

Technical Support Document

Exclusion/Inclusion of Solid Waste Management Units and Areas of Concern

Permit Module VII Corrective Action for Solid Waste Management Units



Waste Isolation Pilot Plant
EPA No. NM4890139088

New Mexico Environment Department
October 27, 1999

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ACRONYM/SYMBOL LIST

AL	Subpart S Action Level
AOC	Area of Concern
As	Arsenic
Ba	Barium
BLM	Bureau of Land Management
bls	Below Land Surface
CAP	RCRA Corrective Action Plan
Cd	Cadmium
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
CMI	Corrective Measures Implementation
Cr	Chromium
CSF	Cancer Slope Factor
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
HBL	Health-Based Level
HEAST	Health Effects Assessment Summary Tables
Hg	Mercury
HI	Hazard Index
HSWA	1984 Hazardous and Solid Waste Amendments
HWMU	Hazardous Waste Management Unit
IEUBK	Integrated Exposure Uptake Biokinetic Model
IRIS	Integrated Risk Information System
KCl	Potassium Chloride
LWA	Land Withdrawal Act
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
Ni	Nickel
NaCl	Sodium Chloride
NAPL	Non-Aqueous Phase Liquid
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMHWHA	New Mexico Hazardous Waste Act
NOAEL	No Observed Adverse Effect Level
Pb	Lead
PR	Preliminary Review
PRG	Preliminary Remediation Goal
RA	Release Assessment
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RfC	Reference Concentration
RfD	Reference Dose
RFI	RCRA Facility Investigation
SAA	Satellite Accumulation Area
Se	Selenium
SL	Region 6 Media-Specific Screening Level
SSL	Generic Soil Screening Level

ACRONYM/SYMBOL LIST (CONT.)

SV	Sampling Visit
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
THQ	Target Hazard Quotient
Tl	Thallium
TSD	Technical Support Document
VC	Vinyl Chloride
VRA	Voluntary Release Assessment
VSI	Visual Site Inspection
WIPP	Waste Isolation Pilot Plant

TECHNICAL SUPPORT DOCUMENT

**EXCLUSION/INCLUSION OF
SOLID WASTE MANAGEMENT UNITS AND
AREAS OF CONCERN**

**PROPOSED FINAL PERMIT MODULE VII
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS**

**WASTE ISOLATION PILOT PLANT, NEW MEXICO
EPA NO. NM4890139088**

1.0 PURPOSE

The Hazardous and Radioactive Materials Bureau of the New Mexico Environment Department (**NMED**) has prepared this Technical Support Document (**TSD**) to provide the rationale for the exclusion of seventy-one (71) Solid Waste Management Units (**SWMUs**) from, and the inclusion of eighteen (18) SWMUs and eight (8) Areas of Concern (**AOCs**) in, Module VII (Corrective Action for Solid Waste Management Units) of the proposed final Permit (NMED 1999) for the U.S. Department of Energy's (**DOE**) and Westinghouse Waste Isolation Division's (**WID**) Waste Isolation Pilot Plant (**WIPP**). This TSD is not part of the Permit.

The following figures depict all SWMUs addressed in this TSD:

Figure 1 (Location of SWMU Mud Pits and Landfills within the WIPP Site Boundary);

Figure 2 (Location of SWMUs Where Voluntary Release Assessments Have Been Completed);

Figure 3 (Location of Material Storage and Stockpile Area SWMUs within the WIPP Site Boundary);

Figure 4 (WIPP Surface Facilities and Evaporation Pond and Holding Pond SWMUs); and

Figure 5 (WIPP Underground Facilities and SAA and Shaft Sump SWMUs).

Table 1 lists those SWMUs excluded from the proposed final Permit (NMED 1999). Table 2 lists those SWMUs included in the proposed final Permit and a Schedule of Compliance for corrective action. Table 2A lists those SWMUs included in the proposed final Permit but not requiring corrective action. Table 3 lists those AOCs included in the proposed final Permit (NMED 1999).

This TSD consists of the following sections:

Section 2.0 provides background information on the statutory and regulatory authorities pertinent to NMED's decisions regarding Module VII.

Section 3.0 discusses pertinent definitions such as solid waste management unit, area of concern, hazardous waste, and hazardous waste constituent.

Section 4.0 summarizes the regulatory guidance used by NMED in preparing Module VII.

Section 5.0 provides a description of the facility.

Section 6.0 provides a description of the site.

Section 7.0 provides NMED's rationale for the selection of soil as the medium of concern for the RFI.

Section 8.0 describes documentation relevant to Module VII.

Sections 9.0 and 10.0 provide DOE's rationale for its no further action requests, and NMED's determinations for SWMUs included/excluded in the voluntary release assessment.

Section 11.0 summarizes DOE's proposed final remedies for three mud pits.

Section 12.0 discusses the public review and comment period for NMED's permit decision.

2.0 STATUTORY AND REGULATORY AUTHORITIES

Title 20 of the New Mexico Administrative Code (**NMAC**) Section 4.1.500 (incorporating 40 CFR §264.101(a)) and Sections 74-4-4.A.5.h and 74-4-4.2.B of the New Mexico Hazardous Waste Act (**NMHW**A) require that "the owner or operator of a facility seeking a permit for the treatment, storage, or disposal [after April 8, 1987 under the NMHW]A of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit [SWMU] at the facility, regardless of the time at which waste was placed in such unit." Section 4.1.500 (incorporating 40 CFR §264.101(b)) requires that "corrective action will be specified in the permit in accordance with this section and Subpart S of this part. The permit [Module VII of the proposed final Permit (NMED 1999)] will contain schedules of compliance for such corrective action...."

3.0 PERTINENT DEFINITIONS

3.1 Solid Waste Management Unit

A solid waste management unit (**SWMU**) is "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been

routinely and systematically released." The definition includes regulated units (i.e., landfills, surface impoundments, waste piles, and land treatment units), but does not include passive leakage or one-time spills from production areas and units in which wastes have not been managed (e.g., product storage areas) (EPA 1990; page 30808).

The SWMUs listed in Tables 1, 2, and 2A of this TSD were identified in the RCRA Facility Assessment (RFA) Report (NMED 1994), Revision 6 of the RCRA Part B Permit Application (DOE 1996e), in a DOE data summary report (DOE 1996f), and in Revision 6.3 to Chapter J of the RCRA Part B Permit Application (DOE 1997c).

3.2 Area of Concern

An area of concern (AOC) is "any discernable unit or area which, in the opinion of the Administrative Authority, may have received solid or hazardous waste or waste containing hazardous constituents at any time. The Administrative Authority may require investigation of the unit to determine if it is a SWMU. If shown to be a SWMU by the investigation, the AOC must be reported by the Permittee as a newly-identified SWMU. If the AOC is shown not to be a SWMU by the investigation, the Administrative Authority may determine that no further action is necessary and notify the Permittee in writing."

The AOCs listed in Table 3 of this TSD were previously identified as SWMUs in the RFA Report (NMED 1994), Revision 6 of the RCRA Part B Permit Application (DOE 1996e), and in a Final SWMU Assessment Report (DOE 1997a). As set forth below, NMED has redesignated these SWMUs as AOCs in Module VII of the proposed final Permit (NMED 1999).

3.3 Hazardous Waste

A hazardous waste is a "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed" (Section 1004[5] of RCRA). This definition includes those wastes specifically listed and identified pursuant to 20 NMAC 4.1.200 (incorporating 40 CFR §261) (Section 3001 of RCRA).

3.4 Hazardous Waste Constituent

A hazardous waste constituent is any constituent identified in 20 NMAC 4.1.200 (incorporating 40 CFR §261 Appendix VIII), or any constituent identified in 20 NMAC 4.1.500 (incorporating 40 CFR §264 Appendix IX) (EPA 1990, page 30809).

4.0 REGULATORY GUIDANCE

The following subsections of this TSD describe the regulatory guidance documents used to draft Module VII.

1. Proposed Subpart S Rule (EPA 1990);
2. RCRA Corrective Action Plan (EPA 1994a);
3. Guidance for the Evaluation of No Further Action Proposals (NMED 1995); and
4. Region 6 Model Hazardous and Solid Waste Amendments (**HSWA**) Permit (1995b).

The corrective action process under NMHWA is also outlined for informational purposes.

4.1 Proposed Subpart S Rule, RCRA Corrective Action Plan, and the Corrective Action Process under NMHWA

4.1.1 Proposed Subpart S Rule

The U.S. Environmental Protection Agency (**EPA**) proposed Subpart S to 40 Code of Federal Regulations (**CFR**) Part 264 (EPA 1990, pages 30798-30884) to establish a comprehensive set of procedural and technical standards for investigation and cleanup of facilities that receive permits for managing hazardous wastes under RCRA. This proposed rule provides a regulatory framework for implementing the requirements of 20 NMAC 4.1.500 (incorporating 40 CFR §264.101) (Sections 74-4-4.A.5.h and 74-4-4.2 of the NMHWA). This framework is discussed in Section 4.1.3 (Corrective Action Process under NMHWA) of this TSD.

4.1.2 RCRA Corrective Action Plan

EPA issued the Final RCRA Corrective Action Plan (**CAP**, EPA 1994) to aid regulators in implementing the corrective action program pursuant to 20 NMAC 4.1.500 (incorporating 40 CFR §264.101) (Sections 74-4-4.A.5.h and 74-4-4.2 of the NMHWA). The CAP provides a framework for developing schedules of compliance to be included in a permit and outlines the scope of work for the main components of the corrective action process. These main components are discussed in Section 4.1.3 (Corrective Action Process under NMHWA) of this TSD.

4.1.3 Corrective Action Process Under NMHWA

A RCRA facility is generally brought into the corrective action process at the time the authorized regulatory agency is considering a RCRA permit application for the facility. These permit applications would be for the treatment, storage, and/or disposal of RCRA wastes.

The process begins with a RCRA Facility Assessment (**RFA**) conducted by the appropriate state agency or EPA. The subjective nature of an RFA requires that the regulatory agency conduct these investigations. The RFA is a three-stage process (EPA 1986) for:

- Identifying and gathering information on releases at RCRA facilities;
- Evaluating SWMUs and other areas of concern for releases to all media and regulated units for releases to media other than ground water;
- Making preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility; and
- Screening from further investigation those SWMUs which do not pose a threat to human health or the environment.

The RFA includes a preliminary review (**PR**) of existing information available on the facility, a visual site inspection (**VSI**) for evidence of releases, and (if necessary) a sampling visit (**SV**) to fill data gaps that remain upon completion of the PR and VSI by obtaining sampling and field data. The regulatory agency uses the information obtained from the RFA Report and the RCRA Part B Permit Application to determine whether certain SWMUs should be included in a draft Permit under a Schedule of Compliance.

A Release Assessment (**RA**) may be performed at any time between the RFA and issuance of a draft Permit. This RA could serve as an update to the RFA Report and would provide additional information to the regulator during the drafting of the draft Permit for the facility¹.

SWMUs identified in the RFA Report, the Part B Permit Application, and/or the RA would be included in a draft Permit and a Schedule of Compliance if the regulator identifies releases or potential releases of hazardous wastes or constituents and determines that additional investigations are required to ensure protection of human health and the environment. This Schedule of Compliance generally requires, among other things, the Permittee to conduct a RCRA Facility Investigation (**RFI**). The purpose of an RFI is to characterize the nature and the full vertical and horizontal extent of contamination at the facility.

If, on the basis of the RFI, the regulator determines that a cleanup or other type of remedy is likely to be necessary, the Permittee must conduct a Corrective Measures Study (**CMS**) to identify possible remedies for the site. After selection of a remedy and public review

¹ As discussed in subsequent sections of this TSD, DOE performed a Voluntary Release Assessment (**VRA**) for several SWMUs at the facility and requested NFA determinations based on the results of sampling activities and information supplemental to the RFA Report.

and comment, the Permittee implements the remedy during the Corrective Measures Implementation (**CM**) phase of the corrective action process.

4.2 Guidance for the Evaluation of NFA [No Further Action] Proposals

NMED's DOE Oversight Bureau (Technical Support Program) developed the Guidance for the Evaluation of NFA [No Further Action] Proposals (NMED 1995)² in order to maintain a consistent approach to the evaluation of NFA proposals. This document outlines the criteria, guidelines for evidence, and definitions used during the evaluation process. Table 4 (Guidance for Evaluation of No Further Action Proposals) of this TSD lists the NFA criteria and guidelines for evidence used by NMED in this permit decision. SWMUs excluded from Module VII of the proposed final Permit met the relevant required criteria. For example, if a SWMU satisfies NFA Criteria 3 (no release of hazardous constituents to the environment), it is impossible to satisfy a higher numbered criteria such as NFA Criteria 4 (there was a release, but at acceptably low levels). Throughout their documentation in support of NFA for particular SWMUs, the DOE consistently exhibited a misunderstanding of these guidelines by claiming the data supported NFA under two or three mutually exclusive criteria (i.e., the site was not used for the management of hazardous constituents **and** there was no release of hazardous constituents to the environment [contradicting the assumption the site was not used for the management of hazardous constituents] **and** there was a release, but at acceptably low levels [contradicting the assumption there was no release]). NMED determined the appropriate NFA criteria which had to be satisfied for each SWMU evaluated.

4.3 Region 6 Model HSWA Permit

EPA (Region 6) developed the Model HSWA Permit (EPA 1995b) based on the guidance provided in the RCRA CAP and comments provided by EPA technical staff. NMED used this model permit to develop Module VII of the proposed final Permit (NMED 1999) for the WIPP.

5.0 FACILITY DESCRIPTION

The DOE submitted a RCRA Part B Permit Application to the NMED on April 12, 1996 (DOE 1996e), for a permit to store and dispose Contact-Handled (**CH**) and Remote-Handled (**RH**) transuranic (**TRU**)-mixed wastes in an underground geologic repository located 2,150 feet below the land surface (**bls**) in a bedded salt formation known as the Salado Formation. Pursuant to the RCRA Permit which NMED intends to issue, WIPP operations will entail receiving, unloading, and transferring CH TRU mixed waste only from the surface facilities to the underground hazardous waste management units (**HWMUs**). CH TRU mixed wastes will be received and unloaded in the Waste Handling Building, transferred to

² Although this document was developed in order to maintain a consistent approach to the evaluation of NFA proposals, it does not represent the regulatory position of the NMED (Hazardous and Radioactive Materials Bureau).

the underground via the Waste Handling Shaft, and disposed of in the HWMUs.

The facility is located 26 miles east of Carlsbad on Jal Highway in Eddy County, New Mexico. The facility boundary corresponds to a 16-section (16 mi²) Federal land area, known as the WIPP Land Withdrawal Act (**LWA**) Area, under the jurisdiction of the DOE. DOE's mailing address is:

U.S. Department of Energy
Carlsbad Area Office
P.O. Box 3090
Carlsbad, NM 88221

6.0 SITE DESCRIPTION

The following subsections of this TSD discuss the climatological and meteorological characteristics, geology and ground water/surface water hydrology, and terrestrial and aquatic ecology of the WIPP site.

6.1 Climatological and Meteorological Characteristics

The climate of the WIPP site is characterized as semiarid, with generally mild temperatures (mean annual temperature of 63°F), low precipitation and humidity, and a high evaporation rate. The average annual precipitation at the site is approximately 12 inches, half received during the summer months from frequent thunderstorms. DOE estimates that at least 96 per cent of precipitation is lost due to evapotranspiration and that the annual amount of infiltration is estimated at less than 0.5 inches per year (DOE 1996e). Prevailing winds are from the southeast.

6.2 Geology and Ground Water/Surface Water Hydrology

6.2.1 Geology and Ground Water Hydrology

The WIPP site is located within the Delaware Basin. During the Permian Period, ancient seas which covered the basin later evaporated resulting in the deposition of a sequence of predominantly evaporites.

The stratigraphy of the geologic units underlying the WIPP site, from oldest to youngest, consist of the following formations and soils: Bell Canyon, Castile, Salado, Rustler, Dewey Lake Red Beds, Santa Rosa, Gatuña, Mescalero Caliche, and surficial deposits. Only the lithologic and hydrologic properties of the Dewey Lake Red Beds and younger formations are discussed for purposes of this TSD.

The Dewey Lake Red Beds Formation, which conformably overlies the Rustler, is considered the uppermost water-bearing unit of concern at the site. The formation, consisting predominantly of a reddish brown sandstone to siltstone or silty claystone, occurs at a depth of 20 to 40 feet at the southern end, 70 to 100 feet along the central axis,

and 130 to 220 feet at the eastern end of the site. The ground water occurs perched or semi-perched in lenticular sands in the upper Dewey Lake. The productive water zone is typically found in the middle of the Dewey Lake approximately 180 to 265 feet bls (DOE 1996c).

The Santa Rosa Formation consists of coarse-grained rocks and conglomerates. The unit is relatively thin to absent within the WIPP site boundary and is thicker to the east. Near the WIPP site, the Santa Rosa has a saturated thickness from 1 to 2 feet and occurs in lenses that are very limited in extent (DOE 1996e).

The Gatuña Formation consists of a discontinuous deposit of friable poorly sorted, pale, reddish brown silty sandstone, with localized mudstone and gravelly beds. The thickness of the Gatuña is not considered to be regionally consistent. Nine (9) feet of undisturbed Gatuña were reported in the Air Intake Shaft at the WIPP site (DOE 1996c).

The Mescalero Caliche, which underlies the surficial sand deposits, is expected to be continuous over much of the WIPP site area and consists of well cemented sands and gravels. The unit, about ten (10) feet thick in most areas, may be locally absent (DOE 1996e).

Of the three soil associations within 5 miles of the WIPP site, only the Kermit-Berino have been mapped across the WIPP site (DOE 1996e). These are sandy soils developed on eolian material and include predominantly active dune areas.

6.2.2 Surface Water Hydrology

The WIPP site is located in the Pecos River basin. The Pecos River is located about 12 miles from the southwestern boundary of the WIPP site. There are no perennial streams at the WIPP site and there are no major natural lakes or ponds within 5 miles of the site.

6.3 Terrestrial and Aquatic Ecology

6.3.1 Vegetation

The vegetation occurring at the WIPP site is dominated by shinners oak, mesquite, sand sage, dune yucca, smallhead snakeweed, three-awn, and cacti (DOE 1996e). Dominating shrubs provide food and shelter for many wildlife species inhabiting the WIPP site.

6.3.2 Mammals

Mammals inhabiting the WIPP site include the black-tailed jack rabbit, desert cottontail, Ord's kangaroo rat, plains pocket mouse, northern grasshopper mouse, mule deer, pronghorn antelope, and coyote (DOE 1996e).

6.3.3 Reptiles and Amphibians

Reptiles inhabiting the WIPP site include the side-blotched lizard, western box turtle, western whiptail lizard, bullsnake, prairie rattlesnake, and western diamondback rattlesnake. Amphibians, restricted to stock-watering ponds and tanks, include turtles, salamanders, frogs, and toads (DOE 1996e).

6.3.4 Birds

Birds inhabiting the WIPP site include the loggerhead shrike, pyrrhuloxia, black-throated sparrow, and Harris hawk (DOE 1996e).

6.3.5 Arthropods

Many insect species are known to exist at the WIPP site. Termites are located across the study area (DOE 1996e).

6.3.6 Aquatic Ecology

Stock-watering ponds and tanks constitute the only permanent surface waters within 5 miles of the WIPP site. The amphibians listed in Section 6.3.3 (Reptiles and Amphibians) of this TSD are frequently found in these ponds and tanks, along with fish sometimes stocked in these ponds (DOE 1996e).

6.3.7 Endangered Species

The threatened or endangered species occurring or possibly occurring at the WIPP site include the Lee pincushion cactus and Pecos gambusia (DOE 1996e).

7.0 MEDIA INCLUDED/EXCLUDED FROM INVESTIGATION DURING THE RCRA FACILITY INVESTIGATION

NMED has determined that soil is the only medium that has the potential to be impacted by releases of hazardous wastes or constituents from the surface SWMUs identified at the facility and is the only medium proposed for investigation under a Schedule of Compliance in Module VII of the proposed final Permit (NMED 1999). Ground water, surface water, and air are not considered likely contaminant pathways at the WIPP site and are not proposed for investigation unless RFI activities reveal otherwise.

7.1 Soil Medium

As discussed in the RFA Report (NMED 1994), the release potential to soils from each SWMU identified during the RFA is high.

7.2 Ground Water Medium

The site's semi-arid climate, low rainfall and infiltration rate, high evaporation rate, and depth/amount of ground water reduce the likelihood that hazardous waste constituents will migrate to the ground water medium. Additionally, the Mescalero Caliche, although not continuous throughout the site, most likely provides a barrier to any downward contaminant movement. Therefore, NMED has determined that the ground water medium will not be investigated during the proposed RFI. However, NMED has determined that the ground water medium must be investigated if the permitted RFI activities show that significant leaching of contaminants has occurred that could present a threat to human health and the environment through the ground water pathway.

7.3 Surface Water Medium

The distance of any major lakes, ponds, or rivers from the WIPP site (over 5 miles) negates the possibility that hazardous waste constituents could be released into surface waters from individual SWMUs. Therefore, NMED has determined that the surface water medium does not require investigation during the proposed RFI.

7.4 Air Medium

NMED has determined that the air medium will not be investigated during the proposed RFI because it will not be affected by releases of hazardous waste constituents from individual SWMUs. However, NMED has determined that the air medium must be investigated if the permitted RFI activities show that significant releases of contaminants are occurring that could present a threat to human health and the environment through the air pathway.

8.0 DOCUMENTATION RELEVANT TO MODULE VII OF THE PROPOSED FINAL PERMIT

In drafting Module VII of the proposed final Permit for the WIPP, NMED considered the technical information provided in the RFA Report (NMED 1994), Part B Permit Application (DOE 1996e, 1997c), Voluntary Release Assessment (VRA) Workplan (DOE 1995), VRA Data Summary Reports No. 1, 2, 3, and 4 (DOE 1996a, 1996b, 1996d, and 1996f, respectively), the Final Voluntary Release Assessment Corrective Action Report (DOE 1996h), the Final Solid Waste Management Unit Assessment Report (DOE 1997a), and Supplemental Information Requested by NMED for SWMUs (DOE 1997b). Following issuance of the draft Permit on May 15, 1998, and with issuance of a revised draft Permit on November 13, 1998, NMED received and considered additional information provided by DOE and others submitted during each public comment period. These documents included Human Health and Ecological Risk Assessment WIPP SWMUs (DOE 1998a), Comments on the Draft Hazardous Waste Facility Permit for the WIPP (DOE 1998b), Tables and Appendices Included by Reference in DOE's Comment 127 for the WIPP SWMUs (DOE 1998c), Supplemental Information and Documentation for SWMUs and AOCs at the WIPP (DOE 1998d), Comments on the Second Draft Hazardous Waste Permit for the WIPP (DOE 1998e),

and Additional Comments on the Second Draft Hazardous Waste Permit for the WIPP (DOE 1999). The following subsections of this TSD summarize the information contained in each document.

8.1 RCRA Facility Assessment Report

RFA activities (e.g., preliminary reviews, visual site inspections, and sampling visits) were performed by the NMED between September and May 1993. The results of this investigation are presented in the RFA Report (NMED 1994) which describes each SWMU in detail and provides information on release and exposure potentials. Representatives of NMED and EPA performed an additional VSI on April 11, 1996.

8.2 RCRA Part B Permit Application

DOE identified the SWMUs from the RFA Report (NMED 1994) along with several newly identified SWMUs in the RCRA Part B Permit Application (DOE 1996e 1997c, Chapter J and Appendix J1). The DOE Supplemented this information in VRA Data Summary Report No. 4 (DOE 1996f). The Part B Permit Application (DOE 1996e 1997c) briefly describes each SWMU and provides some information on waste descriptions and release information.

8.3 Voluntary Release Assessment

The preamble to the Proposed Subpart S Rule (EPA 1990; page 30798) states that "the Agency intends to remove regulatory disincentives to independent action by facility owner/operators and will encourage voluntary cleanups." Regulators recognize that it is important to allow willing and responsible owner/operators to begin corrective action promptly without procedural delays (e.g., issuance of a permit and corrective action schedule of compliance). The purpose of these actions are to help determine at the earliest possible time whether there has been a release from a SWMU and assess whether expedited corrective actions are needed to protect human health and the environment.

On February 28, 1995, representatives of the EPA, NMED, and DOE began discussions concerning the performance of voluntary corrective actions for certain SWMUs at the WIPP site. During the meeting, the participants discussed issues pertinent to the corrective action process under HSWA and NMHWA. EPA discussed the "action level" concept, the "release assessment" phase of the corrective action process, and provided clarification of the definitions for "hazardous waste" and "hazardous waste constituents" within the context of corrective actions. EPA provided a brief overview of the applicable guidance documents and distributed copies of the Proposed Subpart S Rule (EPA 1990), Proposed Subpart S Implementation Strategy (EPA 1994b), Final RCRA Corrective Action Plan (EPA 1994a), and RCRA Facility Investigation Guidance (EPA 1989). EPA agreed to perform technical reviews of any documents submitted by DOE prior to public

noticing of a draft permit to ensure compliance with HSWA requirements and consistency within the RCRA corrective action program³.

8.3.1 Voluntary Release Assessment (VRA) Work Plan

On August 1, 1995, DOE submitted a VRA Workplan (DOE 1995) to EPA Region 6. The purpose of this VRA was to supplement the information contained in the RFA Report (NMED 1994) and possibly preclude the inclusion of certain SWMUs from Module VII of the draft Permit (NMED 1998b) for the WIPP.

On December 19, 1995, EPA issued comments to DOE on the VRA Work Plan (DOE 1995). EPA generally agreed that DOE's approach described in the Work Plan was consistent with the corrective action program described in the proposed Subpart S Rule, the RCRA CAP, and specific RFI guidance documents. In these comments, EPA offered numerous recommendations for revising the VRA Work Plan, which DOE never implemented. Also, contrary to assertions by DOE in Comment 176 (DOE 1998e), EPA Region 6 did not "approve" the VRA Work Plan. Any work performed under voluntary corrective action is conducted at risk by the party, precisely because it is *voluntary*. The regulatory agency reserves the authority to determine whether any voluntary release assessment or corrective action work performed is approvable after completion.

As part of the VRA Work Plan submission, DOE requested NFA determinations for SWMUs 003a (Brinderson Landfill), and 003b (New Landfill, Active and Inactive Units); and approval for final remedies at SWMUs 001o (Badger Unit), 001p (Cotton Baby), and 001q (DOE-1). Generally, the proposed remedies entail capping each mud pit with an 18-inch compacted caliche cap in an attempt to effectively immobilize the hazardous waste constituents known to be present in each mud pit.

8.3.2 VRA Work Plan Activities

DOE performed soil sampling activities at the following SWMUs (mud pits and a storage area): SWMUs 001g (H-14/P-1), 001h (H-15/P-2), 001j (P-3), 001k (P-4), 001l (WIPP-12/P-5), 001m (P-6), 001n (P-15), 001s (ERDA-9), 001t (IMC-374), 001x (WIPP-13), and 004a (Portacamp Storage Area). A judgmental approach was taken in the selection of SWMU downgradient and upgradient soil samples. Soil samples were taken from 12-24 and 60-72 inches bls at the mud pits, and 12-24 and 36-48 inches bls at the Portacamp Area.

The layout and location of each SWMU and site meteorological conditions were used in the selection of SWMU soil sample intervals and to predict where possible contamination could exist. Downgradient soil samples, taken from the same stratigraphic horizon as the SWMU

³ EPA had not yet delegated authority to the NMED for the corrective action program under Sections 3004 (u) and (v) of RCRA at the time of these discussions and initiation of voluntary corrective action activities at the WIPP site. NMED has since received authority and implements the corrective action program under Sections 74-4-4.A.5.h and 74-4-4.2 of the NMHWA.

soil samples, were used to estimate the lateral extent of contamination at each specific SWMU.

Background (upgradient) soil sampling and analysis was conducted to distinguish site-related contamination from naturally occurring levels of toxic metals. These background soil samples were collected near SWMU locations in areas believed not to be influenced by site contamination and from the same stratigraphic horizon as the respective SWMU study area samples. A statistical analysis of background soil concentrations was performed after NMED requested it, and is contained in Table 12 of the Supplemental Information Requested by NMED for SWMUs (DOE 1997b). These facility-wide background soil concentrations have been incorporated into the release determinations performed for each SWMU evaluated in the VRA, with the exception of thallium. NMED has determined that the background soil concentration for thallium appears to be an outlier⁴.

8.3.3 Target Analytes for the VRA

The selection of target analytes for the VRA was based primarily on the application of "acceptable knowledge" of the wastes at the facility in conjunction with historical analytical data. Material Safety Data Sheets were reviewed to identify any hazardous constituents that could have been present in each waste stream.

8.3.3.1 Target Analytes for the Drilling Mud Pits

The target analytes for the drilling mud pits were selected based on the hazardous waste constituents known to be present in drilling fluids that may have been used to drill each of the respective boreholes. In addition, historical soil analytical data obtained from SWMUs 001o (Badger Unit), 001p (Cotton Baby), and 001q (DOE-1) were used during the selection process. Following is a listing of the potential waste streams introduced into some or all of the mud pits:

1. Attapulgate drill gel
2. Bentonite gel
3. Diesel fuel
4. Gear grease/lubricants
5. Hydraulic fluids
6. Hydrochloric acid (20% solution)
7. Lignite
8. Meta-trifluorobenzoic acid
9. Metal cuttings
10. Motor oil
11. Portland cement
12. Sodium and potassium chloride saturated brine

⁴ Of 14 background soil samples analyzed, only one background sample detected thallium. That sample was at extremely high concentrations and is therefore considered an outlier. As such, this single sample concentration is suspect, and steps need to be taken to determine whether it is the result of error or a valid extreme observation. Refer to Section 8.5.1, Subsequent Analytical Data Validation, for NMED's review of DOE's validation of thallium data.

13. Starch
14. Soda ash
15. Sodium hydroxide (NaOH)

Tables 5 through 14 list the target analytes selected for the drilling mud pits and the associated analytical data. Table 17 lists each analyte followed by the appropriate EPA analytical method(s) used by DOE for the soil samples obtained during the VRA.

8.3.3.2 Target Analytes for the Portacamp Area (West Side)

The target analytes for the Portacamp Area (West Side) were selected based on the materials historically managed and/or stored in this area. Table 15 lists the target analytes selected for the Portacamp Area and the associated analytical data. Table 18 lists each analyte followed by the appropriate EPA analytical method(s) used by DOE for the soil samples obtained during the VRA.

8.4 Voluntary Release Assessment Data Summary Reports

DOE summarized the results of the VRA in Data Summary Reports No. 1 (DOE 1996a), 2 (DOE 1996b), 3 (DOE 1996d), and 4 (DOE 1996f); the Final Voluntary Release Assessment Corrective Action Report (DOE 1996h); and the Final Solid Waste Management Unit Assessment Report (DOE 1997a). DOE's NFA requests for each SWMU and the results of the VRA sampling activities are discussed in Section 9.0 (DOE's NFA Requests and NMED's Determinations for Each SWMU Included in the Voluntary Release Assessment) of this TSD.

8.4.1 Soil Analytical Data

DOE incorrectly used the Toxicity Characteristic Leaching Procedure (TCLP, EPA Method 1311) to compare TCLP concentrations with EPA actions levels to determine whether the solid wastes present in each SWMU investigated during the VRA posed a threat to human health and the environment. TCLP data cannot be used for site characterization in determining the nature, rate, and extent of contamination, to determine if a release has occurred, or to evaluate exposure and risk to human or ecological receptors. TCLP data does not provide an indication of the hazardous constituent "total" concentrations in the soils. TCLP data are only appropriate for determining whether a solid waste exhibits the characteristic of toxicity as specified in 20 NMAC 4.1.200 (incorporating 40 CFR §261.24) and therefore is a hazardous waste. Multiplying the TCLP analytical values by a factor of 20 (as once proposed by DOE) is a misapplication of the procedure and does not provide the data necessary for a determination of NFA.⁵

⁵ It is inappropriate to multiply the TCLP values by a factor of 20 and extrapolate to "totals" concentrations because the TCLP is not a full analyte extraction procedure. The TCLP is only a measure of the waste's leachability under specific environmental conditions (e.g., wastes in a solid waste landfill). However, it would be appropriate to divide the "totals" concentrations of each hazardous constituent present in the soils by a factor of 20 to obtain a conservative estimate of the TCLP value. The waste would not be considered a RCRA hazardous waste

In Tables 1 and 3 of the VRA Workplan (DOE 1995), DOE provided the proposed EPA analytical methods for characterizing SWMUs at WIPP, which are all totals analytical methods. Subsequently, DOE used totals analytical methods to determine if there had been a release of hazardous constituents from each SWMU investigated during the VRA. In addition, prior to site characterization, DOE tried to determine whether the solid wastes present in each SWMU investigated during the VRA posed a threat to human health and the environment. This latter evaluation is premature because the nature, rate, and extent of contamination have not been characterized at SWMUs and release assessment is not a substitute for site characterization. Therefore, the results of this evaluation cannot be considered at this time. Tables 5-15 provide a summary of the totals soil analytical data presented in the Final Voluntary Release Assessment Corrective Action Report (DOE 1996h).

8.5 Documents Submitted to NMED After Issuance of Draft Permit

DOE submitted Comments on the Draft Hazardous Waste Facility Permit for the WIPP (DOE 1998b) to NMED on August 14, 1998. Comments 120 through 145 addressed issues in Module VII, while comments 146 through 150 addressed this TSD. DOE also submitted additional documents (Human Health and Ecological Risk Assessment WIPP SWMUs (DOE 1998a); Tables and Appendices Included by Reference in DOE's Comment 127 for the WIPP SWMUs (DOE 1998c); and Supplemental Information and Documentation for SWMUs and AOCs at the WIPP (DOE 1998d)) on September 14, 1998, but these three documents failed to meet the comment deadline of August 14, 1998 and NMED could not consider them when revising the draft permit. NMED responded to the August 14, 1998 comments in a Response to Comments document (issued on June 25, 1999) and in the revised draft permit and TSD issued on November 13, 1998.

DOE submitted Comments on the Second Draft Hazardous Waste Permit for the WIPP (DOE 1998e) and Additional Comments on the Second Draft Hazardous Waste Permit for the WIPP (DOE 1999) to NMED. Comments 157, 182 through 184, and 276 addressed issues in Module VII of the revised draft permit, while comment 176 addressed this TSD. Comment 176 specifically requested consideration of previously submitted documents (DOE 1998a; DOE 1998c; DOE 1998d) by NMED. NMED responded to these documents and comments in a Response to Comments Document, the proposed final permit, and this TSD issued on June 25, 1999.

8.5.1 Subsequent Analytical Data Validation

NMED expressed concerns about the unacceptably high detection limits for thallium and PCBs (20 mg/kg for thallium, 100 mg/kg for PCBs) in a previous TSD (NMED 1998a). DOE provided a review which assessed the

if these values do not exceed the regulatory limits specified in Table 1 (Maximum Concentration of Contaminants for the Toxicity Characteristic) of 20 NMAC 4.1.200 (incorporating 40 CFR §261.24). Estimating toxicity from totals concentration is the approach proposed by DOE and incorporated in the Waste Analysis Plan for waste to be disposed in the WIPP Underground Hazardous Waste Disposal Units.

correctness of these detection limits in their Human Health and Ecological Risk Assessment WIPP SWMUs (DOE 1998a).

NMED reviewed DOE's evaluation of thallium and PCB results to determine if the data are acceptable and support the conclusions reached in the report (DOE 1998a). NMED believes the conclusions made regarding the mislabelling of the PCB data are acceptable, and has determined that PCBs are not a constituent of concern in this study.

However, review of the thallium data revealed several issues that raise concerns about the quality and useability of the thallium data. These concerns are presented below:

- The soil detection limit for thallium was 8 mg/kg, which is higher than, for example, the EPA Region 6 human health soil screening level of 6 mg/kg (EPA 1996). Therefore, none of these results conclusively prove that thallium was not detected below 6 mg/kg. NMED concurs that the samples associated with the split samples sent to the RCRA LabNet facility can be demonstrated to be below 6 mg/kg because all results from split samples were at or below a Method Reporting Limit (**MRL**) of 1 mg/kg. However, these results only account for 5% of the total samples. The report (DOE 1998a) did not indicate or provide statistical justification for the number of split samples collected, nor did it provide any indication that the samples were chosen randomly to minimize any bias in the collection process. In the absence of further information, NMED concludes that these samples were chosen based on the availability of sample left over from the previous analysis. It is inappropriate to use these split samples to characterize the whole population because the criteria used to select these samples for additional analysis was not random and was not based on approved statistical methods.
- The report (DOE 1998a) indicated that these detection limits were consistent with the reporting limits provided in Method 6010. Review of method 6010 indicates that the recommended Instrument Detection Limit (**IDL**) for thallium was 27 ug/l. The IDL provided in the report (DOE 1998a) was 80 ug/l. Guidance on calculating the MRL in SW-846 indicates that the MRL may be 5-10 times the IDL. Based on this guidance, IDL for thallium was marginally below the MRL for thallium. However, the fact that this MRL is above, for example, the 6 mg/kg soil screening level assumed in the previous TSD (NMED 1998a) does not allow for the proper evaluation of thallium data nor the conclusion that thallium is absent in these soil samples.
- The reviewer was unable to verify the conversion of instrument results (which were quantitated in mg/L) to the final reported soil results in mg/kg because adequate soil sample preparation results were not provided. The information needed to verify these results are the soil sample aliquots in grams that were subject to digestion; the final volume of digestate; and the percent

moisture of the samples (or an indication that the samples were dried prior to preparation). Variations or deviations from method specifications for sample weights and volumes can significantly impact the final reported soil concentrations. Additionally, samples with high percent moisture can also significantly increase the final soil sample results.

- The report (DOE 1998a) does correctly note that elevated blanks resulted in the qualification of samples RA-96-056, RA-96-085, and RA-96-217. However, further examination of the blank results indicate that they range from 78 to 177 ug/l. Several of the blanks exceed the low end of the MRL standard for thallium in method 6010. As additional comparison, the CLP equivalent to the MRL or Contract Required Detection Limit (CRDL) for thallium associated with the CLP method is 10 ug/l. The blanks exceeded the CRDL for these samples by 7 to 17 times. CLP guidance clearly indicates that the analyses should be terminated and the samples reanalyzed if any blank exceeds the CRDL. In addition, if the method blank is found above the CRDL for a constituent, the samples must also be re-prepared and analyzed. The "USEPA Contract Laboratory Functional Guidelines for Inorganic Data Review" (EPA 1994c) require the reviewer to use professional judgement in assessing the impact of blanks while noting that the analysis should have been terminated. Based on the fact that the blank level is above 6 mg/kg as well as above the low end of the method 6010 MRL, the analyses should have been terminated for these samples.

Data was unavailable to determine whether the blanks associated with the other samples demonstrated equally high thallium levels. NMED would need to review associated blank results from the additional samples to determine if it would have been appropriate to also terminate their analysis as well.

In conclusion, all of the original thallium results are not useable for determining whether thallium is present in these soil samples. The samples are not useable because the laboratory detection limits result in soil sample detection limits that are above, for example, a 6 mg/kg soil screening level, and because extreme thallium blank results raise serious doubts about the viability of the analysis. NMED recommends that any future thallium analysis should be performed by AA methods or through use of Trace ICP that can exhibit IDL values that are sufficiently low enough to allow soil detection limits to be sufficiently below 6 mg/kg.

NMED notes that five SWMUs (001k, 001m, 001n, 001s, and 001t) could have been granted NFA if DOE had chosen to resample for thallium at these SWMUs using an appropriate analytical technique rather than engage in a debate over the usability of the existing data.

9.0 DOE'S NFA REQUESTS AND NMED'S DETERMINATIONS FOR EACH SWMU INCLUDED IN THE VOLUNTARY RELEASE ASSESSMENT

DOE requested NFA for all SWMUs in Data Summary Report No. 4 (DOE 1996f) and in Final Solid Waste Management Unit Assessment Report (DOE 1997a); and for all SWMUs included in the VRA in the Final Voluntary Release Assessment Corrective Action Report (DOE 1996h). The following subsections of this TSD describe each SWMU Group and specific SWMUs included in the VRA, along with DOE's rationale for the NFA requests and NMED's determinations regarding the requests to exclude these SWMUs from Module VII of the proposed final Permit and a Schedule of Compliance. For ease of reference, Table 1 lists each SWMU and provides NMED's rationale for its exclusion from Module VII of the proposed final Permit. Tables 2, 2A, and 3 provide NMED's rationale for inclusion of each SWMU and AOC in Module VII of the proposed final Permit.

The VRA Workplan (DOE 1995) stated that it was:

"... intended to be the first phase in implementing the RCRA Facility Investigation (RFI) corrective action process at the site. Data generated as part of this workplan is intended to update information contained in the *Assessment of Solid Waste management Units at the Waste Isolation pilot Plant*, NMED/DOE/AIP 94/1, (RFA). Release Assessment data will be used to evaluate and develop the appropriate corrective actions required for each SWMU."

The RCRA CAP (EPA 1994a) states that a release assessment

"... may serve as an update to the RFA if there is some uncertainty about releases after the RFA... In addition, it may help determine if there has been a release to ecological/living resources.

"The release assessment may help determine if the RFI should focus on one area before another and/or if interim/stabilization measures are necessary. Therefore the release assessment should be viewed as an optional step to minimize corrective action activities (i.e., by focusing or streamlining the RFI) and not as an added step in the process."

The RCRA CAP also provides several example alternatives to the traditional corrective action model when a release assessment is conducted. These are:

- 1) Release Assessment -> No further action

A request for no further action is justified if no release is determined to have occurred (i.e., if measured concentrations of hazardous constituents at a SWMU are below background concentrations). If the facility can demonstrate that no release has occurred based

upon results from a release assessment, NFA may be proposed in accordance with NFA Criteria No. 3 and Guidelines for Evidence No. 5 (NMED 1995, See Table 4), as illustrated by Example No. 1 listed above.

- 2) Release Assessment -> Streamlined RFI -> No further action
- 3) Release Assessment -> Streamlined RFI -> CMS -> CMI

While the sampling plan implemented in the VRA may be adequate to satisfy NFA criteria No. 3 if no release is determined to have occurred from a SWMU, NMED has determined that the data generated in the Final Voluntary Release Assessment Corrective Action Report (DOE 1996h) are inadequate to satisfy NFA Criteria No. 4 if a release is determined to have occurred or may have occurred (a release may have occurred when concentrations of hazardous constituents are reported as undetected because inappropriate method detection limits, i.e., too high, were used). This situation would correspond to either Example No. 2 or No. 3 listed above. The final paragraph in Guidelines for Evidence (NMED 1995, See Table 4) states:

"Where sampling indicates that there was a release of hazardous constituents (concentrations in excess of background), and adequate characterization has been done, then depending on the results of a risk assessment, NFA may be proposed. However, sampling and characterization may also indicate the need for further investigation within an RFI."

Module VII of the proposed final Permit states in Permit Condition VII.H.3.c (Baseline Risk Assessments):

"Risk assessments to determine final cleanup levels or to be used in justifying no further action determinations shall be conducted only after the Permittees have determined the full vertical and horizontal nature, rate, and extent of contamination for each SWMU or groups of SWMUs specified in this Module."

DOE has not demonstrated that the limited sampling performed in the VRA was adequate to determine the full vertical and horizontal nature, rate, and extent of contamination at SWMUs where release is determined to have or may have occurred. A biased three-point linear array sampling plan may be suitable for determining whether a release has occurred, but it is inconceivable how data collected from such a linear array could be laterally extrapolated to determine the extent of contamination away from the line of sampling if a release is detected. Subsequent review of the screening level risk assessment contained in the first version of the draft TSD (NMED 1998a) confirmed that the methodology is appropriate only if the full nature, rate and extent of contamination are known, but that the existing data are insufficient to support conclusions concerning NFA if a release has occurred. Therefore, NMED has withdrawn the previously published assessment evaluating potential risk to human and ecological

receptors. Although NMED commends DOE for undertaking a Human Health and Ecological Risk Assessment (DOE 1998a), it too is based on insufficient data and therefore is not considered further in this TSD for the same reasons stated above.

DOE persistently states that they have expended a significant effort to compile a large amount of analytical data and other information and then provide it to NMED, and that this information is all that is necessary to make NFA decisions [e.g., see Comment 176 (DOE 1998e)]. NMED notes that much of the information contained in comments and other submittals provided after issuance of the draft Permit [e.g., (DOE 1998b), (DOE 1998c), (DOE 1998d), (DOE 1998e), (DOE 1999)] is repetition of previously submitted information, and does little to address the concerns raised, or refute the conclusions reached, in this TSD. NMED would be negligent in granting NFA for a SWMU where a release is documented to have occurred and the data are insufficient to quantify the full nature, rate, and extent of the release.

9.1 SWMU Group 001 (Mud Pits)

SWMU Group 001 consists of mud pits created during the drilling of boreholes within the WIPP LWA Boundary. These boreholes were created in support of potash and oil/gas exploration activities, and the various test programs conducted at the WIPP site in support of its demonstration of compliance with federal and state regulations for disposal of TRU mixed wastes.

9.1.1 DOE's NFA Request and NMED's Determination for SWMU 001g (H-14/P-1 Mud Pits)

DOE's NFA request for SWMU 001g is based on the data presented in VRA Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 5 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 5 shows that lead was detected at concentrations above background at this SWMU, constituting a release of this constituent. Although thallium was detected, a release of thallium is unknown because the facility-wide background soil concentration is suspect.

The information presented in Table 5 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, See Table 4). No documents submitted by DOE after the

Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 001g (H-14/P-1 Mud Pits) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.2 DOE's NFA Request and NMED's Determination for SWMU 001h (H-15/P-2 Mud Pits)

DOE's NFA request for SWMU 001h is based on the data presented in VRA Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 6 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 6 shows that barium was detected at concentrations above background at this SWMU, constituting a release of this constituent. A release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 6 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, see Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 001h (H-15/P-2 Mud Pits) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.3 DOE's NFA Request and NMED's Determination for SWMU 001j (P-3 Mud Pit)

DOE's NFA request for SWMU 001j is based on the data presented in VRA Data Summary Report No. 1 (DOE 1996a) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 7 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 7 shows that mercury was detected at concentrations above background at this SWMU, constituting a release of this constituent. A release of thallium is unknown because the facility-wide background soil concentration is suspect.

The information presented in Table 7 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 1 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 001j (P-3 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.4 DOE's NFA Request and NMED's Determination for SWMU 001k (P-4 Mud Pit)

DOE's NFA request for SWMU 001k is based on the data presented in VRA Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 8 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 8 shows that a release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 8 demonstrates a release of hazardous constituents may have occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 3 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. This SWMU could have been granted NFA if DOE had chosen to resample for thallium using an appropriate analytical technique to demonstrate that no release had occurred. Therefore, NMED has included SWMU 001k (P-4 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.5 DOE's NFA Request and NMED's Determination for SWMU 001l (WIPP-12/P-5 Mud Pits)

DOE's NFA request for SWMU 001l is based on the data presented in VRA Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 9 of this TSD, which lists soil constituent concentration data for the

SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 9 shows that barium and lead were detected at concentrations above background at this SWMU, constituting releases of these constituents. Although thallium was also detected, a release of thallium is unknown because the facility-wide background soil concentration is suspect.

The information presented in Table 9 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, see Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 0011 (WIPP-12/P-5 Mud Pits) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.6 DOE's NFA Request and NMED's Determination for SWMU 001m (P-6 Mud Pit)

DOE's NFA request for SWMU 001m is based on the data presented in VRA Data Summary Report No. 1 (DOE 1996a) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 10 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 10 shows that a release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 10 demonstrates a release of hazardous constituents may have occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 1 (DOE 1996a) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 3 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. This SWMU could have been granted NFA if DOE had chosen to resample for thallium using an appropriate analytical technique to demonstrate that no release had occurred. Therefore, NMED has included SWMU 001m (P-6 Mud Pit) in Module VII of

the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.7 DOE's NFA Request and NMED's Determination for SWMU 001n (P-15 Mud Pit)

DOE's NFA request for SWMU 001n is based on the data presented in VRA Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 11 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 11 shows that a release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 11 demonstrates a release of hazardous constituents may have occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 3 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. This SWMU could have been granted NFA if DOE had chosen to resample for thallium using an appropriate analytical technique to demonstrate that no release had occurred. Therefore, NMED has included SWMU 001n (P-15 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.8 DOE's NFA Request and NMED's Determination for SWMU 001s (ERDA-9 Mud Pit)

DOE's NFA request for SWMU 001s is based on the data presented in VRA Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 12 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 12 shows that a release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 12 demonstrates a release of hazardous constituents may have occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 3 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. This SWMU could have been granted NFA if DOE had chosen to resample for thallium using an appropriate analytical technique to demonstrate that no release had occurred. Therefore, NMED has included SWMU 001s (ERDA-9 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.9 DOE's NFA Request and NMED's Determination for SWMU 001t (IMC-374 Mud Pit)

DOE's NFA request for SWMU 001t is based on the data presented in VRA Data Summary Report No. 1 (DOE 1996a) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 13 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 13 shows that a release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 13 demonstrates a release of hazardous constituents may have occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 1 (DOE 1996a) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 3 (NMED 1995, See Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. This SWMU could have been granted NFA if DOE had chosen to resample for thallium using an appropriate analytical technique to demonstrate that no release had occurred. Therefore, NMED has included SWMU 001t (IMC-374 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.1.10 DOE's NFA Request and NMED's Determination for SWMU 001x
(WIPP-13 Mud Pit)

DOE's NFA request for SWMU 001x is based on the data presented in VRA Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h). This information was used to compile Table 14 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 14 shows that barium, chromium, and lead were detected at concentrations above background at this SWMU, constituting releases of these constituents. A release of thallium is unknown because an unacceptably high detection limit (20 mg/kg) was used and the facility-wide background soil concentration is suspect.

The information presented in Table 14 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 2 (DOE 1996b) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, see Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 001x (WIPP-13 Mud Pit) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

9.2 SWMU Group 004 (Storage Yards)

SWMU Group 004 consists of two storage yards. SWMU 004a (Portacamp Storage Yard) consists of two separately managed areas. The east side, managed by Sandia National Laboratory, is used to store water well drilling materials and supplies, office equipment, air conditioning units, electric cable, and other construction and maintenance supplies. The west side, managed by Westinghouse, is used to store HEPA filters, new hazardous waste handling containers, an electric transformer substation, and oils awaiting appropriate disposal (includes hazardous materials and wastes). SWMU 004b (Reclaimables Storage Yard) is used to store reclaimables such as metals and office equipment. SWMU 004c (Grout Storage Yard) is used to store grout materials and grouting equipment. SWMU 004b and 004c were not included in the VRA and are discussed further in Section 10.4 of this TSD.

9.2.1 DOE's NFA Request and NMED's Determination for SWMU 004a
(Portacamp Storage Area, West Side)

DOE's NFA request for SWMU 004a is based on the data presented in VRA Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective

Action Report (DOE 1996h). This information was used to compile Table 15 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 15 shows that chromium, lead, and nickel were detected at concentrations above background at this SWMU, constituting releases of these constituents. Methanol was also detected, but no facility-wide background soil concentration was established. Releases of thallium are unknown because unacceptably high detection limits (20 mg/kg for thallium) were used and the facility-wide background soil concentration for thallium is suspect.

The information presented in Table 15 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Data Summary Report No. 3 (DOE 1996c) and the Final VRA Corrective Action Report (DOE 1996h) does not meet NFA Criteria No. 4 (NMED 1995, see Table 4). No documents submitted by DOE after the Final VRA Corrective Action Report (DOE 1996h) provide any evidence to refute this conclusion. Therefore, NMED has included SWMU 004a (Portacamp Storage Area) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.0 DOE'S NFA REQUESTS AND NMED'S DETERMINATIONS FOR EACH SWMU NOT INCLUDED IN THE VOLUNTARY RELEASE ASSESSMENT

DOE requested NFA in VRA Data Summary Report No. 4 (DOE 1996f) and in Final Solid Waste Management Unit Assessment Report (DOE 1997a) for all SWMUs (identified in the RFA and Part B Permit Application) not included in the VRA. The following subsections of this TSD describe each SWMU Group and specific SWMUs not included in the VRA, along with DOE's rationale for the NFA requests and NMED's determinations regarding the requests to exclude these SWMUs from Module VII of the proposed final Permit and a Schedule of Compliance. For ease of reference, Table 1 lists each specific SWMU and provides NMED's rationale for exclusion of these SWMUs from Module VII of the proposed final Permit. Tables 2, 2A, and 3 provide NMED's rationale for inclusion of certain SWMUs and AOCs in Module VII of the proposed final Permit.

10.1 SWMU Group 001 (Mud Pits)

SWMU Group 001 consists of mud pits created during the drilling of boreholes within the WIPP LWA Boundary. These boreholes were created in support of potash and oil/gas exploration activities, and the various test programs conducted at the WIPP site in support of DOE's demonstration of compliance with federal and state regulations for disposal of TRU mixed wastes.

10.1.1 DOE's NFA Request and NMED's Determination for SWMU 001a (H-1 Mud Pit)

DOE requested NFA for SWMU 001a and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that "Sonora Drilling Company used air and air-mist (soap and water) as circulating media during drilling and reaming."

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001a (H-1 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.2 DOE's NFA Request and NMED's Determination for SWMU 001b (H-2 Mud Pit)

DOE requested NFA for SWMU 001b and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that a hydrologic data report "indicate[s] that air and air-mist (soap and water) were used for circulation during the drilling and reaming of H-2b1." This report adds that, "No information on other drilling fluid constituents or the number and location of the mudpits could be located." DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

Specific information was not provided in the RFA Report (NMED 1994) nor the Final SWMU Assessment Report (DOE 1997a) for the H-2a, H-2b2, and H-2c wells. However, Appendix A of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that H-2a and H-2c were also drilled using air and air-mist. General information on the deepening of H-2a and the drilling of H-2b2 was provided, identifying NaCl-saturated brine as the basic drilling fluid, augmented by attapulgite and caustic soda.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001b (H-2 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.3 DOE's NFA Request and NMED's Determination for SWMU 001c (H-3 Mud Pit)

DOE requested NFA for SWMU 001c and stated that the presence of hazardous constituents is precluded by the information provided in drilling logs and hydrologic reports (DOE 1996f). DOE states in the Final SWMU Assessment Report (DOE 1997a) that a hydrologic data report documents that air mist, saturated brine mud, and Portland/Poz-Mix cement were the drilling additives used to complete wells H-3a [H-3b1] and H-3b [H-3b2]. DOE also states that air mist and brine mud were used for circulation media during the drilling of wells H-3c [H-3b3] and H-3d.

The RFA Report (NMED 1994) states that a hydrologic data report "suggests that Pennsylvania Drilling Company used air-mist and brine mud for circulation media during drilling...." Specific information was not provided in the RFA Report (NMED 1994) nor the Final SWMU Assessment Report (DOE 1997a) for the H-3b1, H-3b2, H-3b3, and H-3d wells. However, Appendix A of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that H-3b1 (originally called H-3) was drilled using air and air-mist, and H-3d was drilled with brine as a drilling fluid. General information on wells H-3b2 and H-3b3 was provided, identifying NaCl-saturated brine as the basic drilling fluid, augmented by attapulgite and caustic soda.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001c (H-3 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.4 DOE's NFA Request and NMED's Determination for SWMU 001d (H-5/P-21 Mud Pits)

DOE requested NFA for SWMU 001d and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that a report "suggests that mudpit constituents for P-21 may include soap from the air, air-mist, and air foam drilling operations, as well as mud gel and brine [additives without hazardous waste constituents]." This report adds that "no borehole data reports could be located for the H-5 wells." DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

Specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for the H-5 wells. However, Appendix B of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that H-5a, H-5b, and H-5c were

drilled using air, air foam, and brine as the basic drilling fluids. It also demonstrates that P-21 used air foam and salt based mud for circulating media.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001d (H-5/P-21 Mud Pits). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.5 DOE's NFA Request and NMED's Determination for SWMU 001e (H-6/P-13 Mud Pits)

DOE requested NFA for SWMU 001e and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that, "The mudpit for P-13 may contain soap from the air and air foam drilling operations, mud gel and brine [additives without hazardous waste constituents]." This report adds that "no borehole data reports could be located for the H-6 wells." DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

Specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for the H-6 wells. However, Appendix C of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that H-6a, H-6b, and H-6c were drilled using air, air foam, and brine as the basic drilling fluids. It also demonstrates that P-13 used mud, air foam, brine, and salt based mud for circulating media.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001e (H-6/P-13 Mud Pits). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.6 DOE's NFA Request and NMED's Determination for SWMU 001f (H-11/P-9 Mud Pit)

DOE requested NFA for SWMU 001f and stated that the presence of hazardous constituents is precluded by the information provided in drilling logs and hydrologic reports (DOE 1996f). DOE states in the Final SWMU Assessment Report (DOE 1997a) that drilling records document that only air mist, saturated brine, and Portland/Poz-Mix cement were used in the drilling of the H-11 boreholes. DOE also states that drilling logs document that air foam and salt mud were the only drilling additives used in the drilling of the P-9 borehole.

The RFA Report (NMED 1994) states that a report "indicates that air foam was used as a circulation fluid for the P-9 well. This report also states that saturated sodium-chloride brine, attapulgate, and air foam were used during the drilling of the H-11 wells.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995), and precludes the presence of hazardous constituents at SWMU 001f (H-11/P-9 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.7 DOE's NFA Request and NMED's Determination for SWMU 001i (H-18 Mud Pit)

DOE requested NFA for SWMU 001i and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that "drillers logs mention only saturated brine and traced freshwater as drilling fluid constituents in the H-18 borehole data report." DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995), and precludes the presence of hazardous constituents at SWMU 001i (H-18 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.8 DOE's NFA Request and NMED's Determination for SWMU 001r (D-123 Mud Pit)

DOE requested NFA for SWMU 001r and stated that the presence of hazardous constituents is precluded by the review of drilling logs and the information provided in the RFA Report (NMED 1994). This report states that, "No records were available on D-123." This report and Final SWMU Assessment Report (DOE 1997a) also state that discussions with local potash firms indicate that KCl/NaCl drilling mud solutions are standard industry practices for potash boreholes. Appendix D of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides limited evidence on a "Notice of Intent to Drill" to support this contention, where it states, "Upon entering the Salado, NaCl-KCl brine will then be substituted for a mud as a drilling fluid." However, there is no substantive evidence to support the contention that this was actually done.

NMED has determined that DOE's NFA request for SWMU 001r does not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). Although

local potash firms indicate that KCl/NaCl drilling mud solutions are standard practice, diesel fuel or other additives may have been used in drilling other potash boreholes and their use has not been explicitly precluded here. NMED has redesignated SWMU 001r (D-123 Mud Pit) as AOC 001r and has included this mud pit in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance since hazardous constituents have not been precluded at the mud pit and the release potential to the soil medium is high.

10.1.9 DOE's NFA Requests and NMED's Determinations for SWMUs 001u (IMC-376 Mud Pit) and 001v (IMC-456 Mud Pit)

DOE requested NFA for SWMUs 001u and 001v and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that no substantive records were located on IMC-376 and IMC-456. DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

SWMU-specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMUs 001u and 001v. The RFA Report (NMED 1994) states that discussions with local potash firms indicate that KCl/NaCl drilling mud solutions are standard industry practices. However, diesel fuel or other additives may have been used in drilling other potash boreholes and their use has not been explicitly precluded. Appendix E of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides no direct evidence to support the claim that no hazardous additives were used for IMC-456, whereas a shift report for IMC-376 indicates the use of an additive (either oil or some other unknown substance) to the drilling fluid.

NMED has determined that DOE's NFA requests for SWMU 001u and 001v do not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). NMED has redesignated SWMUs 001u (IMC-376 Mud Pit) and 001v (IMC-456 Mud Pit) as AOCs 001u and 001v, and has included these mud pits in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance since hazardous constituents have not been precluded at the mud pits and the release potential to the soil medium is high.

10.1.10 DOE's NFA Request and NMED's Determination for SWMU 001w (IMC-457 Mud Pit)

DOE requested NFA for SWMU 001w and stated that the presence of hazardous constituents is precluded by the review of drilling logs (DOE 1996f). DOE states that records on the IMC-457 document that saturated potassium chloride brine was used as the drilling additive.

The RFA Report (NMED 1994) states that, "No substantive records were located on IMC-457." Appendix E of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides no direct evidence to support the claim that no hazardous additives were used for IMC-457. In the absence of substantive records, it is inappropriate to conjecture that hazardous constituents were not used or are not present in this mud pit.

NMED has determined that DOE's NFA request for SWMU 001w does not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). NMED has redesignated SWMU 001w (IMC-457 Mud Pit) as AOC 001w and has included this mud pit in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance since hazardous constituents have not been precluded at the mud pit and the release potential to the soil medium is high.

10.1.11 DOE's NFA Request and NMED's Determination for SWMU 001y (WIPP-18 Mud Pit)

DOE requested NFA for SWMU 001y and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

SWMU-specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMU 001y. However, Appendix F of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that WIPP-18 was drilled using a salt-based mud containing starch and other additives for circulating media.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001y (WIPP-18 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.12 DOE's NFA Requests and NMED's Determinations for SWMUs 001z (WIPP-19 Mud Pit), 001aa (WIPP-21 Mud Pit), and 001ab (WIPP-22 Mud Pit)

DOE requested NFA for SWMUs 001z, 001aa, and 001ab and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). DOE states in Final SWMU Assessment Report (DOE 1997a) that "based on the review of drilling logs, hydrologic reports, and the RFA, the DOE determined that drilling additives used at these sites are limited to fresh and brine-saturated water, [additives without hazardous waste constituents]...."

SWMU-specific information is not provided in the RFA Report (NMED 1994). However, Appendix F of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that WIPP-19, WIPP-21, and WIPP-22 were drilled using a salt-based mud containing starch, drispac, and other additives for circulating media.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMUs 001z (WIPP-19 Mud Pit), 001aa (WIPP-21 Mud Pit), and 001ab (WIPP-22 Mud Pit). Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.13 DOE's NFA Request and NMED's Determination for SWMU 001ac (D-207 Mud Pit)

DOE requested NFA for SWMU 001ac and stated that the presence of hazardous constituents is precluded by the review of drilling logs (DOE 1997a). DOE states that a drilling report "describes drilling additives used to complete the D-207 well as sodium and potassium chloride brine and drilling mud."

SWMU-specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMU 001ac. Appendix D of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides limited evidence on a "Notice of Intent to Drill" to support the contention that KCl/NaCl drilling mud solutions are standard industry practices for potash boreholes, where it states, "Upon entering the Salado, . . . NaCl-KCl brine will then be substituted for a mud as a drilling fluid." However, there is no substantive evidence to support the contention that this was actually done.

NMED has determined that DOE's NFA request for SWMU 001ac does not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). NMED has redesignated SWMU 001ac (D-207 Mud Pit) as AOC 001ac and has included this mud pit in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance since hazardous constituents have not been precluded at the mud pit and the release potential to the soil medium is high.

10.1.14 DOE's NFA Request and NMED's Determination for SWMU 001ad (IMC-375 Mud Pit)

DOE requested NFA for SWMU 001ad and stated that the presence of hazardous constituents is precluded by the review of drilling logs (DOE 1997a). DOE states that a drilling report documents "that saturated potassium chloride brine, drill mud, and air-mist were used as drilling additives."

SWMU-specific information is not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMU 001ad. Appendix E of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides shift reports written during drilling to support the claim that no hazardous additives were used for IMC-375.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 001ad (IMC-375 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.15 DOE's NFA Request and NMED's Determination for SWMU 001ae (IMC-377 Mud Pit)

DOE requested NFA for SWMU 001ae and stated that the presence of hazardous constituents is precluded by the review of drilling logs (DOE 1997a). DOE states that a plugging report documents that saturated potassium chloride brine and drilling mud were used as drilling additives.

SWMU-specific information was not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMU 001ae. Appendix E of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides no direct evidence to support the claim that no hazardous additives were used for IMC-377. In the absence of substantive records, it is inappropriate to conjecture that hazardous constituents were not used or are not present in this mud pit.

NMED has determined that DOE's NFA request for SWMU 001ae does not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). NMED has redesignated SWMU 001ae (IMC-377 Mud Pit) as AOC 001ae and has included the mud pit in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance since hazardous constituents have not been precluded at the mud pit and the release potential to the soil medium is high.

10.1.16 DOE's NFA Request and NMED's Determination for SWMU 001af (H-16 Mud Pit)

DOE requested NFA for SWMU 001af and stated that the presence of hazardous constituents is precluded by the review of drilling logs and hydrologic reports (DOE 1997a) DOE states that "drill logs document that only fresh water, saturated brine, bentonite gel, Portland and Poz-Mix cement . . . were used in the drilling of the H-16 borehole."

SWMU-specific information is not provided in the RFA Report (NMED 1994) or the Final SWMU Assessment Report (DOE 1997a) for SWMU 001af. Appendix G of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provides evidence that H-16 was drilled using saturated brine and fresh water for circulating media.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMU 00laf (H-16 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.17 DOE's NFA Request and NMED's Determination for SWMU 00lag
(Between H-14 & H-4 Mud Pits)

DOE requested NFA for SWMU 00lag and stated that the presence of hazardous constituents is precluded because the well was never drilled (DOE 1997a). The RFA Report (NMED 1994) states that no stained soil or other evidence of a mud pit was identified.

NMED has determined that the information provided in this report and the Final SWMU Assessment Report meet NFA Criteria No. 1 and Guidelines for Evidence No. 3 (NMED 1995), and precludes the presence of hazardous constituents at SWMU 00lag. Therefore, NMED has excluded SWMU 00lag from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.18 DOE's NFA Requests and NMED's Determinations for SWMU 00lah
(H-19 Mud Pit)

DOE requested NFA for SWMU 00lah and stated that the presence of hazardous constituents is precluded because of the management plan in place at the time this well was drilled (DOE 1997a) DOE states that this plan included the collection of circulation waters in a synthetically lined evaporation pond for the H-19 well. All drill cuttings were also collected in the ponds, dried, and excavated and disposed of at an off-site disposal facility.

SWMU-specific information was not provided by DOE in the Final SWMU Assessment Report (DOE 1997a) or the RCRA Part B Permit Application (DOE 1996e) for SWMU 00lah. Appendix H of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) provided laboratory analysis of sludge samples taken from the mudpits at the H-19 drillpad which indicated that the drilling mud was not a hazardous waste. Correspondence also indicates that the contents of the mud pits were removed and disposed of at the Hobbs Controlled Recovery Disposal facility.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of

hazardous constituents at SWMU 001ah (H-19 Mud Pit). Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.1.19 DOE's NFA Requests and NMED's Determinations for SWMUs 001ai (WQSP-1 Mud Pit), 001aj (WQSP-2 Mud Pit), 001ak (WQSP-3 Mud Pit), 001al (WQSP-4 Mud Pit), 001am (WQSP-5 Mud Pit), and 001an (WQSP-6/6a Mud Pit)

DOE requested NFA for SWMUs 001ai, 001aj, 001ak, 001al, 001am, and 001an and stated that the presence of hazardous constituents is precluded because of the management plan in place at the time these wells were drilled (DOE 1997a) DOE states that this plan included the collection of circulation waters in a synthetically lined evaporation pond. All drill cuttings were also collected in the ponds, dried, and excavated and disposed of at an off-site disposal facility. DOE adds that drilling additives used during the construction of the WQSP wells were limited to saturated brine water and bentonite mud.

SWMU-specific information was not provided by DOE in the Final SWMU Assessment Report (DOE 1997a) or the RCRA Part B Permit Application (DOE 1996e) for these SWMUs. Appendix I of Supplemental Information Requested by NMED for SWMUs (DOE 1997b) contained a basic data report for the WQSP wells, which substantiated the claim that the principal drilling materials used were air, air foam, saturated brine, and clay- and brine-based mud, while the completion materials were Portland cement and bentonite.

NMED has determined that the information provided in the Supplemental Information (DOE 1997b) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995, see Table 4), and precludes the presence of hazardous constituents at SWMUs 001ah, 001ai, 001aj, 001ak, 001al, 001am, and 001an. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.2 SWMU Group 002 (Salt and Top Soil Storage Areas)

SWMU Group 002 consists of two salt and top soil storage areas created during the construction of the WIPP site. The material stored at the salt storage areas consists primarily of salt excavated from the repository horizon. The material stored at the top soil storage areas consists only of top soil.

10.2.1 DOE's NFA Requests and NMED's Determinations for SWMUs 002a ("SPVD" Salt Storage Pile), 002b (Salt Storage Pile), 002c (Top Soil Storage Area), and 002d (Top Soil Storage Area, "SPVD" Soil)

DOE requested NFA for SWMUs 002a, 002b, 002c, and 002d and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that SWMUs

002a, and 002b may contain "trace amounts" [negligible amounts] of hazardous constituents, such as hydraulic and motor oils from the heavy equipment used in the construction of the WIPP site. This report also states that SWMU 002c contains some waste concrete, concrete slabs, and decomposing rebar, and that SWMU 002d only contains top soil.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 and 3 (NMED 1995), and precludes the presence of hazardous constituents at SWMUs 002a, 002b, 002c, and 002d. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.3 SWMU Group 003 (Brinderson and Construction Landfills)

SWMU Group 003 consists of two areas that have been used as landfills at the WIPP site. SWMU 003a (Brinderson Landfill) has been covered over and reseeded. SWMU 003b consists of a closed and an active portion. Both landfills have been used for the disposal of construction debris consisting of, among other things, foundation excavation soils, waste concrete, scrap wood, and metal.

10.3.1 DOE's NFA Request and NMED's Determination for SWMUs 003a (Brinderson Landfill), and 003b (Construction Landfill, Active and Inactive Units)

DOE requested NFA for SWMUs 003a and 003b and stated that the presence of hazardous constituents is precluded at these SWMUs by adherence to the Bureau of Land Management (**BLM**) Land Use Permits NM-067-LUP-219 and NM-067-LUP-237, respectively (DOE 1995 and DOE 1996d). DOE states that these permits specify the design, operation, and closure of each landfill. DOE's NFA request is based on the administrative controls, such as specific permit conditions requiring the disposal of construction debris only, monthly inspections by BLM hazardous material personnel to ensure compliance with permit conditions, and reclamation/closure requirements established in the permits.

DOE provided copies of BLM Permits NM-067-LUP-219 and NM-067-LUP-237 for SWMUs 003a and 003b, respectively (DOE 1995), and documentation of interviews with BLM personnel who stated that during their numerous inspections of the landfills there was no evidence of disposal of materials prohibited by the permits (DOE 1996d). NMED has determined that these documents, along with the additional information provided by DOE, meet NFA Criteria No. 2 and Guidelines for Evidence Nos. 1, 2, and 3, and preclude the presence of hazardous wastes or constituents at SWMUs 003a and 003b. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.4 SWMU Group 004 (Storage Yards)

SWMU Group 004 consists of two storage yards. SWMU 004a (Portacamp Storage Yard), which consists of two separately managed areas, is discussed in Section 9.2.1 of this TSD. The east side, managed by Sandia National Laboratory, is used to store water well drilling materials and supplies, office equipment, air conditioning units, electric cable, and other construction and maintenance supplies. The west side, managed by Westinghouse, is used to store HEPA filters, new hazardous waste handling containers, an electric transformer substation, and oils awaiting appropriate disposal (includes hazardous materials and wastes). SWMU 004b (Reclaimables Storage Yard) is used to store reclaimables such as metals and office equipment. SWMU 004c (Grout Storage Yard) is used to store grout materials and grouting equipment.

10.4.1 DOE's NFA Request and NMED's Determination for SWMU 004b (Reclaimables Storage Yard)

DOE requested NFA for SWMU 004b and stated that the presence of hazardous constituents [in the soil medium] is precluded by the information provided in the RFA Report (NMED 1994). This report states that a release and exposure potential exists "given the yard's use as a warehouse to store hazardous materials until disposal (sulfuric acid batteries)...." This report also states that there is no evidence of past releases, and management practices and procedures decrease the likelihood of a future release.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 3 and Guidelines for Evidence Nos. 2 and 3, and precludes the presence of hazardous constituents in the soil medium at SWMU 004b. In addition, the release potential to the soil medium is low. Therefore, NMED has excluded this SWMU from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.4.2 DOE's NFA Request and NMED's Determination for SWMU 004c (Grout Storage Yard)

DOE requested NFA for SWMU 004c and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that the type of grout being managed and stored at this yard is not hazardous and there is no evidence of a past release.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence Nos. 2 and 3, and precludes the presence of hazardous constituents at SWMU 004b. Therefore, NMED has excluded this SWMU from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.5 SWMU Group 005 (Concrete Batch Plants)

SWMU Group 005 consists of SWMU 005a (Concrete Batch Plant, Waste Handling Building), 005b (Concrete Batch Plant), and 005c (Concrete Batch Plant). These three areas at the WIPP site were used for temporary locations of concrete batch plants.

10.5.1 DOE's NFA Requests and NMED's Determinations for SWMUs 005a (Concrete Batch Plant, Waste Handling Building), 005b (Concrete Batch Plant), and 005c (Concrete Batch Plant)

DOE requested NFA for SWMUs 005a, 005b, and 005c and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that the only releases at the site consisted of concrete, sand, and gravel all of which are considered nonhazardous.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence Nos. 2 and 3, and precludes the presence of hazardous constituents at SWMUs 005a, 005b, and 005c. Therefore, NMED has excluded these SWMUs from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.6 SWMU Group 006 (Holding Ponds)

SWMU Group 006 consists of SWMUs 006a (Salt Shaft Holding Pond) and 006b (Waste Handling Shaft Holding Pond). During the drilling of the first two shafts at the WIPP facility, brine was used as a drilling fluid and stored at each holding pond.

10.6.1 DOE's NFA Requests and NMED's Determinations for SWMUs 006a and 006b

DOE requested NFA for SWMUs 006a and 006b and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that the material in the holding ponds consisted of saturated brine with bentonite.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2, and precludes the presence of hazardous constituents at SWMUs 006a and 006b. Therefore, NMED has excluded these SWMUs from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.7 SWMU Group 007 (Evaporation Ponds)

SWMU Group 007 consists of three ponds used for the evaporation of water. SWMUs 007a and 007b received water from employee showers. SWMU 007c was used to collect run-off from the main salt storage area.

10.7.1 DOE's NFA Request and NMED's Determination for SWMU 007a
(Evaporation Pond)

DOE requested NFA for SWMU 007a and stated that hazardous constituents are precluded by the information provided in the RFA Report (NMED 1994). This report states that the waste in the unit consisted of soap, cleaning solutions, and trace amounts of oil. This report also states that releases of hazardous wastes or hazardous constituents are not known to have occurred at this SWMU.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2, and precludes the presence of hazardous constituents at SWMU 007a. Therefore, NMED has excluded this SWMU from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.7.2 DOE's NFA Request and NMED's Determination for SWMU 007b
(Evaporation Pond)

DOE requested NFA for SWMU 007b and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that a soil sample analyzed for heavy metals showed barium above background control samples, but "... below RCRA action levels."

NMED obtained the analytical data from this sampling event at SWMU 007b conducted on October 7, 1992, as provided in Appendix K of the Supplemental Information Requested by NMED for SWMUs (1997b). NMED's WIPP Environmental Oversight group initiated a limited sampling investigation to close identified data gaps in the environmental baseline at WIPP. One area was the WIPP stormwater outfall on the western boundary of Zone 1 (Property Protection Area), which has been the site of construction, facility run-off and sediment accumulation since the early 1980's. This sampling location, referred to as "Facility West", documented "artificial concentrations of constituents" within the upper 40 inches of soil as modified by facility activities. Background samples were collected at the "Sand Dune Blowout" location, approximately 500 feet west of the north access road adjacent to the access railroad spur. NMED and DOE split samples for analysis.

This information was used to compile Table 16 of this TSD, which lists soil constituent concentration data for the SWMU and downgradient soil samples, facility-wide background soil concentrations, and a determination whether a release has occurred at the SWMU. NMED determines that a release has occurred at a SWMU when on-site (SWMU) and/or downgradient soil constituent concentrations exceed background soil concentrations. Table 16 shows that lead and nickel were detected at concentrations above background at this SWMU, constituting releases of these constituents.

The information presented in Table 16 demonstrates a release of hazardous constituents has occurred at this SWMU, but the existing data are insufficient to support conclusions concerning NFA due to the lack of full characterization of the nature, rate, and extent of contamination at the SWMU. NMED has determined that the information provided in Supplemental Information Requested by NMED for SWMUs (1997b) does not meet NFA Criteria No. 4 (NMED 1995, See Table 4). Therefore, NMED has included SWMU 007b (Evaporation Pond) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.7.3 DOE's NFA Request and NMED's Determination for SWMU 007c (Evaporation Pond)

DOE requested NFA for SWMU 007c and stated that the presence of hazardous constituents is precluded by the information provided in the RFA Report (NMED 1994). This report states that the material in the pond consisted of sodium and potassium-based brine runoff from the main salt storage pile.

NMED has determined that the information provided in the RFA Report (NMED 1994) meets NFA Criteria No. 2 and Guidelines for Evidence No. 2 (NMED 1995), and precludes the presence of hazardous constituents at SWMU 007c. Therefore, NMED has excluded this SWMU from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.8 SWMU Group 008 (Surface Satellite Accumulation Areas)

SWMU Group 008 consists of surface satellite accumulation areas storing all hazardous wastes in DOT-approved containers. Following is a list of the SWMUs in this group:

SWMU 008a (Surface Satellite Accumulation [SSA], Blg. 455)
SWMU 008b (SSA, Blg. 454)
SWMU 008c (SSA, Blg. 993)
SWMU 008d (SSA, Blg. W083)
SWMU 008e (SSA, Blg. 473)
SWMU 008f (SSA, Blg. 486)
SWMU 008g (SSA, Safety Blg.)
SWMU 008h (SSA, Inactive Hazardous Waste Storage Area)
SWMU 008i (SSA, AIS)
SWMU 008j (SSA, Blg. 482)
SWMU 008k (SSA, Petroleum Product/Used Oil, Blg. 454)
SWMU 008l (SSA, Hazardous Waste Staging Area, Blg. 474B)
SWMU 008m (SSA #1, Maintenance Tool Crib, Blg. 454)
SWMU 008n (Future Hazardous Waste Staging Area, Blg. 474-A))
SWMU 008o (Blg. 474-E)
SWMU 008p (SSA, Analytical Laboratory, Blg. 451)
SWMU 008q (RH Bay, Blg. 411)

10.8.1 DOE's NFA Requests and NMED's Determinations for SWMU Group 008 (Surface Satellite Accumulation Areas)

DOE requested NFA for each SWMU in SWMU Group 008 and stated that no release of hazardous constituents has occurred from any accumulation area at the WIPP (DOE 1996f). DOE also states that operating procedures for the daily management and inspection of all accumulation areas have been established and adds that all SSA containers are placed on, or locked inside of spill containment devices. SWMUs 008c, 008d, 008e, 008f, 008g, 008h, 008i, and 008o have been closed. SWMU 008n was never constructed.

The RFA Report states that there have been no releases of hazardous wastes or constituents from any of the SWMUs in Group 008. NMED has determined that the information provided in the RFA Report (NMED 1994) and the additional information provided in the Final SWMU Assessment Report (DOE 1997a) meets NFA Criteria No. 3 and Guidelines for Evidence Nos. 2 and 3 (NMED 1995), and precludes the presence of hazardous constituents in the soil medium at any of these SWMUs. Therefore, NMED has excluded these SWMUs from the Permit (NMED 1999) and an RFI Schedule of Compliance.

10.9 SWMU Group 009 (Underground Satellite Accumulation Areas)

SWMU Group 009 consists of underground satellite accumulation areas storing hazardous wastes in DOT-approved containers. Following is a list of the SWMUs in this group:

- SWMU 009a (Satellite Accumulation [SA], S1300/W30)
- SWMU 009b (SA, E300 Shop)
- SWMU 009c (SA, S1300/W170 Intersection)
- SWMU 009d (Satellite/Materials Storage West S1300/W170)
- SWMU 009e (Satellite/Hazardous Materials Storage, E140/S700)
- SWMU 009f (SA, Underground Wash Rack, S1600/W30)
- SWMU 009g (SA, S1300/E140)
- SWMU 009h (SA/Storage, N780)
- SWMU 009i (SPVD Room 1 Maintenance Shop)
- SWMU 009j (SA, West End N1420)
- SWMU 009k (SA, S1000 Tool Crib)
- SWMU 009l (Borehole Construction)

10.9.1 DOE's NFA Requests and NMED's Determinations for SWMU Group 009 (Underground Satellite Accumulation Areas)

DOE requested NFA for each SWMU in SWMU Group 009 and stated that no release of hazardous constituents has occurred from any accumulation area at the WIPP (DOE 1996f). DOE also states that operating procedures for the daily management and inspection of all accumulation areas have been established and adds that all SSA containers are placed on, or locked inside of spill containment devices. SWMUs 009a, 009c, 009d, 009f, 009g, 009h, 009i, and 009j have been closed.

The RFA Report (NMED 1994) states that there have been no releases of hazardous wastes or constituents from any of the SWMUs in SWMU Group 009. NMED has determined that the information provided in the RFA Report (NMED 1994) and the additional information provided in the Final SWMU Assessment Report (DOE 1997a) meets NFA Criteria No. 3 and Guidelines for Evidence Nos. 2 and 3 (NMED 1995), and document that there has been no release of hazardous wastes or constituents to the repository underground environment from these SWMUs. Furthermore, release potential to the soil, ground water, and surface water media is extremely low to nonexistent. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.10 SWMU Group 010 (Mine Shaft Sumps)

SWMU Group 010 consists of areas at the bottoms of the four (4) shafts leading to the WIPP repository. The salt handling (SWMU 010a) and waste handling shaft sumps (SWMU 010b) extend 148 and 119 feet, respectively, below the repository horizon. The areas underlying the exhaust (SWMU 010c) and air intake shafts (SWMU 010d) do not have sumps. The exhaust shaft catchment basin (SWMU 010e) is co-located with SWMU 010c, which was closed in 1996.

10.10.1 DOE's NFA Requests and NMED's Determinations for SWMUs 010b (Waste Handling Shaft Sump) and 010c (Exhaust Shaft Sump)

DOE requested NFA for SWMUs 010b and 010c and stated that visual inspections of the areas underlying the shafts revealed clean, well-managed areas (DOE 1997a). DOE also states that wastes accumulated during the construction phase of the shafts (e.g., grease, etc.) were not apparent. The RFA Report states that deleterious materials [hazardous wastes or constituents] were not observed at any of the SWMUs in SWMU Group 010 and that DOE is conducting regular inspection and cleaning (NMED 1994).

In June 1995, increased volumes of brine were observed in the Waste Handling Shaft Sump. Sampling of this brine indicated some of it contained elevated levels of lead. The source of the increased brine flow was traced to water entering the mine by seepage in the Exhaust Shaft. The source of lead appeared to be leachate from the galvanized chain link mesh used for support in the unlined portions of the Exhaust Shaft (DOE 1997a).

Remedial action involved removal of debris and muck and the emplacement of a catchment basin (SWMU 010e) at the base of the Exhaust Shaft (DOE 1997c). This effectively stopped the flow of brine from the Exhaust Shaft to the Waste Handling Shaft Sump. Subsequent sampling using the TCLP specified in 20 NMAC 4.1.200 (incorporating 40 CFR §261.24) indicated that lead remained in solution and did not precipitate into the salt muck contained in the Waste Handling Shaft (DOE 1997a). However, by using TCLP analysis for lead, DOE has only characterized whether the salt muck is a hazardous waste. Because no

total lead concentrations in the salt have been measured between the Waste Handling Shaft Sump and the Exhaust Shaft, DOE has not determined the extent of release. All brine collected in the catchment basin (and any which reaches the Waste Handling Shaft Sump) is managed in accordance with New Mexico Hazardous Waste and Water Quality Control Commission (WQCC) Regulations. Brine containing levels of lead at or above the regulatory limit are managed and disposed of at an off-site treatment, storage, and disposal facility in accordance with 20 NMAC 4.1.300 (incorporating 40 CFR §262). Alternately, when the levels of lead are below the limits in the DOE's WQCC Discharge Plan DP-831, the brine is discharged into the WIPP sewage lagoon. As a result of the removal of debris and muck from the base of the Exhaust Shaft, DOE considers SWMU 010c closed (DOE 1997c).

NMED has determined that DOE's NFA requests for SWMUs 010b and 010c do not meet the NFA Criteria and Guidelines for Evidence (NMED 1995). NMED has redesignated SWMUs 010b (Waste Handling Shaft Sump) and 010c (Exhaust Shaft Sump) as AOCs 010b and 010c, and has included these areas in Module VII the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance because hazardous constituents have been identified in the sumps and the extent of release has not been determined.

10.10.2 DOE's NFA Requests and NMED's Determinations for SWMUs 010a (Salt Handling Shaft Sump), 010d (Air Intake Shaft Sump), and 010e (Exhaust Shaft Catchment Basin)

DOE requested NFA for SWMUs 010a, 010d, and 010e and stated that visual inspections of the areas underlying the shafts revealed clean, well-managed areas (DOE 1997a). DOE also states that wastes accumulated during the construction phase of the shafts (e.g., grease, etc.) were not apparent.

The RFA Report states that deleterious materials [hazardous wastes or constituents] were not observed at any of the SWMUs in SWMU Group 010 and that DOE is conducting regular inspection and cleaning (NMED 1994).

NMED has determined that the information provided in the RFA Report (NMED 1994) and the additional information provided in the Final SWMU Assessment Report (DOE 1997a) meet NFA Criteria No. 2 and Guidelines for Evidence Nos. 2 and 3 (NMED 1995), and document that there has been no release of hazardous wastes or constituents to the repository underground environment from these SWMUs. Furthermore the release potential to the soil, ground water, and surface water media is extremely low to nonexistent. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.11 SWMU 011 (Sewage Treatment Facility)

SWMU 011 is a sewage treatment facility consisting of five ponds. Two primary and two polishing ponds are synthetically lined, while the effluent pond is unlined by design. This facility treats sanitary waste and is permitted by the NMED Ground Water Protection and Remediation Bureau.

10.11.1 DOE's NFA Request and NMED's Determination for SWMU 011 (Sewage Treatment Facility)

DOE requested NFA for SWMU 011 and stated that all quarterly monitoring and oversight data demonstrate that hazardous constituents have not been discharged into the treatment facility (DOE 1996f).

The RFA Report (NMED 1994) states that a background review indicates that the system is safeguarded against the introduction of RCRA hazardous waste or constituents by procedures and site training. This report also states that sanitary waste is exempted from classification as a solid waste by New Mexico regulations. NMED has determined that the information provided in the RFA Report (NMED 1994) and the additional information provided in the VRA Data Summary Report No. 4 (DOE 1996f) meet NFA Criteria No. 2 and Guidelines for Evidence No. 2, and preclude the presence of hazardous wastes or constituents at SWMU 011. Therefore, NMED has excluded this SWMU from Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

10.12 SWMU Group 012 (Nonhazardous Solid Waste Bins)

SWMU Group 012 consists of twelve surface nonhazardous solid waste bins (SWMU 012a) and as many as six underground nonhazardous solid waste bins (SWMU 012b). These portable bins are used for the collection of nonhazardous solid wastes from the facility.

10.12.1 DOE's NFA Requests and NMED's Determinations for SWMU Group 012 (Nonhazardous Solid Waste Bins)

DOE requested NFA for each SWMU in SWMU Group 012 and stated that segregation of hazardous and nonhazardous waste streams is achieved by a combination of employee training and waste management procedures (DOE 1996f).

The RFA Report (NMED 1994) states that, "All operational and experimental site activities with potentially hazardous waste streams are managed, inspected, and sampled to exclude hazardous waste from the waste bins." This report also states that no evidence of past releases were observed. NMED has determined that the information provided in the RFA Report (NMED 1994) and the additional information provided in Data Summary Report No. 4 (DOE 1996f) meet NFA Criteria No. 2 and Guidelines for Evidence No. 2 and 3 (NMED 1995), and preclude the presence of hazardous wastes or constituents at these

SWMUs. Therefore, NMED has excluded these SWMUs from Module VII of the proposed final Permit and an RFI Schedule of Compliance.

10.12 SWMU Group 013 (TRU Mixed Waste Management Units)

The RFA Report (NMED 1994) stated, "This unit is not investigated for the RFA. Although the unit description in the RCRA Part B Permit application [for the Test Phase in 1993] identifies adequate safeguards from a solid waste management perspective, detailed assessment of this unit by the team reviewing the permit application may have concerns or actions involving the management of hazardous materials and potentially hazardous waste. The RCRA Part B permit application review is not final at the time of publication of this report."

The waste management modules of the proposed final Permit (NMED 1999) specify conditions for operating the following SWMUs in compliance with 20 NMAC 4.1.500 (incorporating 40 CFR §264):

SWMU 013a (Waste Handling Building Unit - Container Storage Unit)
SWMU 013b (Parking Area Unit - Container Storage Unit)
SWMU 013c (Underground HWDU Panel 1 - Disposal Unit)
SWMU 013d (Underground HWDU Panel 2 - Disposal Unit)
SWMU 013d (Underground HWDU Panel 3 - Disposal Unit)

10.13.1 NMED's Determination for SWMU Group 013 (TRU Mixed Waste Management Units)

DOE did not request NFA for the storage and disposal units described in the permit application (DOE 1996e) to operate these units under 20 NMAC 4.1.500 (incorporating 40 CFR §264). NMED designates permitted units as SWMUs to facilitate recordkeeping in EPA's Resource Conservation and Recovery Information System (**RCRIS**) database. NMED will designate those TRU mixed waste management units which have received and managed solid waste as SWMUs 013a (Waste Handling Building Unit), 013b (Parking Area Unit), and 013c (Underground HWDU - Panel 1). SWMUs 013d (Underground HWDU - Panel 2) and 013e (Underground HWDU - Panel 3) will require a permit modification to include them in Table 2A of Module VII upon initial receipt and subsequent management of solid waste. NMED will also include these areas in Module VII of the proposed final Permit (NMED 1999) but will not require an RFI Schedule of Compliance because these SWMUs will be managed and closed as specified in Modules III and IV as required by 20 NMAC 4.1.500 (incorporating 40 CFR §264).

11.0 DOE's REQUESTS FOR FINAL REMEDIES AT SWMUS 001O (BADGER UNIT), 001P (COTTON BABY), AND 001Q (DOE-1)

DOE requested approvals for final remedies at SWMUs 001o, 001p, and 001q in the VRA Corrective Action Work Plan (DOE 1995) and the Final VRA Corrective Action Report (DOE 1996h). SWMUs 001o and 001p are mud pits that resulted from the drilling of oil and gas exploration wells.

SWMU 001q is a mud pit that resulted from WIPP site characterization activities. Following is a discussion of previous sampling activities at these SWMUs, DOE's proposed remedies, and finally NMED's determination for these SWMUs.

11.1 Previous Sampling Activities at SWMUs 001o, 001p, and 001q

Soil samples were collected from SWMUs 001o, 001p, and 001q at depths of 5-8 feet bls during RFA activities. These soil samples were analyzed for heavy metals, semi-volatiles, and volatiles. Sampling results indicated the presence of hazardous constituents such as barium, chromium, and lead. The full vertical and horizontal extent of contamination was not determined.

11.2 DOE's Proposed Remedies for SWMUs 001o, 001p, and 001q

DOE stated in the VRA Workplan (DOE 1995) and the Final VRA Corrective Action Report (DOE 1996h) that the cost of further release sampling was comparable to the cost associated with the proposed corrective action at SWMUs 001o, 001p, and 001q. DOE proposed capping as the most cost-effective action for each of these SWMUs. Capping involves the placement of three wetted and compacted 6-inch lifts of crushed caliche fill. DOE states that the 18-inch caliche cap would provide a cost effective barrier that would contain any vertical or horizontal migration of hazardous constituents. Six to twelve inches of topsoil would then be placed on each cap and reclaimed using a BLM approved grass seed mix.

11.3 NMED's Determination for SWMUs 001o, 001p, and 001q

NMED has determined that although capping of SWMUs 001o, 001p, and 001q may provide adequate protection of human health and the environment, conclusive evidence is required for a determination of NFA (see NFA Criteria No. 6). Note that NFA Criteria 6 states "There was a release, but the site **has been remediated**" (emphasis added). No capping has been conducted, and NFA cannot be granted for a planned activity. Therefore, NMED has included SWMUs 001o (Badger Unit), 001p (Cotton Baby), and 001q (DOE-1) in Module VII of the proposed final Permit (NMED 1999) and an RFI Schedule of Compliance.

In order to obtain NFA for these SWMUs, DOE must provide additional conclusive information to demonstrate that there will be no migration of hazardous wastes or constituents from each of the capped mud pits at levels that could present a hazard to human health and the environment. This demonstration could include simplified worst-case migration scenarios and modeling that take into account specific site characteristics (e.g., rainfall, stratigraphy, and depths to ground water, etc.). This demonstration would require the performance of risk assessments to estimate the risks posed to human health and the environment. Determination of the full vertical and horizontal extent of contamination is required. In addition, DOE would be required to elaborate on each of the following remedy selection factors applicable

to each site: long-term reliability and effectiveness; reduction of toxicity, mobility, or volume; short-term effectiveness of a potential remedy(s); implementability; and cost. NMED notes that although DOE performed a simplified preliminary infiltration modeling study of a compacted caliche cap and submitted a brief summary of the results (DOE 1998d, Appendix N), they neglected to perform any of the required items listed in this paragraph, including estimates of risk, determination of extent of contamination, and evaluation of remedy selection factors.

12.0 PUBLIC REVIEW AND COMMENT

Regulations codified at 20 NMAC 4.1.1103 (incorporating 40 CFR §124.10(b)) require that public notice of a draft permit decision shall allow at least 45 days for public comment. Regulations codified at 20 NMAC 4.1.1103 (incorporating 40 CFR §124.11) specify that any interested person may submit written comments on the draft Permit and may request a public hearing. A public hearing on the draft Permit was held from February 22 through March 26, 1999, and written and oral comments were submitted and considered. Regulations codified at 20 NMAC 4.1.1103 (incorporating 40 CFR §124.17) specify that the regulator shall issue a response to all significant comments raised during the public comment period or during any public hearing. NMED issued Response to Comments documents on June 25, 1999, along with this TSD and a proposed final Permit which incorporates all significant comments received during the comment period. Following is NMED's mailing address:

New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
2044 Galisteo
P.O. Box 26110
Santa Fe, New Mexico 87502

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FIGURES
(Taken from DOE 1997a)

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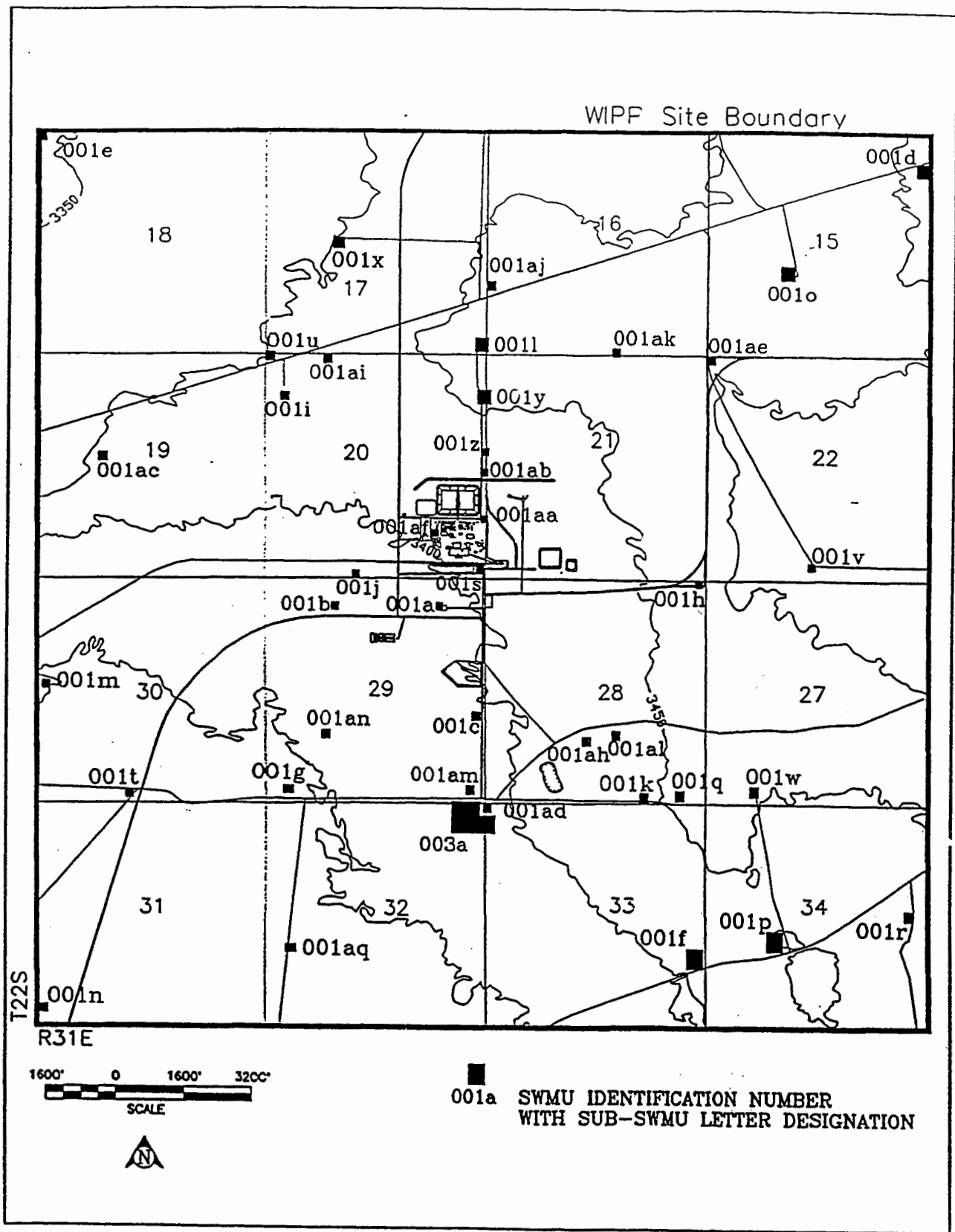


Figure 1
Location of SWMU Mudpits and Landfills within the WPP Site Boundary

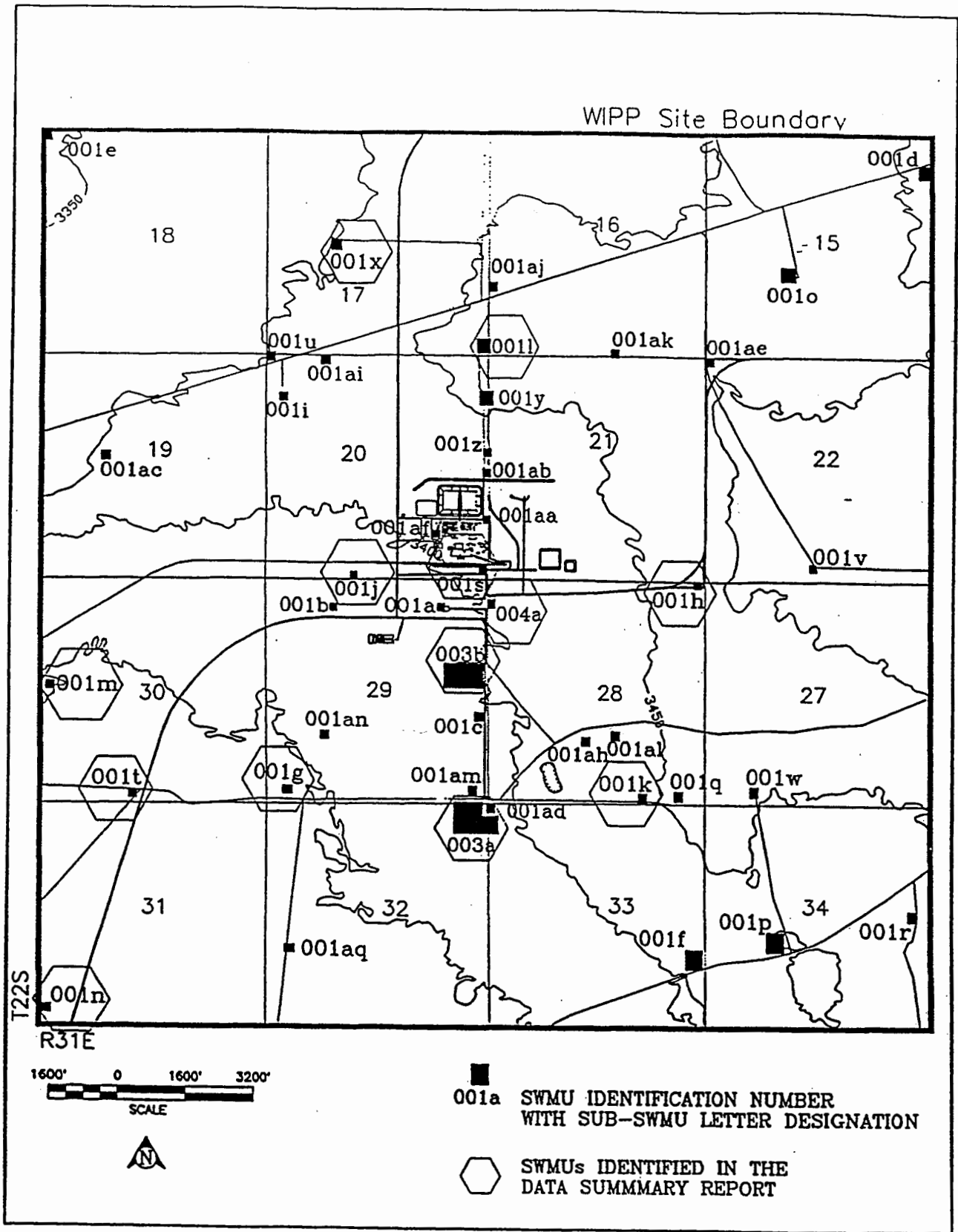


Figure 2

Location of SWMUs Where Voluntary Release Assessments Have Been Completed

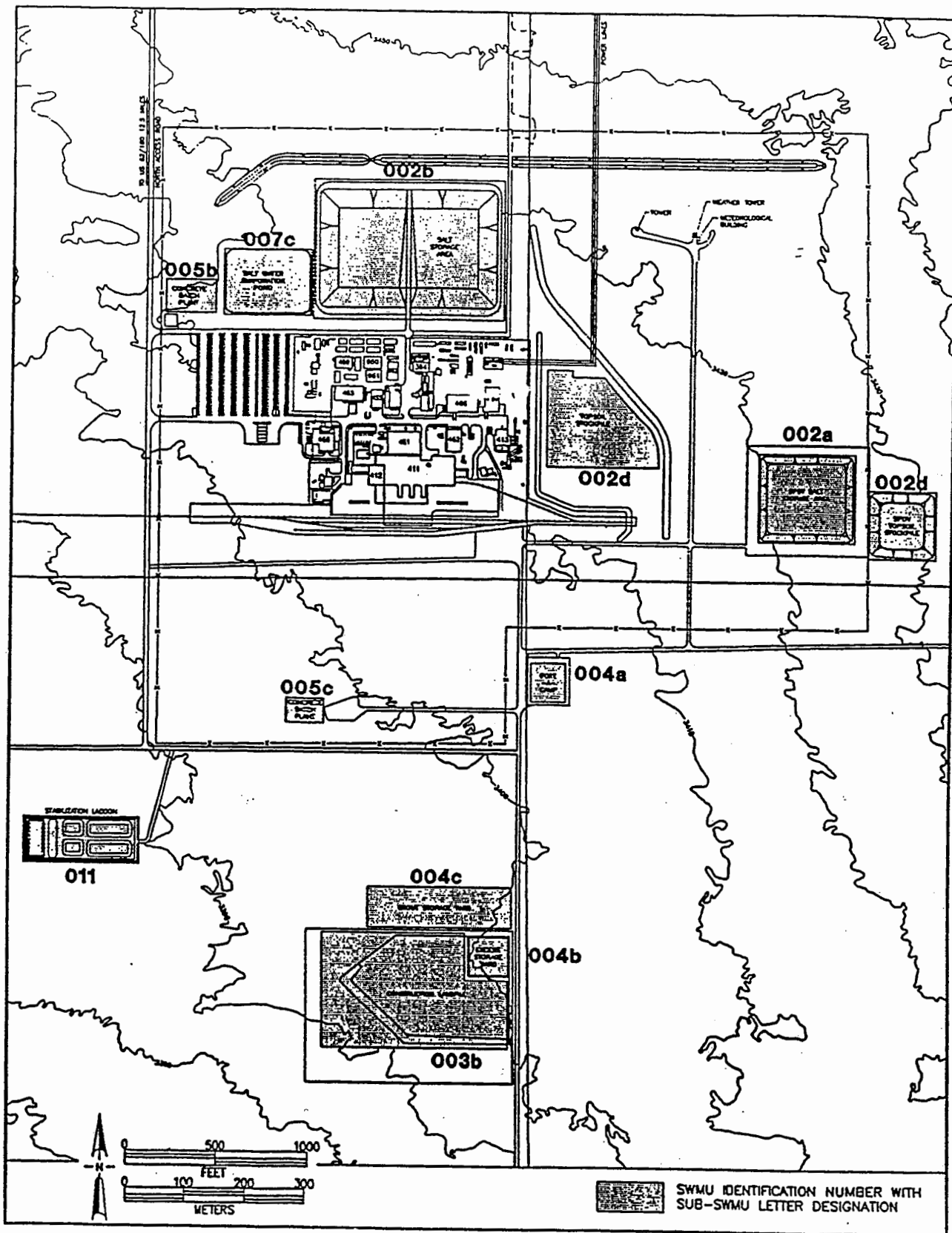


Figure 3
Location of Material Storage and Stockpile Area SWMUs
within the WIPP Site Boundary

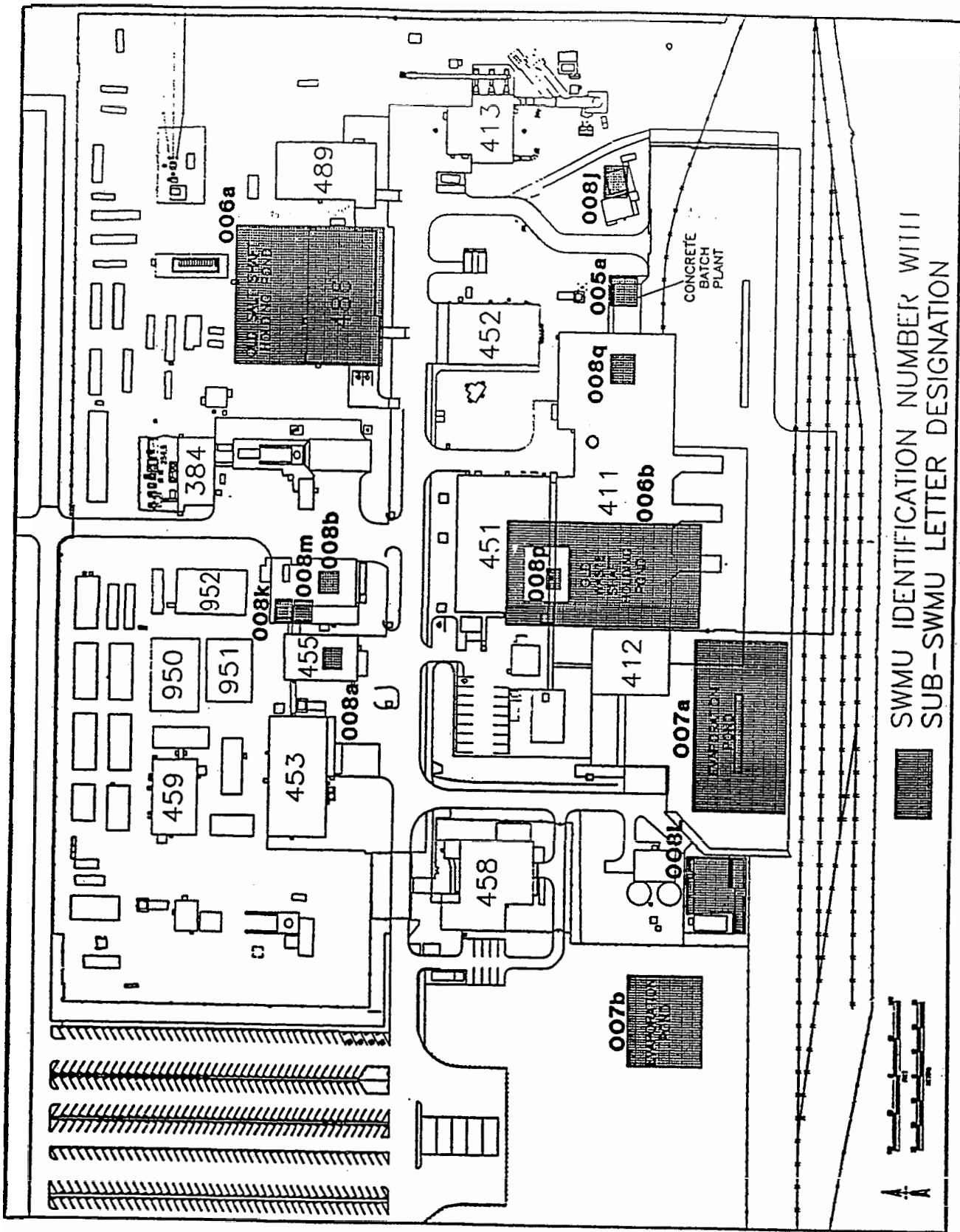


Figure 4

WIPP Surface Facilities and Evaporation Pond and Holding Pond SWMUs

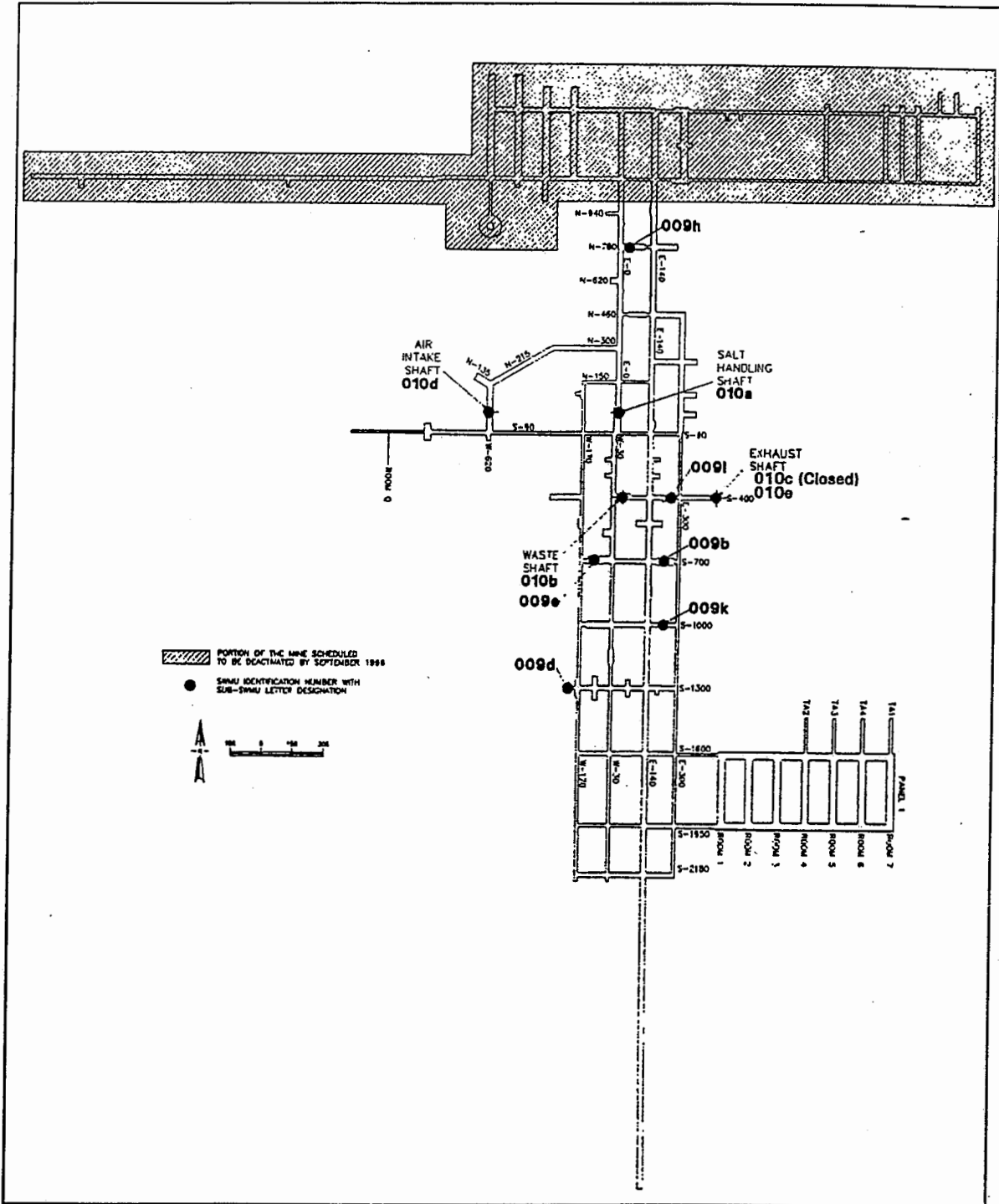


Figure 5
 WIPP Underground Facilities and SAA and Shaft Sump SWMUs

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TABLES

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TABLE 1
SWMUS EXCLUDED FROM THE DRAFT RCRA/HSWA PERMIT

SWMU NUMBER & (NAME) ^a	RATIONALE FOR EXCLUSION
Drilling Mud Pits (21 SWMUs)	
001a (H-1)	Presence of hazardous constituents precluded.
001b (H-2)	Presence of hazardous constituents precluded.
001c (H-3)	Presence of hazardous constituents precluded.
001d (H-5/P-21)	Presence of hazardous constituents precluded.
001e (H-6/P-13)	Presence of hazardous constituents precluded.
001f (H-11/P-9)	Presence of hazardous constituents precluded.
001i (H-18)	Presence of hazardous constituents precluded.
001y (WIPP-18)	Presence of hazardous constituents precluded.
001z (WIPP-19)	Presence of hazardous constituents precluded.
001aa (WIPP-21)	Presence of hazardous constituents precluded.
001ab (WIPP-22)	Presence of hazardous constituents precluded.
001ad ^b (IMC-375)	Presence of hazardous constituents precluded.
001af ^b (H-16)	Presence of hazardous constituents precluded.
001ag ^b (between H-14 & H-4)	Well was never drilled, SWMU never existed.
001ah (H-19)	Presence of hazardous constituents precluded.
001ai (WQSP-1)	Presence of hazardous constituents precluded.
001aj (WQSP-2)	Presence of hazardous constituents precluded.
001ak (WQSP-3)	Presence of hazardous constituents precluded.
001al (WQSP-4)	Presence of hazardous constituents precluded.
001am (WQSP-5)	Presence of hazardous constituents precluded.
001an (WQSP-6/6a)	Presence of hazardous constituents precluded.
Salt and Top Soil Storage Piles (4 SWMUs)	
002a ("SPVD" Salt Storage Pile)	Presence of hazardous constituents precluded.
002b (Salt Storage Pile)	Presence of hazardous constituents precluded.
002c (Top Soil Storage Area)	Presence of hazardous constituents precluded.
002d (Top Soil Storage Area, "SPVD" Soil)	Presence of hazardous constituents precluded.
Landfills (2 SWMUs)	
003a (Brinderson Landfill)	Presence of hazardous constituents precluded.
003b (New Landfill, Active & Inactive Units)	Presence of hazardous constituents precluded.

**TABLE 1 (CONT.)
SWMUS EXCLUDED FROM THE DRAFT RCRA/HSWA PERMIT**

SWMU NUMBER & (NAME) ^a	RATIONALE FOR EXCLUSION
Storage Yards (2 SWMUs)	
004b (Reclaimables Storage Yard)	No visual indications of releases to the environment, release potential to the soil medium is low.
004c (Grout Storage Yard)	Presence of hazardous constituents precluded.
Concrete Batch Plants (3 SWMUs)	
005a (Concrete Batch Plant, WHB)	Presence of hazardous constituents precluded.
005b (Concrete Batch Plant)	Presence of hazardous constituents precluded.
005c (Concrete Batch Plant)	Presence of hazardous constituents precluded.
Holding Ponds (2 SWMUs)	
006a (Salt Shaft Holding Pond)	Presence of hazardous constituents precluded.
006b (Waste Handling Shaft Holding Pond)	Presence of hazardous constituents precluded.
Evaporation Ponds (2 SWMUs)	
007a (Evaporation Pond)	Presence of hazardous constituents precluded.
007c (Evaporation Pond)	Presence of hazardous constituents precluded.
Surface Satellite Accumulation (SSA) and Storage (17 SWMUs)	
008a (SSA, Blg.455)	Presence of hazardous constituents in the soil medium precluded.
008b (SSA, Blg.454)	Presence of hazardous constituents in the soil medium precluded.
008c (SSA, Blg.993)	Presence of hazardous constituents in the soil medium precluded.
008d (SSA, Blg.W083)	Presence of hazardous constituents in the soil medium precluded.
008e (SSA, Blg.473)	Presence of hazardous constituents in the soil medium precluded.
008f (SSA, Blg.486)	Presence of hazardous constituents in the soil medium precluded.
008g (SSA, Safety Blg.)	Presence of hazardous constituents in the soil medium precluded.
008h (Inactive Hazardous Waste Storage Area)	Presence of hazardous constituents in the soil medium precluded.
008i (SSA, AIS)	Presence of hazardous constituents in the soil medium precluded.
008j (SSA, Blg. 482)	Presence of hazardous constituents in the soil medium precluded.

TABLE 1 (CONT.)
SWMUS EXCLUDED FROM THE DRAFT RCRA/HSWA PERMIT

SWMU NUMBER & (NAME) ^a	RATIONALE FOR EXCLUSION
Surface Satellite Accumulation (SSA) and Storage (17 SWMUs)	
008k (Petroleum Product/ Used Oil, Blg. 454)	Presence of hazardous constituents in the soil medium precluded.
008l (Hazardous Waste Staging Area, Blg. 474B)	Presence of hazardous constituents in the soil medium precluded.
008m (SSA #1, Maintenance Tool Crib, Blg. 454)	Presence of hazardous constituents in the soil medium precluded.
008n (Future Hazardous Waste Staging Area, Blg. 474-A)	Staging area was not constructed, SWMU never existed.
008o (Blg. 474-E)	Presence of hazardous constituents in the soil medium precluded.
008p (SSA, Analytical Laboratory, Blg. 451) ^b	Presence of hazardous constituents in the soil medium precluded.
008q (RH Bay, Blg. 411) ^b	Presence of hazardous constituents in the soil medium precluded.
Underground Satellite Accumulation (SA) Areas (12 SWMUs)	
009a (SA, S1300/W30)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009b (SA, E300 Shop)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009c (SA, S1300/W170 Intersection)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009d (Satellite/Materials Storage West S1300/W170)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009e (Satellite/Hazardous Materials Storage, E140/S700)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009f (SA, Underground Wash Rack, S1600/W30)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009g (SA, S1300/E140)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.

TABLE 1 (CONT.)
SWMUS EXCLUDED FROM THE DRAFT RCRA/HSWA PERMIT

SWMU NUMBER & (NAME) ^a	RATIONALE FOR EXCLUSION
Underground Satellite Accumulation (SA) Areas (12 SWMUs)	
009h (SA/Storage, N780)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009i (SPVD Room 1, Old Maintenance Shop)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009j (SA, West End N1420)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009k (SA, S1000 Tool Crib) ^b	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
009l (Borehole Construction) ^b	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
Mine Shaft Sumps (3 SWMUs)	
010a (Salt Handling Shaft Sump)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
010d (Air Intake Shaft Sump)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
010e (Exhaust Shaft Catchment Basin)	No release has occurred to the repository underground environment; release potential to the soil, ground water, and surface water media is extremely low to nonexistent.
Sewage Treatment Facility (1 SWMU)	
011 (Sewage Treatment Facility)	Presence of hazardous constituents precluded.
Nonhazardous Solid Waste Bins (2 SWMUs)	
012a (Surface Bins)	Presence of hazardous constituents precluded.
012b (Underground Bins)	Presence of hazardous constituents precluded.

^a SWMU Numbers are from the RFA Report (NMED 1994), unless otherwise indicated.

^b SWMU Numbers were arbitrarily assigned.

TABLE 2
SWMUS INCLUDED IN THE DRAFT RCRA/HSWA PERMIT

SWMU NUMBER & (NAME) ^a	RATIONALE FOR INCLUSION
Drilling Mud Pits (13 SWMUs)	
001g (H-14/P-1)	Hazardous constituents (lead, possibly thallium) present, conclusive information is required for a determination of No Further Action (NFA), release potential to the soil medium is high.
001h (H-15/P-2)	Hazardous constituents (barium, possibly thallium) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001j (P-3)	Hazardous constituents (mercury, possibly thallium) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001k (P-4)	Hazardous constituent (thallium) may be present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001l (WIPP-12/P-5)	Hazardous constituents (barium, lead, possibly thallium) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001m (P-6)	Hazardous constituent (thallium) may be present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001n (P-15)	Hazardous constituent (thallium) may be present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001o (Badger Unit)	Hazardous constituents (barium, chromium, and lead) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001p (Cotton Baby)	Hazardous constituents (barium, chromium, lead, and nickel) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001q (DOE-1)	Hazardous constituents (barium, chromium, and lead) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001s (ERDA-9)	Hazardous constituent (thallium) may be present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.

TABLE 2 (CONT.)
SWMUS INCLUDED IN THE DRAFT RCRA/HSWA PERMIT

SWMU NUMBER & (NAME) ^a	RATIONALE FOR INCLUSION
Drilling Mud Pits (13 SWMUs)	
001t (IMC-374)	Hazardous constituent (thallium) may be present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
001x (WIPP-13)	Hazardous constituents (barium, chromium, lead, and possibly thallium) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
Storage Yard (1 SWMU)	
004a (Portacamp Storage Yard, West Side)	Hazardous constituents (chromium, lead, nickel, possibly thallium, and methanol) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.
Evaporation Pond (1 SWMU)	
007b (SW Evaporation Pond)	Hazardous constituents (lead and nickel) present, conclusive information is required for a determination of NFA, release potential to the soil medium is high.

^a SWMU Numbers are from the RFA Report (NMED 1994).

TABLE 2A
SWMUS INCLUDED IN THE DRAFT RCRA/HSWA PERMIT NOT REQUIRING AN RFI

SWMU NUMBER & (NAME) ^a	RATIONALE FOR INCLUSION
TRU Mixed Waste Management Unit (3 SWMUs)	
SWMU 013a (Waste Handling Building Unit)	Permitted TRU mixed waste container storage unit
SWMU 013b (Parking Area Unit)	Permitted TRU mixed waste container storage unit
SWMU 013c (Underground HWDU - Panel 1)	Permitted TRU mixed waste disposal unit

^a SWMU Numbers were arbitrarily assigned.

TABLE 3
AOCs INCLUDED IN THE DRAFT RCRA/HSWA PERMIT

AOC NUMBER & (NAME) ^a	RATIONALE FOR INCLUSION
Drilling Mud Pits (6 AOCs)	
001r (D-123)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
001u (IMC-376)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
001v (IMC-456)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
001w (IMC-457)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
001ac ^b (DSP-207)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
001ae ^b (IMC-377)	Presence of hazardous constituents not precluded, release potential to the soil medium is high.
Mine Shaft Sumps (2 AOCs)	
010b (Waste Handling Shaft Sump)	Hazardous constituents have been released, the extent of release has not been determined.
010c (Exhaust Shaft Sump)	Hazardous constituents have been released, the extent of release has not been determined.

^a AOC Numbers are from the RFA Report (NMED 1994), unless otherwise indicated.

^b AOC Numbers were arbitrarily assigned.

TABLE 4
GUIDANCE FOR EVALUATION OF NO FURTHER ACTION PROPOSALS^a

No Further Action (NFA) Criteria ^b	Guidelines for Evidence ^b
<p>1. The site does not exist. If it can be shown that the site does not exist, then a proposal may be made for NFA.</p> <p>2. The site was not used for the management of hazardous constituents. If this can be shown, then a proposal may be made for NFA.</p> <p>3. There was no release of hazardous constituents to the environment. If it can be shown that there was not, nor is there likely to be a release, then a proposal may be made for NFA.</p> <p>4. There was a release, but a release assessment indicates that concentrations of hazardous constituents are at acceptably low levels as determined by regulators. The release assessment includes site characterization, release assessment sampling, and risk assessment.</p> <p>5. There was a release, but the site was characterized and/or remediated under another authority, such as the New Mexico Underground Storage Tank Bureau, and documentation such as closure letter is available, then the site may be proposed for NFA. Regulation of a site by another authority is not, necessarily, sufficient justification for a proposal for NFA.</p> <p>6. There was a release, but the site has been remediated. Typically, the site would have been remediated by means of Voluntary Corrective Actions or Expedited Cleanups/Voluntary Corrective Measures. After remediation, evidence should show that concentrations of hazardous constituents are at acceptable levels as determined by regulators. If the site meets the criteria for remediation, then it may be proposed for NFA.</p>	<p>1. Interviews may be used to investigate past activities at a site and verify location information. A written record of the interview should be maintained. Interviews alone are not sufficient evidence on which to base an NFA proposal.</p> <p>2. Historical records include but are not limited to information such as process descriptions, test reports, aerial photos, and bills of lading which may indicate the nature, amount, and period of use of hazardous constituents. Historical records should be documented and available for review by the regulators and the public. Historical records cannot by themselves prove the absence of a release, and are therefore not sufficient evidence on which to base an NFA proposal.</p> <p>3. Site visual inspections should be used to locate sites of potential contamination and to estimate pathways of migration. A record of site visual inspections should be maintained by the facility. Visual inspections alone are not sufficient evidence on which to base an NFA proposal.</p> <p>4. Site surveys may include but are not limited to radiation surveys, magnetic surveys, gravity surveys, and soil gas surveys. Surveys should be documented and available for review. It cannot be assumed that the absence of radioactive material indicates the absence of hazardous constituents. As with previous kinds of evidence, site surveys should be used in combination with other evidence to complete a sufficient proposal package.</p> <p>5. Release assessment sampling may be used to verify and evaluate a release or potential release. Documentation of sampling locations and documentation of sampling results should be available for review. As with other kinds of evidence, data from release assessment sampling alone is not sufficient basis for an NFA proposal. However, sampling results may be used in combination with other evidence to complete a sufficient NFA proposal package.</p> <p>Where sampling indicates that there was a release of hazardous constituents (concentrations in excess of background), and adequate characterization has been done, then depending on the results of a risk assessment, NFA may be proposed. However, sampling and characterization may also indicate the need for further investigation within an RFI.</p>

^a Taken from "Guidance for the Evaluation of NFA Proposals;" November 30, 1995; NMED; DOE Oversight Bureau (NMED 1995).

^b For any proposal using the NFA Criteria, appropriate evidence, as described in this table, must be provided.

TABLE 5
SWMU 001G (H-14/P-1 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.9-1.2 J (12-24") 1.2-2.3 J (60-72")	3.3 (12-24") 3.3 (60-72")	no
Barium	17.0 & 22.0 (12-24") 24.0-71.0 (60-72")	120 (12-24") 91 (60-72")	no
Cadmium	0.5 UJ (12-24") 0.5 UJ (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	4.0-6.0 (12-24") 4.0 & 7.0 (60-72")	26 (12-24") 8.2 (60-72")	no
Lead	2.0-3.4 J (12-24") 2.4-3.4 J (60-72")	3.2 (12-24") 7.1 (60-72")	yes
Mercury	0.02 U (12-24") 0.02 U (60-72") 0.04 J (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 (12-24") 20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 5 (CONT.)
SWMU 001G (H-14/P-1 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

- U Analyte was not detected, value is method reporting limit.
- J Result should be considered an estimated value.

TABLE 6
SWMU 001H (H-15/P-2 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.6-1.3 (12-24") 1.2 (12-24") [†] 1.9 (25-35") [†] 0.018-2.2 (60-72")	3.3 (12-24") 3.3 (60-72")	no
Barium	20.0-69.0 (12-24") 27.0 (12-24") [†] 170.0 (25-35") [†] 64.0-150.0 (60-72")	120 (12-24") 91 (60-72")	yes
Cadmium	0.5 (12-24") 0.5 U (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	4.0 & 5.0 (12-24") 5.0 (12-24") [†] 5.0 (25-35") [†] 5.0-7.0 (60-72")	26 (12-24") 8.2 (60-72")	no
Lead	2.0-2.3 (12-24") 2.0 J (12-24") 2.4 J (12-24") [†] 2.2 J (25-35") [†] 2.4-6.5 (60-72") 2.8 J (60-72")	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.03 U (12-24") 0.03 U (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 6 (CONT.)
SWMU 001H (H-15/P-2 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

- U Analyte was not detected, value is method reporting limit.
- J Result should be considered an estimated value.

TABLE 7
SWMU 001J (P-3 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.8 (12-24") 0.7 (12-24") [†] 0.9 & 1.2 (60-72") 1.0 (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	18.0 & 34.0 (12-24") 16.0 (12-24") [†] 29.0 & 32.0 (60-72") 33.0 (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 U (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	12.0 & 22.0 (12-24") 4.0 (12-24") [†] 5.0 (60-72") 4.0 (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.7 & 2.1 (12-24") 1.9 (12-24") [†] 2.3 & 2.6 (60-72") 2.3 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.03 U (12-24") 0.06 (12-24") 0.03 U (60-72") 0.06 (60-72")	0.06 (12-24") 0.04 (60-72")	yes
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 7 (CONT.)
SWMU 001J (P-3 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "total soils analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is the data qualifier used in this table:

U Analyte was not detected, value is method reporting limit.

TABLE 8
SWMU 001K (P-4 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.5 J (12-24") 0.6 J (12-24") [†] 0.6 J (60-72") 0.7 J (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	13.0 J (12-24") 14.0 J (12-24") [†] 13.0 J (60-72") 14.0 J (60-72") 18.0 J (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 J (12-24") 0.5 UJ (12-24") 0.5 UJ (60-72") 1.0 J (60-72") [†]	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	2.0 & 4.0 J (12-24") 4.0 J (12-24") [†] 3.0 J (60-72") 4.0 J (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.2 (12-24") 1.5 (12-24") [†] 1.3 (60-72") 1.6 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.03 U (12-24") 0.03 U (60-72") 0.05 (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 8 (CONT.)
SWMU 001K (P-4 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

U Analyte was not detected, value is method reporting limit.

J Result should be considered an estimated value.

TABLE 9
SWMU 001L (WIPP-12/P-5 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.7 & 1.3 (12-24") 2.3 J (12-24") 0.7 J (12-24") [†] 0.9 & 1.4 (60-72") 2.3 & 2.5 J (60-72") 0.9 J (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	140.0-1700.0 (12-24") 18.0 (12-24") [†] 120.0-860.0 (60-72") 36.0 (60-72") [†]	120 (12-24") 91 (60-72")	yes
Cadmium	0.5 U (12-24") 0.5 UJ (12-24") 0.5 U (60-72") 0.5 UJ (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	5.0-7.0 (12-24") 2.0 (12-24") [†] 4.0-6.0 (60-72") 4.0 (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.7-4.2 J (12-24") 1.4 J (12-24") [†] 1.5-5.1 J (60-72") 1.8 J (60-72") [†]	3.2 (12-24") 7.1 (60-72")	yes
Mercury	0.02 U (12-24") 0.02 U (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 (12-24") [†] 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 9 (CONT.)
SWMU 001L (WIPP-12/P-5 MUD PITS)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

U Analyte was not detected, value is method reporting limit.

J Result should be considered an estimated value.

TABLE 10
SWMU 001M (P-6 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.5 & 0.6 J (12-24") 3.1 J (12-24") [†] 0.9 & 1.0 J (60-72") 0.9 J (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	16.0 J & 24.0 J (12-24") 20.0 J (12-24") [†] 39.0 J & 83.0 J (60-72") 19.0 J (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 UJ (12-24") 0.5 UJ (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	3.0 J (12-24") 6.0 J (12-24") [†] 5.0 & 6.0 J (60-72") 4.0 J (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.2 & 1.6 (12-24") 5.1 (12-24") [†] 1.4 & 1.8 (60-72") 1.2 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.03 U (12-24") 0.05 (12-24") 0.03 & 0.04 (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 10 (CONT.)
SWMU 001M (P-6 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

U Analyte was not detected, value is method reporting limit.

J Result should be considered an estimated value.

TABLE 11
SWMU 001N (P-15 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.6 & 0.8 (12-24") 0.6 (12-24") [†] 0.8 & 1.0 (60-72") 0.8 (60-72") ^{††}	3.3 (12-24") 3.3 (60-72")	no
Barium	27.0 & 110.0 (12-24") 12.0 (12-24") [†] 27 & 42.0 (60-72") 19.0 (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 U (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	5.0 & 7.0 (12-24") 4.0 (12-24") [†] 5.0 & 6.0 (60-72") 4.0 (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.9 & 2.0 (12-24") 1.3 (12-24") [†] 1.8 & 2.6 (60-72") 1.6 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.02 UJ (12-24") 0.02 UJ (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 UJ (12-24") 20.0 UJ (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no

TABLE 11 (CONT.)
SWMU 001N (P-15 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

U Analyte was not detected, value is method reporting limit.

J Result should be considered an estimated value.

TABLE 12
SWMU 001S (ERDA-9 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.5 & 1.1 J (12-24") 0.5 J (12-24") [†] 0.4 & 0.6 J (60-72") 1.2 J (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	44.0 J & 71.0 (12-24") 24.0 J (12-24") [†] 11.0 & 19.0 (60-72") 39.0 (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 U (12-24") 0.6 J (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	4.0 J & 8.0 (12-24") 4.0 J (12-24") [†] 2.0 & 3.0 (60-72") 4.0 (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.8 & 2.1 (12-24") 1.5 (12-24") [†] 1.3 & 1.4 (60-72") 2.2 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.03 U (12-24") 0.03 (12-24") [†] 0.03 U (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no

TABLE 12 (CONT.)
SWMU 001S (ERDA-9 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 UJ (12-24") 0.01 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.005 UJ (12-24") 0.005 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). The dashes in this column indicate that no facility-wide background soil concentrations were established or that no samples were obtained for analysis. Following is a listing of the data qualifiers used in this table:

- U Analyte was not detected, value is method reporting limit.
- J Result should be considered an estimated value.

TABLE 13
SWMU 001T (IMC-374 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.4 & 0.7 (12-24") 0.6 (12-24") [†] 0.7 & 0.8 (60-72") 0.8 (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	12.0 & 16.0 (12-24") 9.3 (12-24") [†] 14.0 & 16.0 (60-72") 20.0 (60-72") [†]	120 (12-24") 91 (60-72")	no
Cadmium	0.5 U (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	3.0 & 4.0 (12-24") 3.0 (12-24") [†] 4.0 & 5.0 (60-72") 2.0 U (60-72") [†]	26 (12-24") 8.2 (60-72")	no
Lead	1.1 & 1.6 (12-24") 1.2 (12-24") [†] 1.5 & 1.7 (60-72") 1.4 J (60-72") [†]	3.2 (12-24") 7.1 (60-72")	no
Mercury	0.02 UJ (12-24") 0.02 UJ (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 UJ (12-24") 20.0 UJ (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no
Benzene	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no

TABLE 13 (CONT.)
SWMU 001T (IMC-374 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Chloroform	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no
Toluene	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (60-72")	0.01 U (12-24") [†] 0.01 U (60-72") [†]	no
Xylenes (total)	0.005 U (12-24") 0.005 U (60-72")	0.005 U (12-24") [†] 0.005 U (60-72") [†]	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). Following is a listing of the data qualifiers used in this table:

- U Analyte was not detected, value is method reporting limit.
- J Result should be considered an estimated value.

TABLE 14
SWMU 001X (WIPP-13 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.6 & 1.0 (12-24") 0.4 (12-24") [†] 0.7 & 1.2 (60-72") 0.7 (60-72") [†]	3.3 (12-24") 3.3 (60-72")	no
Barium	16.0 & 3800.0 (12-24") 13.0 (12-24") [†] 40.0 & 680.0 (60-72") 17.0 (60-72") [†]	120 (12-24") 91 (60-72")	yes
Cadmium	0.5 U (12-24") 0.6 (12-24") 0.5 U (60-72")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	7.0 & 36.0 (12-24") 6.0 (12-24") [†] 8.0 & 10.0 (60-72") 3.0 (60-72") [†]	26 (12-24") 8.2 (60-72")	yes
Lead	1.8 & 270.0 (12-24") 1.3 (12-24") [†] 2.8 & 5.0 (60-72") 1.7 (60-72") [†]	3.2 (12-24") 7.1 (60-72")	yes
Mercury	0.03 U (12-24") 0.03 U (60-72")	0.06 (12-24") 0.04 (60-72")	no
Thallium	20.0 U (12-24") 20.0 U (60-72")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no

TABLE 14 (CONT.)
SWMU 001X (WIPP-13 MUD PIT)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
1,2-Dichloroethane	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no
Benzene	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no
Chloroform	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no
Ethyl Benzene	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no
Toluene	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no
Vinyl Chloride	0.01 U (12-24") 1.2 U (12-24") 0.01 U (60-72") 0.05 U (60-72")	---	no
Xylenes (total)	0.005 U (12-24") 0.62 U (12-24") 0.005 U (60-72") 0.025 U (60-72")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). Following is the data qualifier used in this table:

U Analyte was not detected, value is method reporting limit.

TABLE 15
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	0.6 & 0.7 J (12-24") 0.4-1.1 J (36-48")	3.3 (12-24") 3.3 (60-72")	no
Barium	16.0-59.0 (12-24") 14.0-43.0 (36-48")	120 (12-24") 91 (60-72")	no
Cadmium	0.5 U (12-24") 0.5 U (36-48")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	4.0-140.0 (12-24") 4.0 & 120.0 (36-48")	26 (12-24") 8.2 (60-72")	yes
Lead	1.6-4.2 (12-24") 1.2-4.8 (36-48")	3.2 (12-24") 7.1 (60-72")	yes
Mercury	0.03 U (12-24") 0.03 U (36-48")	0.06 (12-24") 0.04 (60-72")	no
Nickel	3.0-66.0 (12-24") 2.0 U (36-48") 5.0-54.0 (36-48")	2 (12-24") 2 (36-48")	yes
Selenium	0.4 & 0.5 U (12-24") 0.4 U (36-48")	0.4 (12-24") 0.4 (36-48")	no
Silver	1.0 U (12-24") 1.0 U (36-48")	1 (12-24") 1 (36-48")	no
Thallium	20.0 U (12-24") 20.0 U (36-48")	---	unknown
1,1,1-Trichloroethane	0.005 U (12-24") 0.005 U (36-48")	---	no
1,1,2,2-Tetrachloroethane	0.005 U (12-24") 0.005 U (36-48")	---	no

TABLE 15 (CONT.)
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
1,1,2-Trichloro-1,2,2-trifluoroethane	0.01 U (12-24") 0.01 U (36-48")	---	no
1,1,2-Trichloroethane	0.005 U (12-24") 0.005 U (36-48")	---	no
1,1-Dichloroethane	0.005 U (12-24") 0.005 U (36-48")	---	no
1,1-Dichloroethylene	0.005 U (12-24") 0.005 U (36-48")	---	no
1,2-Dichloroethane	0.005 U (12-24") 0.005 U (36-48")	---	no
Methyl Ethyl Ketone	0.05 U (12-24") 0.05 U (36-48")	---	no
4-Methyl-2-pentanone	0.05 U (12-24") 0.05 U (36-48")	---	no
Acetone	0.05 UJ (12-24") 0.05 UJ (36-48")	---	no
Benzene	0.005 U (12-24") 0.005 U (36-48")	---	no
Carbon Tetrachloride	0.005 U (12-24") 0.005 U (36-48")	---	no
Chlorobenzene	0.005 U (12-24") 0.005 U (36-48")	---	no
Chloroform	0.005 U (12-24") 0.005 U (36-48")	---	no

TABLE 15 (CONT.)
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Cis-1,2-Dichloroethylene	0.005 U (12-24") 0.005 U (36-48")	---	no
Cyclohexane	0.01 U (12-24") 0.01 U (36-48")	---	no
Cyclohexanone	0.01 U (12-24") 0.01 U (36-48")	---	no
Ethyl Acetate	0.01 U (12-24") 0.01 U (36-48")	---	no
Ethyl Benzene	0.005 U (12-24") 0.005 U (36-48")	---	no
Toluene	0.005 U (12-24") 0.005 U (36-48")	---	no
Methylene Chloride	0.005 U (12-24") 0.005 U (36-48")	---	no
Tetrachloroethylene	0.005 U (12-24") 0.005 U (36-48")	---	no
Tribromomethane	0.005 U (12-24") 0.005 U (36-48")	---	no
Trichloroethylene	0.005 U (12-24") 0.005 U (36-48")	---	no
Trichlorofluoromethane	0.01 U (12-24") 0.01 U (36-48")	---	no
Vinyl Chloride	0.01 U (12-24") 0.01 U (36-48")	---	no

TABLE 15 (CONT.)
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Xylenes (total)	0.005 U (12-24") 0.005 U (36-48")	---	no
2-Ethoxyethanol	10.0 U (12-24") 10.0 U (36-48")	---	no
Isobutanol	2.0 U (12-24") 2.0 U (36-48")	---	no
Methanol	2.0 U & 200.0 (12-24") 2.0 U (36-48") 42.0 & 200.0 (36-48")	---	unknown
n-Butanol	2.0 U (12-24") 2.0 U (36-48")	---	no
1,2-Dichlorobenzene	0.33 U (12-24") 0.33 U (36-48")	---	no
1,4-Dichlorobenzene	0.33 U (12-24") 0.33 U (36-48")	---	no
2,4,5-Trichlorophenol	1.7 U (12-24") 1.7 U (36-48")	---	no
2,4,6-Trichlorophenol	0.33 U (12-24") 0.33 U (36-48")	---	no
2,4-Dinitrotoluene	0.33 U (12-24") 0.33 U (36-48")	---	no
2-Methylphenol	0.33 U (12-24") 0.33 U (36-48")	---	no
3-Methylphenol	0.33 U (12-24") 0.33 U (36-48")	---	no

TABLE 15 (CONT.)
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
4-Methylphenol	0.33 U (12-24") 0.33 U (36-48")	---	no
Hexachlorobenzene	0.33 U (12-24") 0.33 U (36-48")	---	no
Hexachlorobutadiene	0.33 U (12-24") 0.33 U (36-48")	---	no
Hexachloroethane	0.33 U (12-24") 0.33 U (36-48")	---	no
Nitrobenzene	0.33 U (12-24") 0.33 U (36-48")	---	no
Pentachlorophenol	1.7 U (12-24") 1.7 U (36-48")	---	no
Pyridine	0.33 U (12-24") 0.33 U (36-48")	---	no
PCB-1221	0.1 U (12-24") 0.1 U (36-48")	---	no
PCB-1232	0.1 U (12-24") 0.1 U (36-48")	---	no
PCB-1242	0.1 U (12-24") 0.1 U (36-48")	---	no
PCB-1016	0.1 U (12-24") 0.1 U (36-48")	---	no

TABLE 15 (CONT.)
SWMU 004A (PORTACAMP STORAGE AREA)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA FROM SWMU & DOWNGRADIENT [†] SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
PCB-1248	0.1 U (12-24") 0.1 U (36-48")	---	no
PCB-1254	0.1 U (12-24") 0.1 U (36-48")	---	no
PCB-1260	0.1 U (12-24") 0.1 U (36-48")	---	no

^a The "totals soil analytical data" were obtained from sampling events conducted during DOE's "Voluntary Release Assessment" for the WIPP Site. The purpose of the downgradient soil samples is to verify any lateral extent of contamination at each SWMU. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). Following is a listing of the data qualifiers used in this table:

- U Analyte was not detected, value is method reporting limit.
- J Result should be considered an estimated value.

TABLE 16
SWMU 007B (EVAPORATION POND)
TOTALS SOIL ANALYTICAL DATA

TARGET ANALYTES	TOTALS SOIL ANALYTICAL DATA (WID ^a & NMED [†]) FROM SWMU SOIL SAMPLES ^a mg/kg (depth)	FACILITY-WIDE BACKGROUND SOIL CONCENTRATIONS mg/kg (depth)	RELEASE DETECTED ABOVE BACKGROUND?
Arsenic	10.0 ^a U & 1.6 [†] (14") 10.0 ^a U (44")	3.3 (12-24") 3.3 (60-72")	no
Barium	44.0 ^a & 51.0 [†] (14") 32.0 ^a (44")	120 (12-24") 91 (60-72")	no
Cadmium	0.5 ^a U & 5.0 [†] U (14") 0.5 ^a U (44")	0.7 (12-24") 1.8 (60-72")	no
Chromium (total)	8.0 ^a & 10.0 [†] (14") 7.0 ^a (44")	26 (12-24") 8.2 (60-72")	no
Lead	6.0 ^a & 5.0 [†] U (14") 6.0 ^a (44")	3.2 (12-24") 7.1 (60-72")	yes
Nickel	5.0 ^a & 7.0 [†] (14") 4.0 ^a (44")	2 (12-24") 2 (60-72")	yes
Silver	1.0 ^a U & 5.0 [†] U (14") 1.0 ^a U (44")	1 (12-24") 1 (60-72")	no

^a The "totals soil analytical data" were obtained from sampling events conducted during an NMED/WIPP sampling event in October 1992, documented in Appendix K of *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). Samples were split and analyzed by both NMED and Westinghouse. The facility-wide background soil concentrations taken from Table 12 in *Supplemental Information Requested by the New Mexico Environment Department for Solid Waste Management Units* (DOE 1997b). Following is the data qualifier used in this table:

U Analyte was not detected, value is method reporting limit.

TABLE 17
TARGET ANALYTES AND EPA ANALYTICAL METHODS
FOR CHARACTERIZING MUD PIT SWMUS (GROUP 001)

TARGET ANALYTES	EPA ANALYTICAL METHODS (or equivalent)
Arsenic	6010
Barium	6010
Cadmium	6010
Chromium	6010
Lead	6010
Mercury	7470/7471
Thallium	6010
Benzene	8240/8260
Chloroform	8240/8260
1,2-Dichloroethane	8240/8260
Ethyl Benzene	8240/8260
Toluene	8240/8260
1,1,1-Trichloroethane	8240/8260
Vinyl Chloride	8240/8260
Xylenes, (total)	8240/8260

TABLE 18
TARGET ANALYTES AND EPA ANALYTICAL METHODS
FOR CHARACTERIZING SWMU 004A (PORTACAMP AREA)

TARGET ANALYTES	EPA ANALYTICAL METHODS (or equivalent)
Arsenic	6010
Barium	6010
Cadmium	6010
Chromium	6010
Lead	6010
Mercury	7470/7471
Nickel	6010
Selenium	6010
Silver	6010
Thallium	6010
Acetone	8240/8260
Benzene	8240/8260
Tribromomethane	8240/8260
n-Butanol	8260
Carbon Tetrachloride	8240/8260
Chlorobenzene	8240/8260
Chloroform	8240/8260
2-Methylphenol	8240/8260
3-Methylphenol	8240/8260
4-Methylphenol	8240/8260
Cyclohexane	8240/8260
Cyclohexanone	8240/8260
1,2-Dichlorobenzene	8260/8270
1,4-Dichlorobenzene	8260/8270
1,1-Dichloroethane	8240/8260
1,2-Dichloroethane	8240/8260

TABLE 18 (CONT.)
TARGET ANALYTES AND EPA ANALYTICAL METHODS
FOR CHARACTERIZING SWMU 004A (PORTACAMP AREA)

TARGET ANALYTES	EPA ANALYTICAL METHODS (or equivalent)
1,1-Dichloroethylene	8240/8260
Cis-1,2-Dichloroethylene	8240/8260
2,4-Dinitrotoluene	8250/8270
2-Ethoxyethanol	8240/8260/8015 (mod.)
Ethyl Acetate	8240/8260
Ethyl Benzene	8240/8260
Hexachloroethane	8250/8270
Isobutanol	8240/8260/8015 (mod.)
Methanol	8240/8260/8015 (mod.)
Methylene Chloride	8240/8260
Methyl Ethyl Ketone	8240/8260
4-Methyl-2-pentanone	8240/8260
Nitrobenzene	8250/8270
Polychlorinated Biphenyls	8080/8081
Pyridine	8250/8270
1,1,2,2-Tetrachloroethane	8240/8260
Tetrachloroethylene	8240/8260
Toluene	8240/8260
1,1,1-Trichloroethane	8240/8260
1,1,2-Trichloroethane	8240/8260
Trichloroethylene	8240/8260
Trichlorofluoromethane	8240/8260
1,1,2-Trichloro-1,2,2-tri- fluoroethane	8240/8260
Vinyl Chloride	8240/8260
Xylenes, (total)	8240/8260

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