



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Waste Management Update

Mark Senderling

Director, Office of Disposition Planning & Policy
EM Headquarters WIPP Recovery Manager
Office of Environmental Management

April 20, 2016

Discussion Points

- WIPP Recovery
- Greater-Than-Class C Low-Level Waste Final Environmental Impact Statement
- Low-Level Waste Update

WIPP Recovery

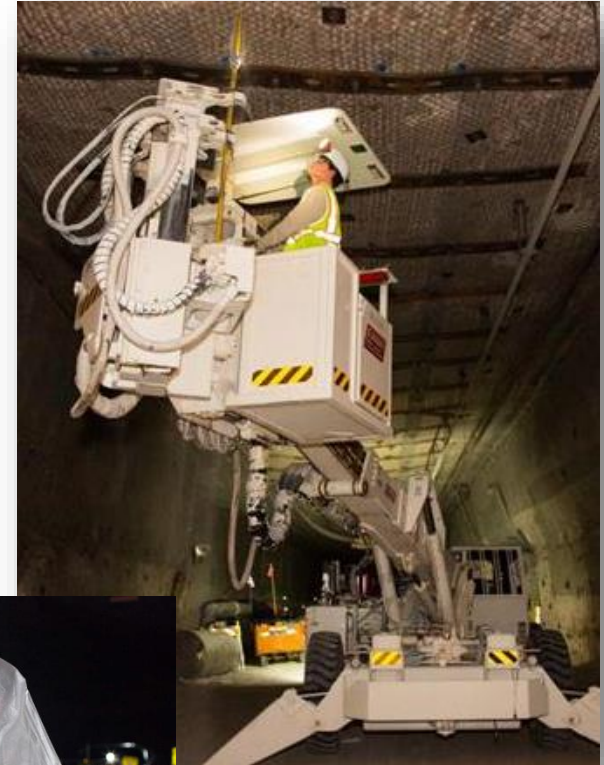
WIPP Recovery—Overview

- Progress to Date
- Status of Accident Investigation Board (AIB) corrective actions
- Critical Decision-1 approval for new permanent ventilation system
- New Integrated Performance Measurement Baseline
- Looking ahead in 2016
 - Documented Safety Analysis
 - Interim Ventilation System
 - Cold operations
 - Management self assessment
 - CBFO and contractor operational readiness reviews
 - TRU Waste Generator Impacts
 - Supplemental Environmental Projects

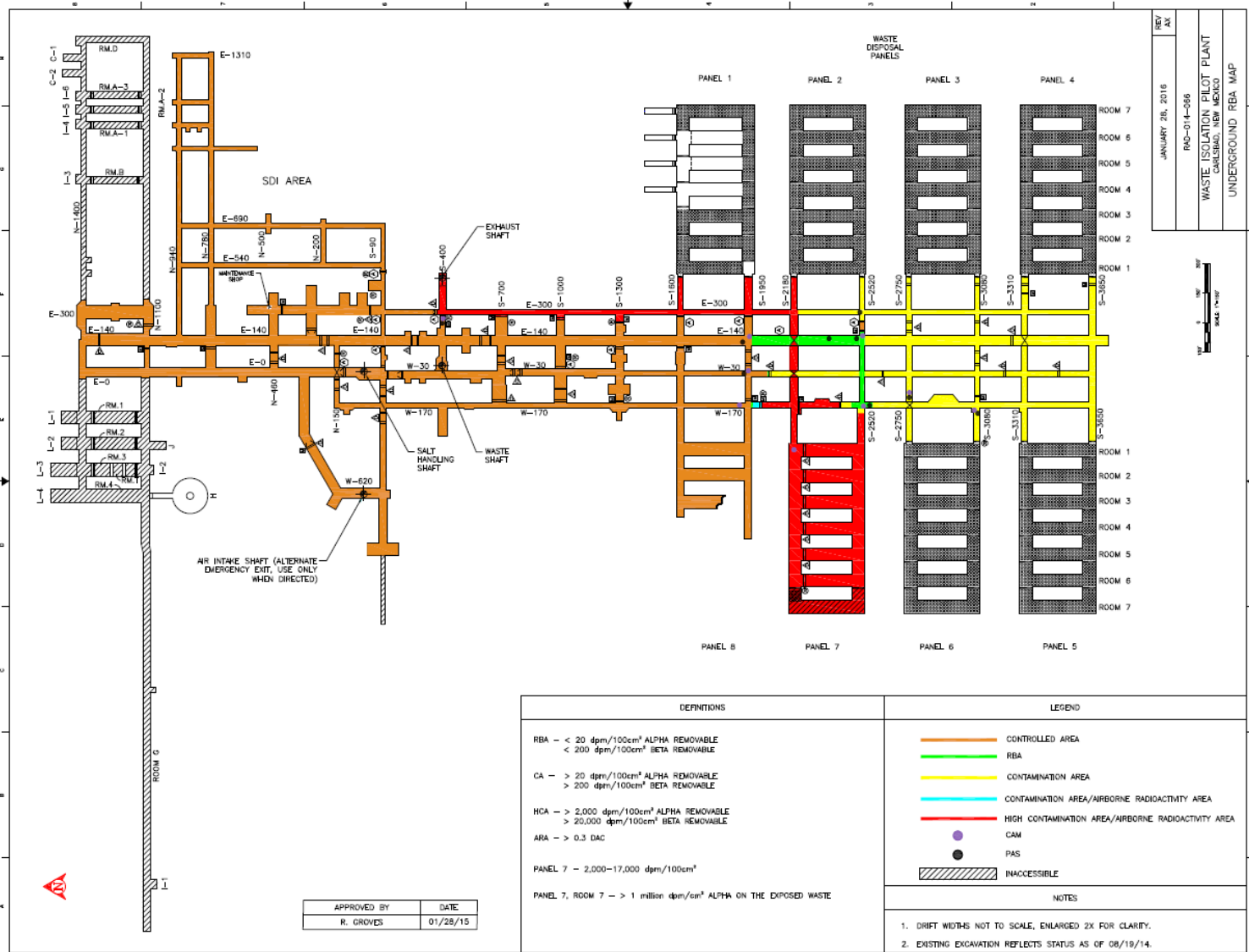
Embedded WIPP Video

WIPP Recovery—Progress to Date

- Initial Closure of Panel 6 and Panel 7, Room 7 completed in May 2015--all suspect nitrate salt containers isolated
- Ground control and catch up bolting
- Electrical restoration
- Zone recovery
 - Pathway from the waste hoist to the opening of Panel 7 has been rolled back
 - No additional personal protection equipment for radiological safety
 - Panel 7 is and will remain posted as an airborne contamination area.



Radiological Rollback



- Re-establishing safety management programs
- AIB corrective actions
- Revised Documented Safety Analysis, and submitted to DOE/CBFO



WIPP Recovery—Progress To Date, Ventilation

Current Status

- Ventilation in Filtration Mode
 - 60,000 cfm of filtered air
- Note: WIPP's standard (unfiltered) operational airflow is 425,000 cfm



Recovery Actions

- Interim Ventilation System (IVS) – HEPA skid and fan unit to add 54,000 cfm of airflow—required for resumption of operations
- Supplemental Ventilation System – An underground fan and reconfiguration of airflow circuits, 70,000 cfm airflow— not required for resumption of operations
- Permanent Ventilation System – Design and construct a new ventilation system capable of providing 500,000+cfm

Interim Ventilation System (IVS)

- Required for resumption of operations.
- Scheduled to be operational in the May timeframe.
- IVS will:
 - Provide adequate air flow at the waste face-for resumption of waste emplacement
 - Increase airflow for ground control and maintenance operations
- Construction status;
 - Ductwork completed
 - Instrument calibrations and component testing underway
 - Readiness activities scheduled for early May



Supplemental Ventilation System

- Required for mining after waste operations resume.
- Scheduled to be operational in the early 2017.



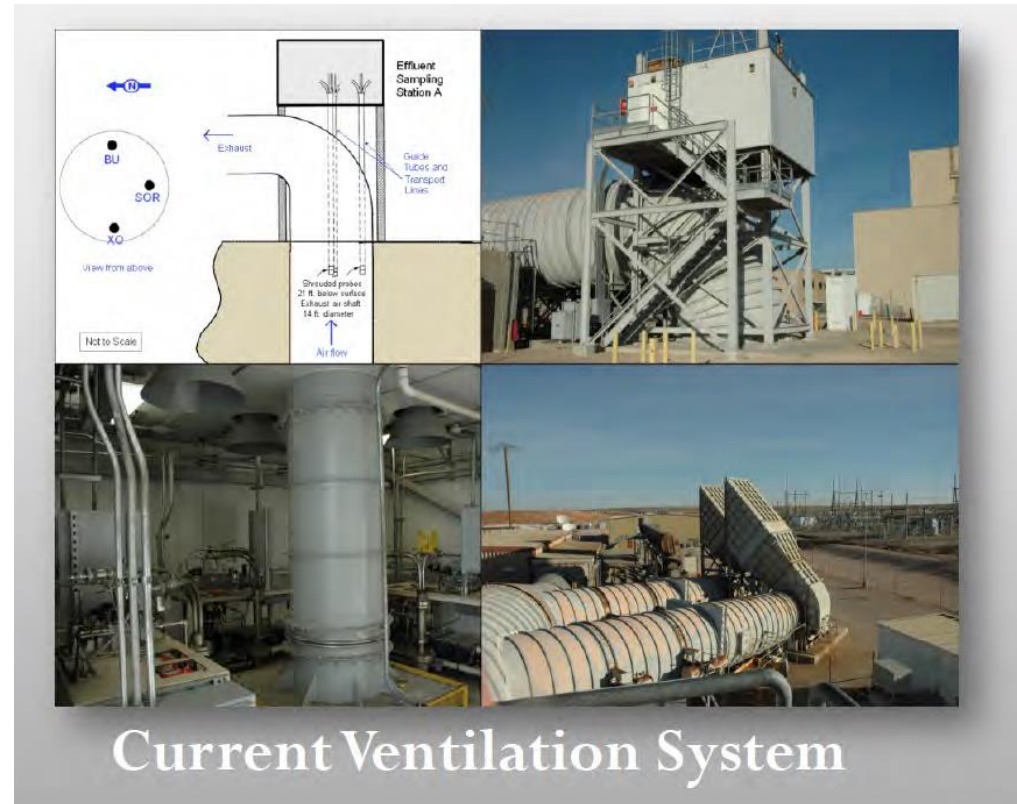
WIPP Recovery—Status of Accident Investigation Board Corrective Actions

- Based on the Accident Investigation Board Report and subsequent evaluations, DOE has implemented Corrective Actions that will prevent incidents from occurring throughout the lifecycle of WIPP
- Five organizations have implemented changes
 - EM-HQ
 - EM-LA and NA-LA
 - LANS
 - CBFO
 - NWP
- Over 70% of corrective actions resulting from the fire and radiological release events have been completed and over 60% validated/closed out by DOE (Not all corrective actions are “prestart”, i.e., required for resumption of operations).



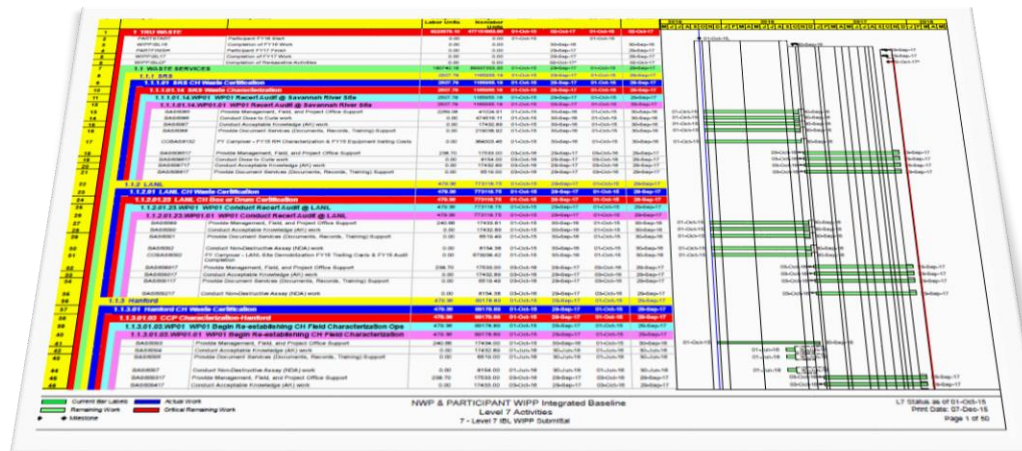
WIPP Recovery—Critical Decision-1 Approval for Permanent Ventilation System

- Critical Decision (CD)-1, *Approve Alternative Selection and Cost Range*, approved December 23, 2015.
 - 24 alternatives analyzed
 - New safety-significant confinement ventilation system and new exhaust shaft were selected alternative
- The cost range as of reaching CD-1 is \$270-\$398 million.
- These estimates are rough order of magnitude estimates that will be refined as the design effort matures.
- CBFO is working the formal design phase of the project, which is expected to take about eighteen months.



WIPP Recovery—New Integrated Performance Measurement Baseline (PMB)

- New integrated PMB approved by Carlsbad Field Office in January 2016
 - Integrated PMB integrates recovery activities with base activities including capital asset projects
 - Identifies critical path activities
 - Identifies resumption of waste emplacement in December 2016



WIPP Recovery—Looking Ahead in 2016.

Documented Safety Analysis

- Developed in accordance with new DOE Standard 3009-2014
- Approximately 120 Safety Management Program procedures created or revised
- First high-quality draft was submitted to CBFO in December 2015.
- The DSA overview training has been completed.
- Implementation/training on-going; ramp-up after DSA approval.



Waste Isolation Pilot Plant Documented Safety Analysis

Prepared by
Nuclear Waste Partnership LLC Carlsbad, NM
U.S. Department of Energy Contract DE-EM0001971

Prepared for:
U.S. Department of Energy Carlsbad Field Office Carlsbad, NM

DECEMBER 2015

WIPP Recovery—Looking Ahead in 2016. DSA

Startup of Interim Ventilation System

- Empirical measurements will be used to validate modeling and ensure IVS will provide adequate airflow for initial operations.



WIPP Recovery—Looking Ahead in 2016

Cold Operations

Testing Systems and Procedures

- Following approval of the DSA, CBFO will begin Cold Operations
- WIPP crews will process and download empty containers utilizing the new DSA Rev. 5 controls.
- Regular drilling to test safety management programs



WIPP Recovery—Looking Ahead in 2016 Management Assessments



An internal review conducted by the NWP's line management organization for the purpose of confirming readiness.

WIPP Recovery—Looking Ahead in 2016

Operational Readiness Reviews

Separate contractor and CBFO performance-based examination of facilities, equipment, personnel and procedures to ensure WIPP will be operated safely within its approved safety envelope.



WIPP Recovery—TRU Waste Generator Impacts

- CBFO National TRU Program is developing an enhanced chemical compatibility determination process.
 - New requirements may have impacts on existing and future TRU processing/packaging.
 - This process is being discussed with Field Managers with TRU waste, e.g., via TRU Corporate Board.
- Initial focus of WIPP will be on emplacement of waste currently located in Waste Handling Building.
- Technical and programmatic factors for waste shipment priorities
 - What waste meets new chemical compatibility requirements
 - WIPP transportation/waste acceptance capabilities
 - Generator site compliance commitments
 - Storage capacities
- Above-ground storage capability is being planned.



WIPP Recovery—TRU Waste Generator Impacts (cont'd)

New and Enhanced Federal Oversight

- Increased compliance oversight at Carlsbad Field Office and EM/HQ
- Clearer roles and responsibilities

New Technical and Program Reviews

- Generator Site Technical Reviews
- Program reviews to ensure generator site programs at adequate (Facility Qualification Evaluations)

Enhanced Technical Documentation Requirements

- Detailed chemical compatibility analyses of all TRU waste streams



WIPP Recovery—Supplemental Environmental Projects

- Two settlement agreements signed to resolve State of New Mexico Environment Department claims against DOE
- These SEPs represent estimated total value of \$74 million
 - \$34 million for New Mexico road repair projects
 - \$4 million for offsite emergency operations center near WIPP
 - \$1 million to fund enhanced training and capabilities for local emergency responders, including funding for training and exercises with local mine rescue teams
 - Up to \$12 million to improve DOE-owned transportation routes at LANL used to ship transuranic waste to WIPP

WIPP Recovery—Supplemental Environmental Projects (cont'd)



Governor Susana Martinez cuts the ribbon for the new WIPP Emergency Operations Center (EOC)

CBFO's Mike McCoy discusses features of the new EOC



WIPP Recovery—Supplemental Environmental Projects (cont'd)

- SEPs (cont'd):
 - \$10 million to replace aging potable water lines
 - \$7.5 million to design and install engineering structures in canyons in and around LANL to slow storm water flow
 - \$2.5 million to fund increased sampling and monitoring capabilities for storm water runoff in and around LANL
 - \$3 million for agreements to conduct external triennial compliance reviews

WIPP Recovery—Summary

- **Key Remaining Tasks:**
 - DSA Approval and Implementation
 - Startup of Interim Ventilation System
 - Cold Operations
 - Management Self Assessment
 - Contractor Operational Readiness Review
 - DOE Operational Readiness Review
- **DOE is committed to the reopening of WIPP.**
- **Resumptions of operations will occur only when it is safe to do so.**

GTCC LLW Final Environmental Impact Statement (FEIS)

Relevant Legislative Drivers

- Currently there is no disposal pathway for GTCC LLRW or GTCC-like waste.
- Congressional Mandate
 - Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law #99-240)
 - Deems the Federal Government responsible for the disposal of LLRW with concentrations of radionuclides that exceed the limits established by the Nuclear Regulatory Commission (NRC) for Class C radioactive waste (e.g. GTCC LLRW). DOE was the agency that was later assigned that responsibility.
 - Requires disposal of GTCC LLRW at a facility licensed by NRC.
 - Energy Policy Act of 2005 (Public Law #109-58)
 - Requires DOE to submit a Report to Congress on the GTCC EIS disposal alternatives and await action by Congress before issuing a Record of Decision selecting a GTCC disposal alternative.

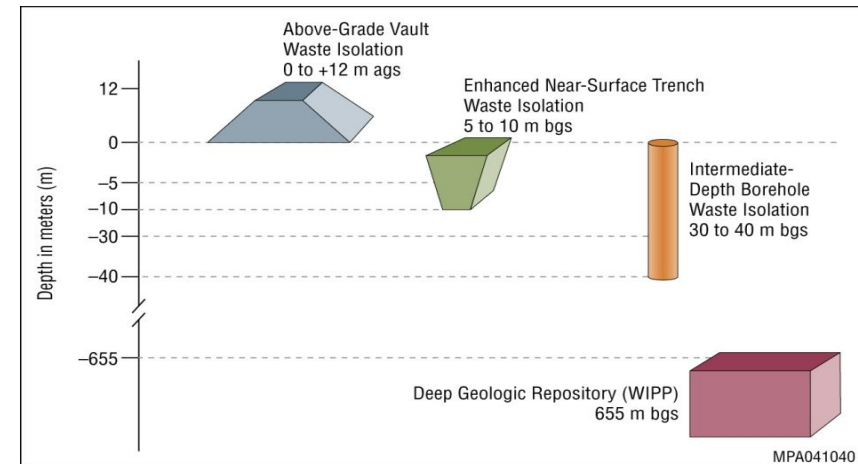
Overview: GTCC LLRW Waste & GTCC-Like Waste

- GTCC LLRW:
 - ***A formal, defined waste classification in federal law and regulations***
 - Generated from Nuclear Regulatory Commission (NRC) or Agreement State licensed activities
 - The most hazardous class of LLRW as defined by the NRC in 10 CFR 61
 - ...“waste that is not generally acceptable for near-surface disposal... for which form and disposal methods must be different, and in general more stringent, than those specified for Class C waste”
 - Must be disposed of in a geologic repository, as defined by NRC, unless proposals for disposal in a site licensed pursuant to 10 CFR 61 are approved by the Commission
 - 8,800 cubic meters

- GTCC-Like Waste:
 - ***Not a formal waste classification by rule or DOE order; rather, a descriptive category created for purposes of the EIS***
 - DOE owned or generated LLRW or transuranic (TRU) waste with characteristics similar to GTCC LLRW and with no identified disposal path
 - Primarily non-defense TRU waste from clean up activities at the West Valley Demonstration Project in New York
 - 2,800 cubic meters

Overview: GTCC Disposal Alternatives Evaluated

1. **No Action:** Continue current storage/management practices
2. **Geologic Repository:** At Waste Isolation Pilot Plant (WIPP)
3. **Intermediate-Depth Boreholes:** At Hanford, Idaho National Laboratory (INL), Los Alamos National Laboratory (LANL), Nevada National Security Site (NNSS), WIPP Vicinity, and generic commercial location in Region IV (west)
4. **Enhanced Near-Surface Trenches:** At Hanford, INL, LANL, NNSS, Savannah River Site (SRS), WIPP Vicinity, and generic commercial location in Regions II and IV (southeast and west)
5. **Above-Grade Vaults:** At Hanford, INL, LANL, NNSS, SRS, WIPP Vicinity, and generic commercial location in Regions I-IV (northeast, southeast, midwest, and west)



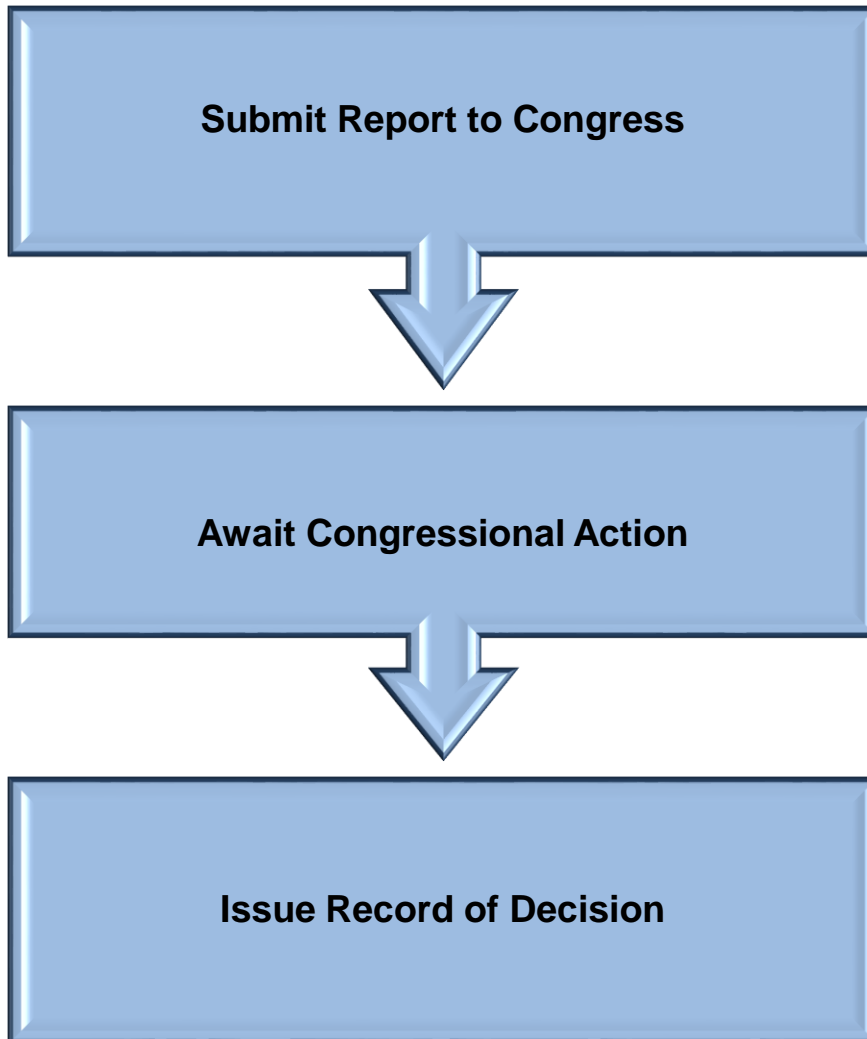
Factors Considered During the Development of the Preferred Alternative

- Public comments provided on the Draft GTCC EIS: Over 4,000 public comments were submitted on the Draft GTCC EIS. DOE addresses those comments in the Comment Response Document section of the Final GTCC EIS.
- Disposal site: Potential human health impacts (including those from transportation and cumulative impacts), cultural resources and tribal concerns, laws, regulations, and other requirements
- Waste type: Radionuclide inventory/characteristics, waste form stability, physical characteristics, and availability for disposal
- Disposal method: Inadvertent human intrusion, construction and operational experience, post-closure care, and cost

Preferred Alternative

- **The Final GTCC EIS includes a preferred alternative:**
WIPP geologic repository and/or land disposal at generic commercial facilities.
 - These land disposal conceptual designs at generic commercial facilities could be altered or enhanced, as necessary, to provide optimal application at a given location.
 - There is presently no preference among the three land disposal technologies (e.g. intermediate-depth borehole, enhanced near-surface trench, and above-grade vault) at the generic commercial facilities.

Remaining Steps for Fulfilling Statutory Responsibility



In accordance with Section 631 of the Energy Policy Act of 2005, the Report to Congress will:

- Propose actions to ensure safe disposal of such identified radioactive wastes
- Describe alternatives
- Identify the Federal and non-Federal options for disposal
- Describe projected costs
- Identify options for ensuring that the beneficiaries of the activities resulting from the generation of GTCC waste bear all reasonable costs
- Identify statutory authority required for disposal of GTCC waste

To view the Final GTCC EIS electronically go to:
<http://www.gtcceis.anl.gov/>

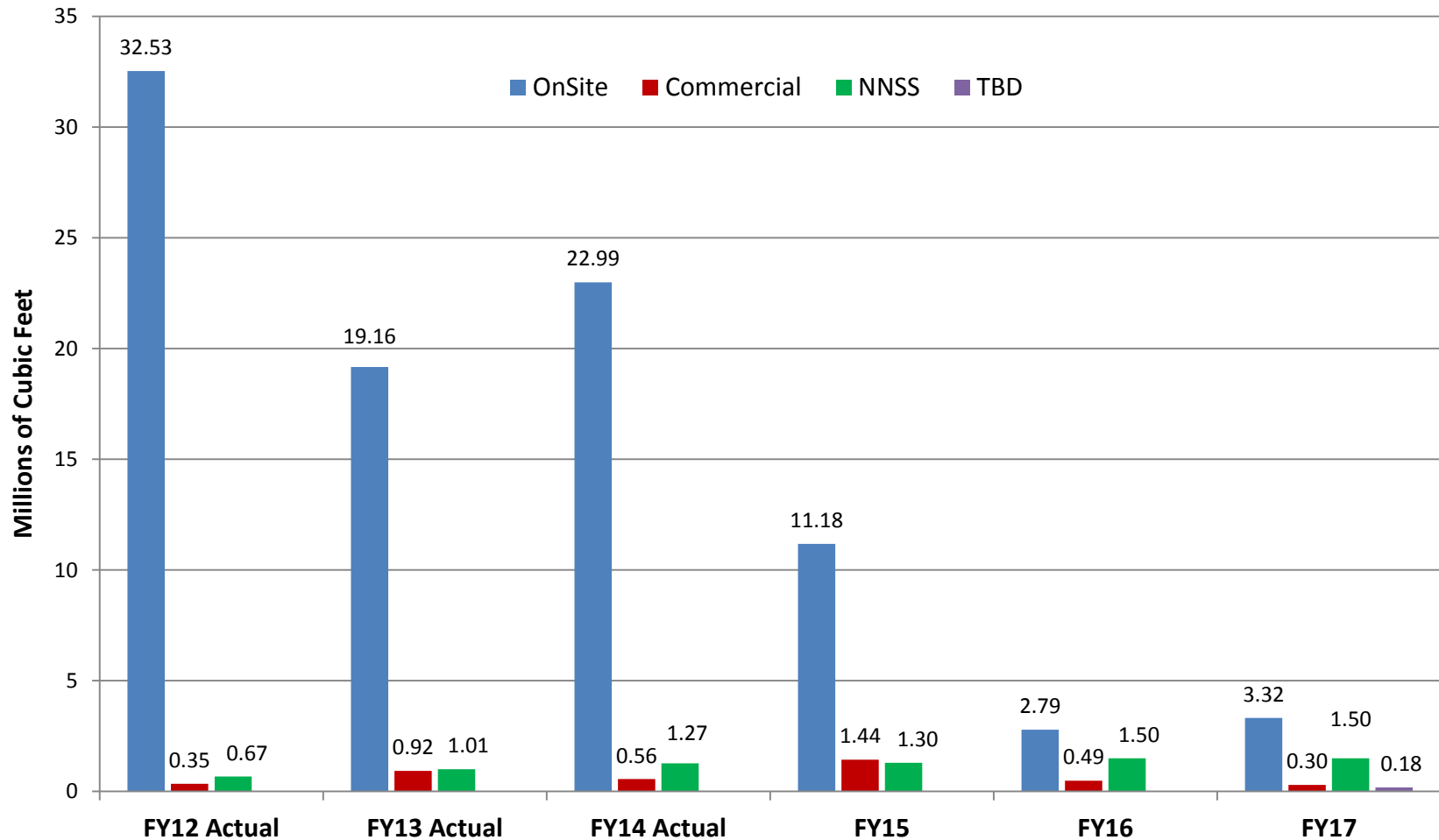
To request hard copies of the Final GTCC EIS:
<http://www.gtcceis.anl.gov/documents/order/index.cfm>

Low-Level Waste Update

Low-Level Waste Highlights

- DOE sites continue to use combination of on-site and off-site disposal paths
- Nationwide contracts for treatment and disposal provide cost-effective vehicles
- DOE closely monitoring potential changes in commercial market
- Nevada National Security Site (NNSS) continues to serve important role in DOE waste management system
- New onsite disposal facilities under evaluation/in planning for three former gaseous diffusion sites to address large D&D and remediation volumes
- Planning for shipment of three vessels from West Valley before end of year
- Reached 50% completion mark in relocation of uranium mill tailings from Moab, CO to Crescent Junction, UT disposal cell
- Hanford retrieving vertical pipe units from 618-10 Burial Ground

Complex-Wide LLW/MLLW Disposal Rates by Disposal Location

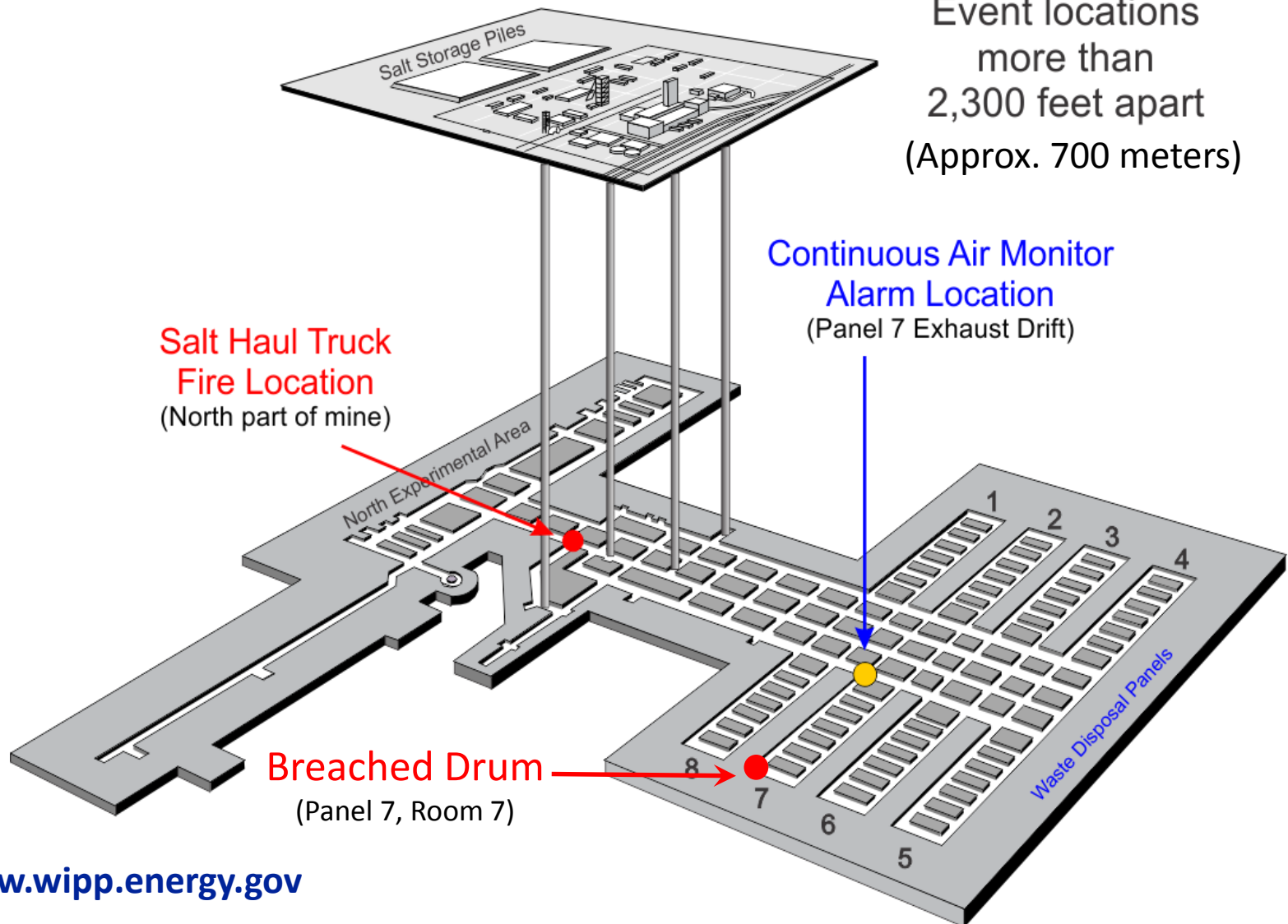


Questions?



Event Locations Underground

Event locations more than 2,300 feet apart (Approx. 700 meters)



Salt Haul Truck Fire Location (North part of mine)

Continuous Air Monitor Alarm Location (Panel 7 Exhaust Drift)

Breached Drum (Panel 7, Room 7)