative risk assessment (RA) was conducted for all sites except AOC-V (Officer's Club). Many sites had more than one RA conducted. This information as well as any corrective measures taken following the RA (i.e., cap construction at SWMU 197) have been taken into consideration.

The attached table, *CA725-HAFB Jun01*, contains the pertinent data. The latest data is reported gathered from previous investigations (e.g., RCRA Facility Investigations) or from Holloman's groundwater Long-Term Monitoring program where applicable.

The attached sheet contains site information where appropriate.

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

All sites listed under Question 2 DO NOT have complete pathways. This is reflected in the response below. References are given in the Question 2 response. Rationale for remaining sites is discussed below.

Th following is specifically for SWMUs/AOCs: SWMUs 39, 82, 104, 105, 108, 115, 116, 127, 135, 137, 170, 197, 229, 113A, 113B, AOC-L, AOC-T and AOC-V

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	_No_	No_	No_	No_			_No_
~~Air (indoors)~~	___	___	___				
Soil (surface, e.g., <2 ft)	No_	No_	No_	No_	No_	No_	No_
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
Soil (subsurface e.g., >2 ft)				_ 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.

__X__ 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).

_____ 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): Where contaminants of concern (COC) were identified (see Question 2 response), quantitative risk assessments identified no complete pathways. These assessment are in large part due to the non-potable status of the underlying aquifer below HAFB where TDS is greater than 10,000 mg/L.

See attached Table H-1

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.

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)?

SKIPPED per instructions….

_____ 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):_____

[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.

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

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

SKIPPED per instructions…

_____ 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):

For ALL SWMU/AOCs except SWMU 183:

__X_ 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 **Table A.1 sites except SWMU 183 (see attached table given in response to question 2)**__ facility, EPA ID **#_NM6572124422**_____, located at ___**Holloman AFB** NM_ 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."

For SWMU 183:

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

Signed ① Cornelius Amindyas, NMED/HWB Date 07/10/01

Completed by **(signature)** _____ **Date** 3 Jul 01
(print) **Jose A. Gallegos**
(title) **Restoration Element Leader, Environmental Engineer**

Supervisor **(signature)** John R. Poland **Date** 3 July 01
(print) **John R. Poland**
(title) **Chief, Environmental Flight**
(EPA Region or State) **New Mexico**

NMED - HWB
JOHN E. KIELING
Signed ② _____ Date 7/10/01 DAT

Locations where References may be found:

References may be found at the Environmental Flight, Building 55 at Holloman AFB. Also, the same documents have been filed with the New Mexico Environment Department Hazardous Waste Bureau, formerly, the Hazardous and Radioactive Materials Bureau or HRMB. Many of the documents also are part of Holloman's Information Repository located at the City of Alamogordo (NM) Public Library.

Contact telephone and e-mail numbers

(name)_ Jose A. Gallegos
(phone #)__505-572-5395
(e-mail)___josea.gallegos@holloman.af.mil

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.

ATTACHMENTS AVAILABLE UPON REQUEST