



Agenda

Friday, November 3, 2000
141 Palace Avenue ♦ Santa Fe, New Mexico

Time	Activity	Party
2:00 p.m.	Introduction / Purpose	Jody Plum
2:15 p.m.	RH Characterization - Defining the Path Forward	Miriam Whatley
2:40 p.m.	RH Emplacement Process Overview	Tod Burrington
3:00 p.m.	Remarks	Steve Zappe
3:20 p.m.	Comments / Feedback	All

001106.5



RH TRU Waste Characterization: Defining the Path Forward

*Miriam Whatley, Manager
RH Characterization
Westinghouse*



Purpose

Describe the next steps WIPP must take to initiate safe disposal of Remote-Handled TRU waste

Focus on RH TRU characterization requirements necessary to meet 40 CFR 264.13

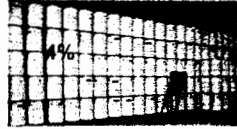
Set the stage for this afternoon's discussions

Disposal of Remote-Handled TRU Waste Continuing the WIPP Mission

Consultation and Cooperation Agreement and the Land Withdrawal Act:

WIPP may receive up to 7,080 cubic meters of RH TRU, defense waste with a limit of 5.1 million curies from RH TRU

(~4% of the total WIPP waste volume: 175,600 cubic meters)



Remote Handled TRU Waste

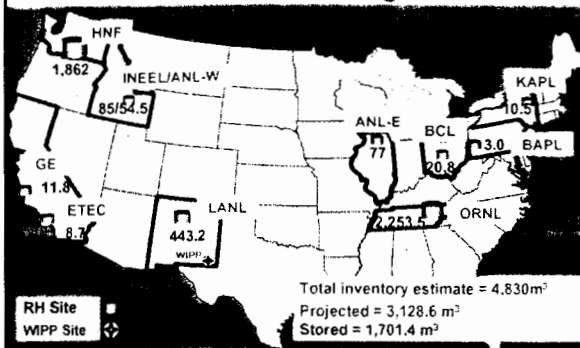
Homogeneous solids, debris, soil/gravel

200 millirems - 1,000 rems per hour dose rate at package surface

Non-mixed and mixed with hazardous constituents

Alpha, beta, gamma and neutron-emitting

RH-TRU Generator/Storage Sites 10/13/00



WIPP RH Authorization Basis

- Land Withdrawal Act
- NEPA Records of Decision
- Facility Safety Analysis Report/Technical Safety Requirements
- EPA Certification Final Rule
- Hazardous Waste Facility Permit

Modification Needed

Hazardous Waste Facility Permit

October 1999

Miscellaneous Unit Permit

- Authorizes Contact-Handled TRU waste storage and disposal
- Establishes "performance standards" to comply with 40 CFR 264.601-602
- Provides Waste Analysis Plan for Contact-Handled TRU waste to comply with 40 CFR 264.13 requirements.

Contact-Handled Waste Analysis Plan Requirements

- Characterization
 - Acceptable Knowledge
 - Headspace Gas Sampling and Analysis
- Confirmation of Acceptable Knowledge
 - Radiography
 - Visual Examination
 - Solids Sampling
 - Headspace Gas Sampling and Analysis
 - Data Management
- Audit Program

The Remote-Handled Prohibition

RH Waste is Prohibited Because: The DOE did not provide documentation that RH-TRU waste could be characterized in accordance with the hazardous waste regulations

Solution: Performance-Based, RH-specific Waste Analysis Plan

What Does "Performance-Based" Mean?

PBMS [performance-based measurement system] conveys "what" needs to be accomplished, but not prescriptively "how" to do it.

EPA, OSWER Performance-Based Measurement System (PBMS) Implementation Plan

What = "...all the information which must be known to treat, store, or dispose of the waste..."

20.4.1.500 NMAC (40 CFR 264.13)

What Does "Performance" mean In Terms of the WIPP Facility?

- Air only pathway for hazardous release during operational phase
- Repository performance would not be compromised even if repository-sensitive parameters were maximized

Remote-Handled Waste Analysis Plan

What is Proposed



How = Reliance on Acceptable Knowledge where possible

What is Acceptable Knowledge

Joint NRC/EPA Guidance on Testing Requirements for Mixed Radioactive and Hazardous Waste

- Process knowledge
 - Records of analyses performed by generator or TSDF prior to the effective date of RCRA regulations; or,
 - A combination of the above information, supplemented with chemical analysis.

Remote-Handled Waste Analysis Plan

What's **Not** Proposed

Why No Headspace Gas Sampling?

RH constitutes small fraction of allowable emissions
RH emissions can be bounded by reducing permit's room-based limits



Why No Solids Sampling?



Because of high radiation, small size samples are analyzed and large sample dilution is required
Analyses provide data that are not useful for regulatory determinations

Why this Approach? ALARA

Safety

Waste knowledge alone may be the *most appropriate method* to characterize mixed waste streams where increased radiation exposures are a concern.

Joint NRC/EPA Guidance on Testing Requirements for Mixed Radioactive and Hazardous Waste

Repository Performance

Qualitative data may be all that are needed

Only collect data relative to "the site decision"

EPA TIO Guidance



Summary

- Remote-handled TRU waste disposal is part of the WIPP's original mission
- Authorization basis for remote-handled waste must be completed
- WIPP preparing permit modification requests to allow remote-handled disposal
- Permit modifications include an RH-specific Waste Analysis Plan
- Proposed Waste Analysis Plan is "performance-based"
- Desired outcome is to focus on use of acceptable knowledge, when possible and integrate ALARA considerations with RCRA compliance

...What Does this Mean to You?

- Performance-based Waste Analysis Plan is a different approach for WIPP
 - We need **your perspectives**

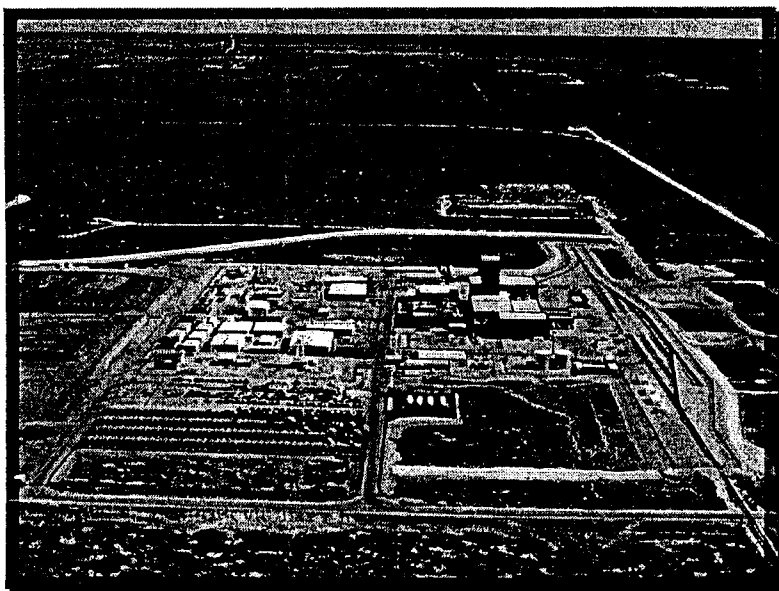
RH Generator/
Storage Sites



WIPP

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The Waste Isolation Pilot Plant Overview

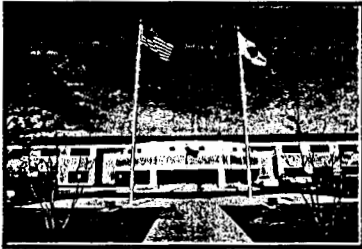
**Robert Kehrman, Manager
Requirements Management Project
Westinghouse**

**Regulator Workshop
October 17, 2000
Carlsbad, NM**

Topics

- **Who we are**
- **Where WIPP is located and what does it look like**
- **Brief WIPP Chronology**
- **How we know it is the the right place for Transuranic Waste Disposal**
- **What we have to know about the RH-TRU waste to keep WIPP safe**
- **Where the waste will come from and how much we have disposed so far**

**United States Department of Energy
Assistant Secretary for
Environmental Management**



Carlsbad Field Office

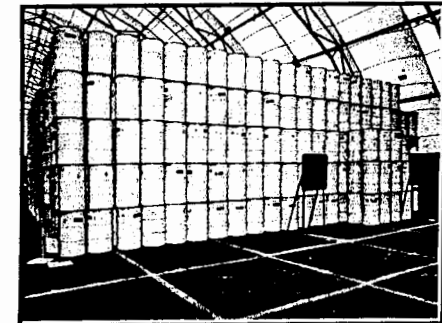
**Waste Isolation
Pilot Plant**

**Primary
Participants**

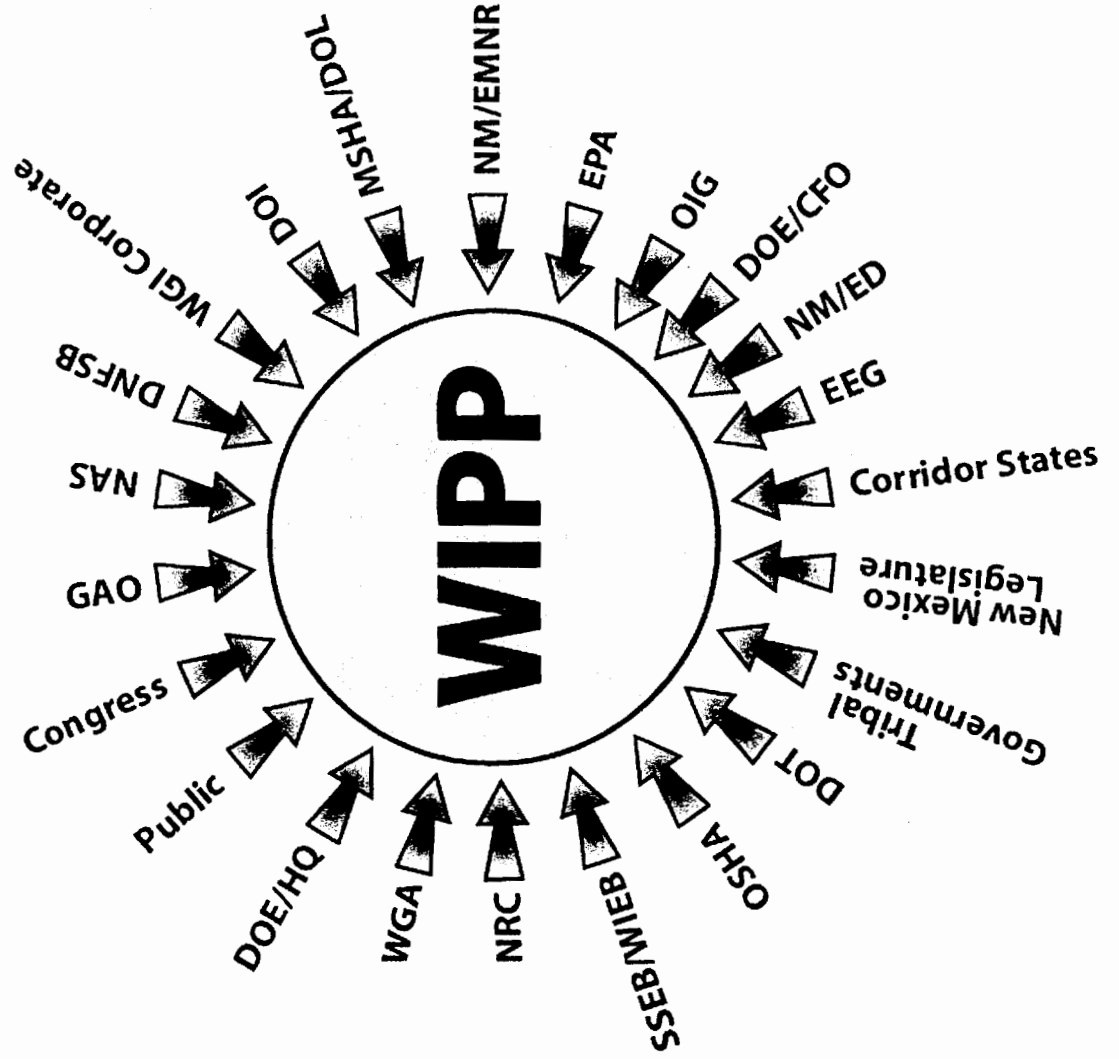
**National
TRU Program**



**Westinghouse
Los Alamos National Laboratory
Sandia National Laboratories
CTAC**



WIPP's Oversight / Stakeholders

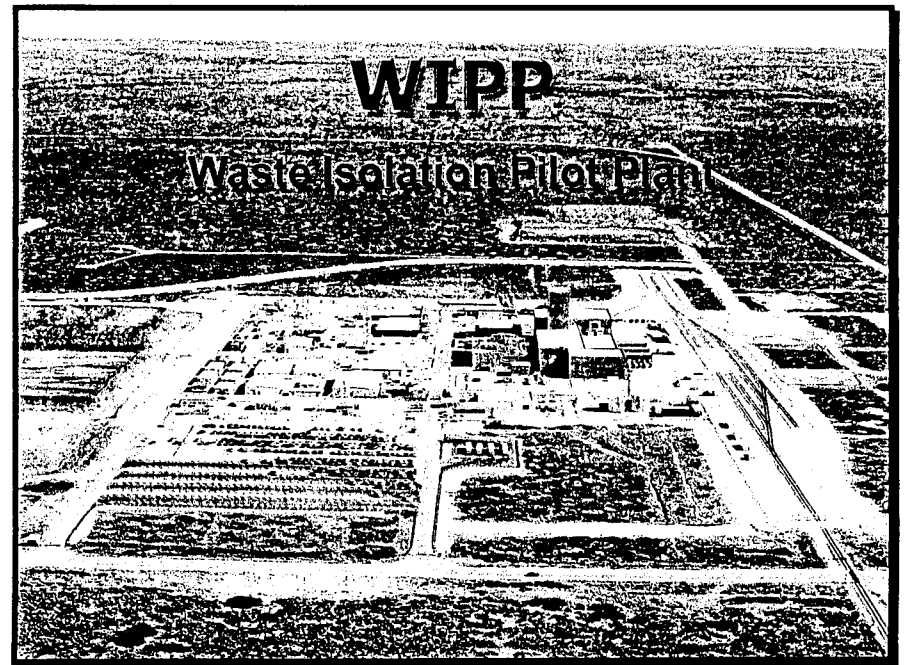


Where WIPP is Located

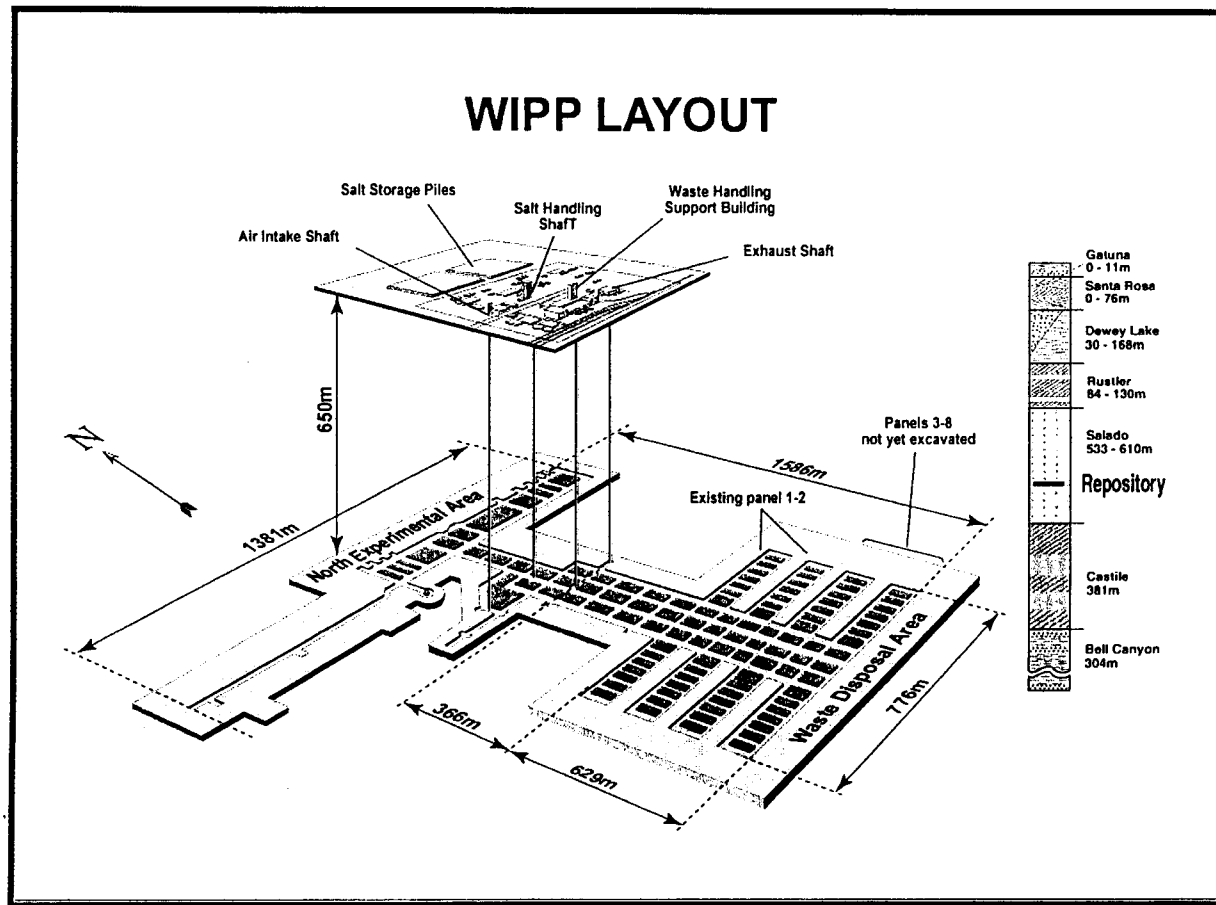


Where WIPP is Located

- Northern Chihuahuan Desert
- 33 miles east of Carlsbad, NM
- Eddy-Lea County Line
- 16 Sections of Federal Land (10,240 Acres)



What Does It Look Like



Brief WIPP Chronology

- **1955 - National Academy of Sciences recommends salt as host rock**
 - Identified areas to investigate
 - Identified favorable siting criteria
- **1974 - Atomic Energy Commission selects site near Carlsbad for exploratory work**
- **1979 - Congress authorizes WIPP for research and development for safe disposal of defense-generated radioactive waste that are exempt from Nuclear Regulatory Commission (NRC) (PL 96-164)**
- **1980 - DOE issues Final Environmental Impact Statement (FEIS)**

Brief WIPP Chronology (*cont.*)

- **1981 - DOE issues Record of Decision**
- **1981 - DOE begins construction of WIPP Exploratory Shaft**
- **1985 - EPA issues radioactive waste disposal standards applicable to WIPP**
- **1986 - EPA states facilities must comply with Resource Conservation and Recovery Act (RCRA) for disposal of mixed (hazardous and radioactive) waste**
- **1990 - New Mexico is authorized by EPA to regulate mixed waste**

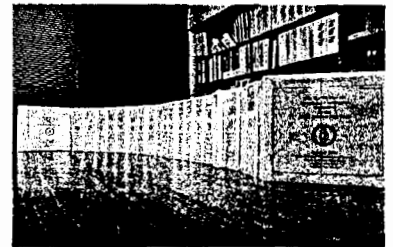
Brief WIPP Chronology (*cont.*)

- **1990 - DOE issues first Supplemental Environmental Impact Statement (SEIS)**
- **1991 - DOE submits Parts A and B of the RCRA Permit Application to New Mexico**
- **1992 - WIPP Land Withdrawal Act**
 - **Permanently segregates land for WIPP**
 - **Gives EPA regulatory authority to certify WIPP compliance to 40 CFR 191**
- **1995 - DOE submits revised RCRA Permit Application to New Mexico Environment Department (NMED)**

Brief WIPP Chronology (cont.)

- **1996 - EPA issues 40 CFR 194, compliance criteria in February**
 - DOE submits 84,000 page Compliance Certification Application to EPA

- **1998 - DOE issues SEIS II in January**
 - EPA certifies WIPP ready for disposal
 - New Mexico Environment Department issues draft hazardous waste facility permit (HWFP) for disposal of transuranic mixed waste



Brief WIPP Chronology (*cont.*)

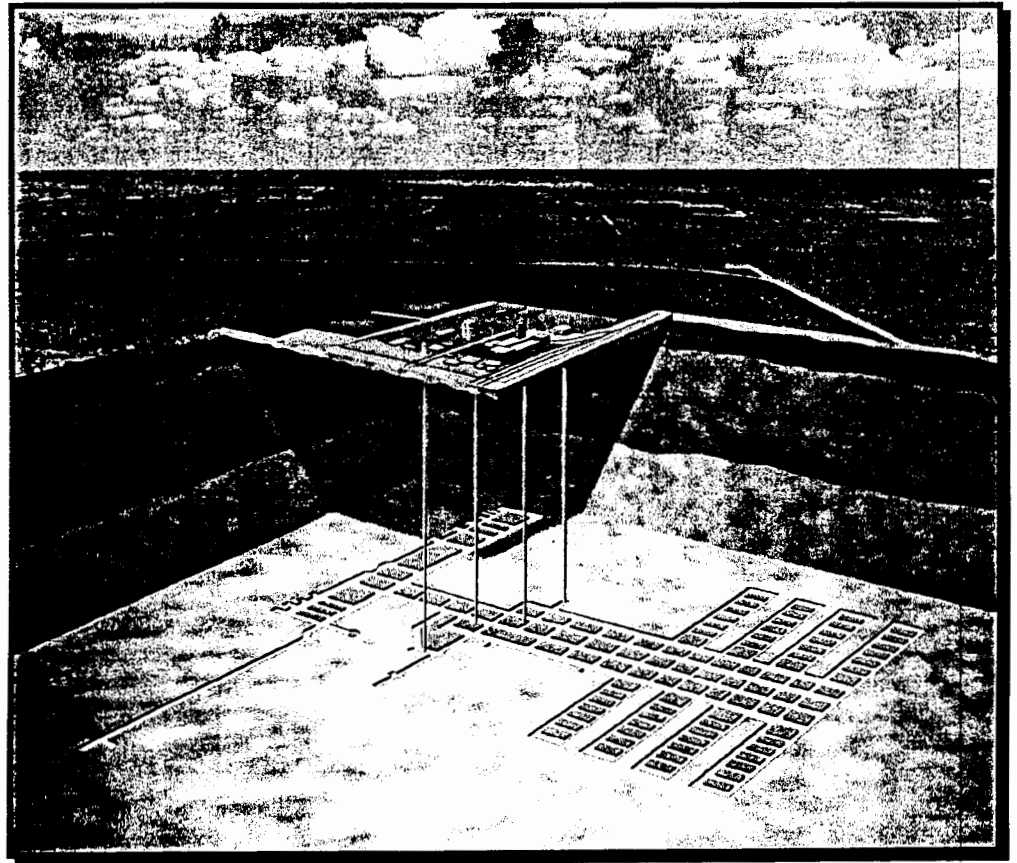
- **1999 - First shipment non-mixed waste in March**
 - **New Mexico Environment Department issues Hazardous Waste Facility Permit in October**
- **2000 - First shipment of mixed waste in September**

How We Know it is the the Right Place for TRU Waste Disposal

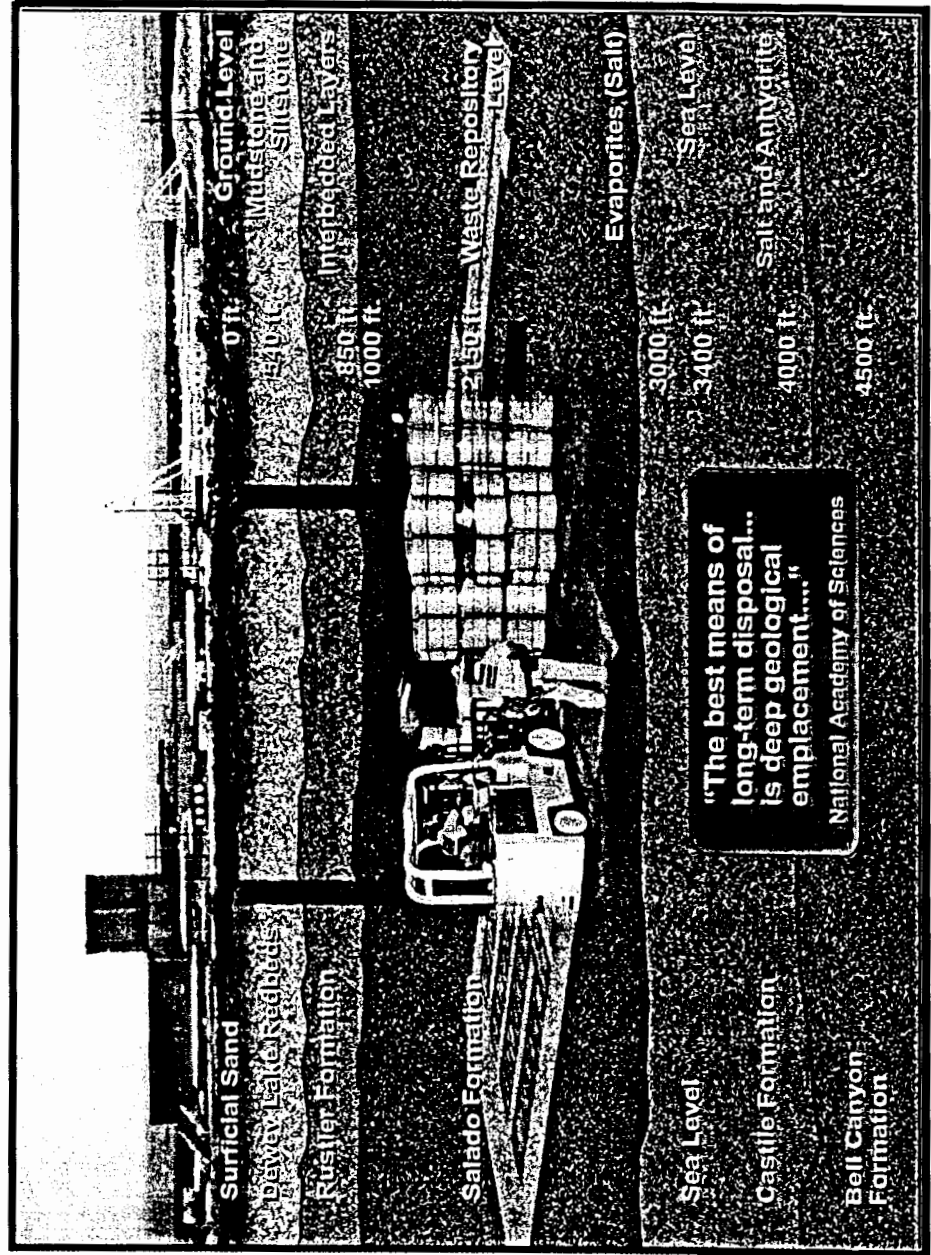
- **DOE selected the best site available**
- **Performed risk assessments to evaluate the site**
 - **RCRA - 300 years**
 - **40 CFR 191 - 10,000 years**
- **Regulatory Agencies have accepted our risk assessments**

The Best Site Available

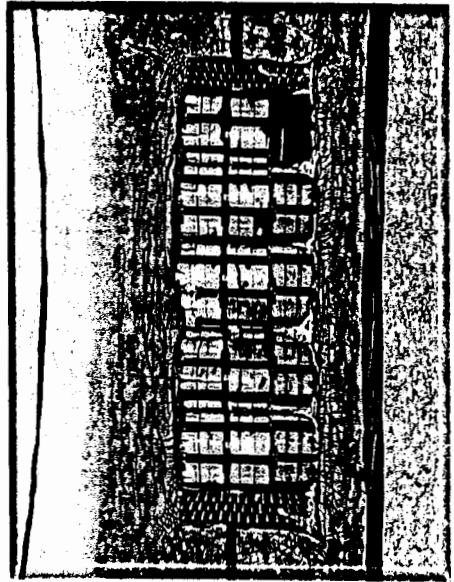
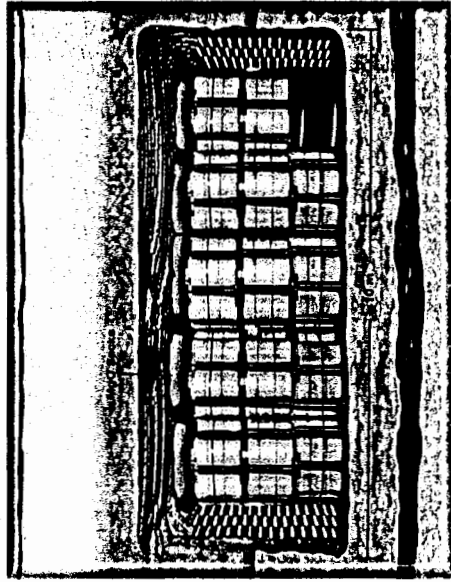
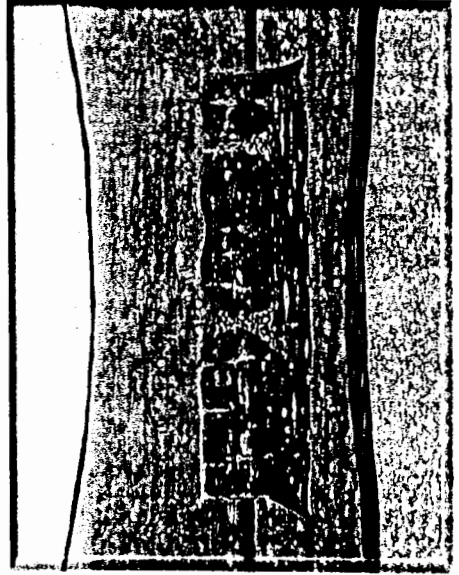
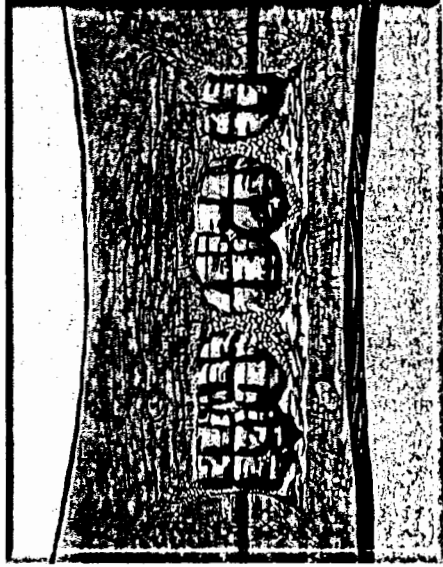
- Isolated location
- Geologically stable
- Thick salt formation
- Reasonable depth
- Little groundwater
- Resource considerations



The Best Site Available



The Best Site Available



Performed Risk Assessments to Evaluate the Site

- **Geology, Hydrology, Climate, Seismology, etc.**
 - Hundreds of parameters
- **Waste**
 - Chemical, physical, radiological properties
 - Packaging
 - Inventory
- **Events and Processes**
 - Natural
 - Manmade

Performed Risk Assessments to Evaluate the Site

- **Probabilistic assessments**
- **Predicted performance for 10,000 years**
- **Complies with EPA standards by a factor
of 10**

Performed Risk Assessments to Evaluate the Site

- **Used a 300-year subset for RCRA**
- **Result is no releases from the closed facility**
- **Only the air pathway is important during operations**

Performed Risk Assessments to Evaluate the Site

- **Important Parameters determined by the RCRA risk assessment**
 - **Moisture Content**
 - **Prohibited Items**
 - **Reactive**
 - **Corrosive**
 - **Ignitable**
 - **Chemical/Physical Properties**
 - **Volatile Organic Compound concentrations in the container headspace**
 - **corrodible metals**
 - **plastics, cellulosics, rubber**

Performed Risk Assessments to Evaluate the Site

- **These parameters are related to Permit Conditions**
 - **VOC** Room limits
 - **Moisture** <1%
 - **Prohibited Items** None Allowed
 - **Metals** Track (Minimum)
 - **Organics** Track (Maximum)
- **We re-evaluated these parameters for RH-TRU waste**

What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- **In the Risk Assessment for RH-TRU waste we show that::**
 - **Moisture does not matter**
 - **Organics (rubber, plastic, cellulosics) do not matter**
 - **Metals are bounded by the CH-TRU waste**
 - **VOCs can be accounted for by lowering the room limits**

What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- **This is because:**
 - **RH-TRU is a small percentage of the total waste in the repository**
 - **Repository performance is not compromised if these parameters are taken to extremes**

What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- **For RH-TRU waste, the following parameters are needed to assure the waste can be managed safely and in accordance with RCRA:**
 - **No prohibited items**
 - **Hazardous waste codes**
 - **Physical form of the waste**
- **These can be determined using knowledge of the waste.**

Summary

- Facility was selected using well established criteria
- WIPP was characterized to determine important performance parameters
- Risk assessments show that WIPP will comply with applicable regulations
- Information needed for RH-TRU waste management can be obtained using knowledge of the waste.

WIPP Has Received Waste From Four Sites *(as of 10-17-00)*

