U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Transuranic Waste Processing Update

Oak Ridge Site Specific Advisory Board

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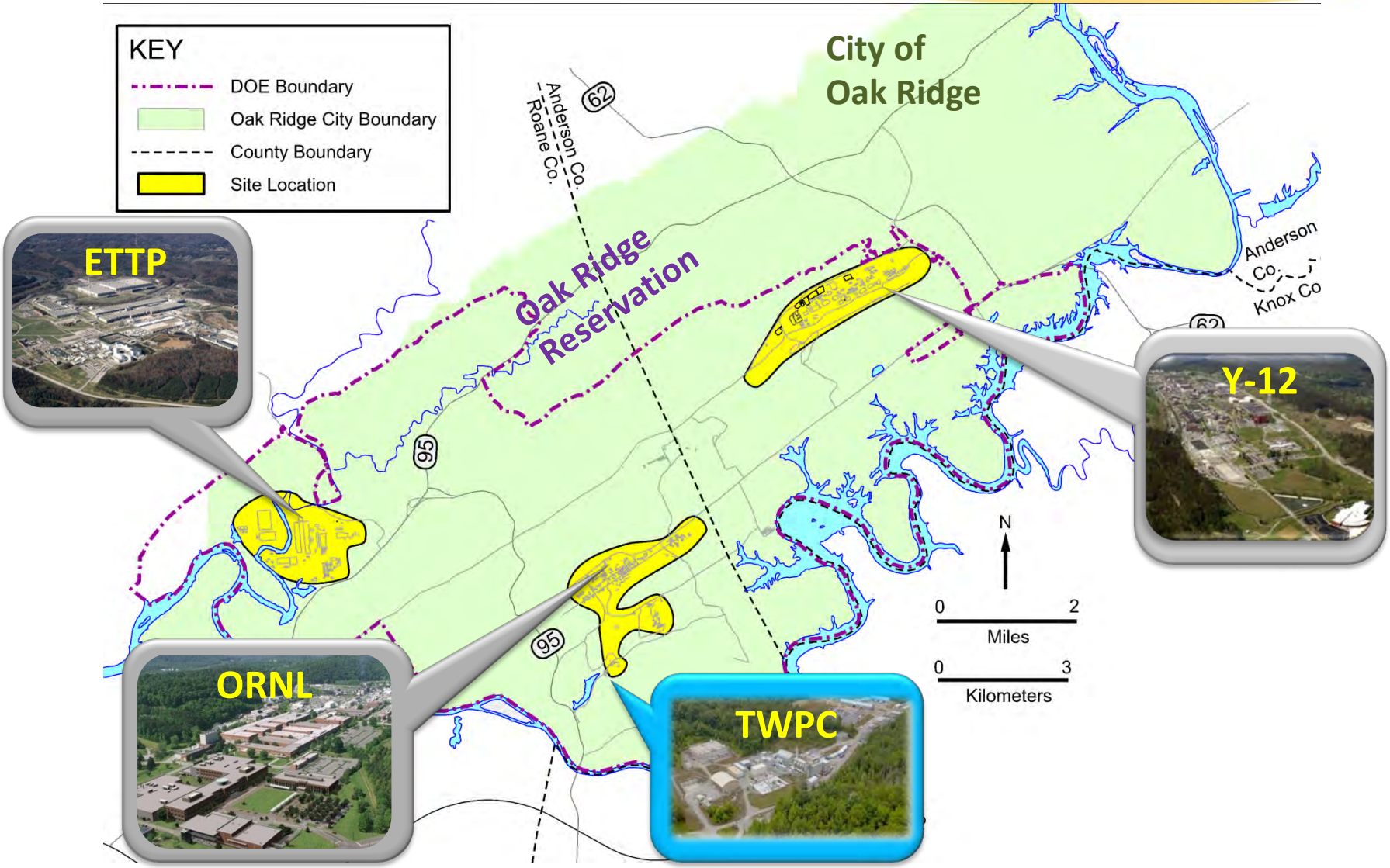
Oak Ridge Office of Environmental Management

Oak Ridge Reservation



Oak Ridge Transuranic (TRU) Waste Inventory

- TRU waste is waste contaminated with man-made elements heavier than uranium with half-lives greater than 20 years
- The Oak Ridge TRU waste inventory is associated with ORNL's research and development activities dating back to the Manhattan Project
- Primarily consists of protective clothing, tools, laboratory debris, and soils

TRU Waste Program Mission

- DOE is under a TDEC Commissioner's Order to implement the *Site Treatment Plan* that mandates specific requirements for the treatment and disposal of TRU waste.
- The Oak Ridge TRU Waste Program's mission is to process, segregate, and repackage the ORNL TRU waste inventory for disposal at the Waste Isolation Pilot Plant (WIPP)
  - Mixed Low Level Waste (MLLW) and Low Level Waste (LLW) segregated from the TRU waste is disposed at DOE's MLLW/LLW disposal facility
- Oak Ridge's TRU Waste inventory is comprised of the following:
  - Supernate ~1610 m^3 (completed 2004)
  - Contact Handled (CH) Debris ~1500 m^3
  - Remote Handled (RH) Debris ~560 m^3
  - RH Sludge (and associated supernate) ~2000 m^3

TRU Waste Processing Center (TWPC) General Overview

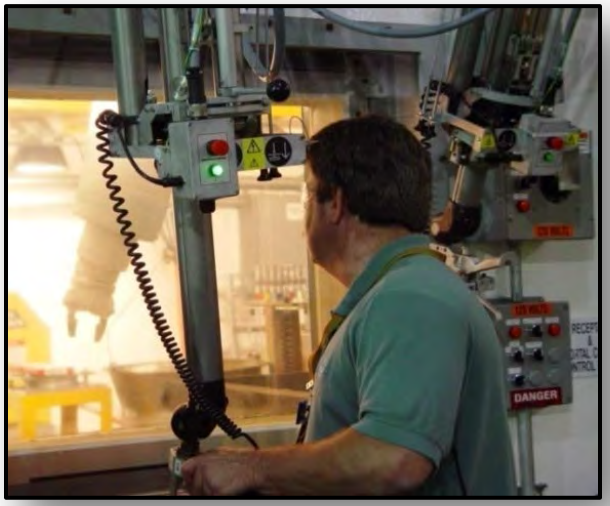
- 15 acres on DOE Oak Ridge Reservation
- 44 facilities
- Operations began in 2004
- 4.5 million man hours since last lost time incident (12+ years)
- Current operations focused on TRU debris waste
- Buildouts required for Sludge retrieval and processing

Mission Accomplishments – CH Waste

- Original CH waste inventory ~1500 m^3
- CH waste processing and disposal status (as of April 2014):
  - 95% processed
  - 68% shipped to permanent disposal
- CH waste inventory remaining to be processed includes difficult waste streams

Mission Accomplishments - RH Waste

- Original RH inventory ~ 560 m^3
- RH waste processing and disposal status (as of April 2014):
  - 65% processed
  - 21% shipped to permanent disposal
- Remaining inventory includes some difficult waste streams (e.g. high dose neutron casks)

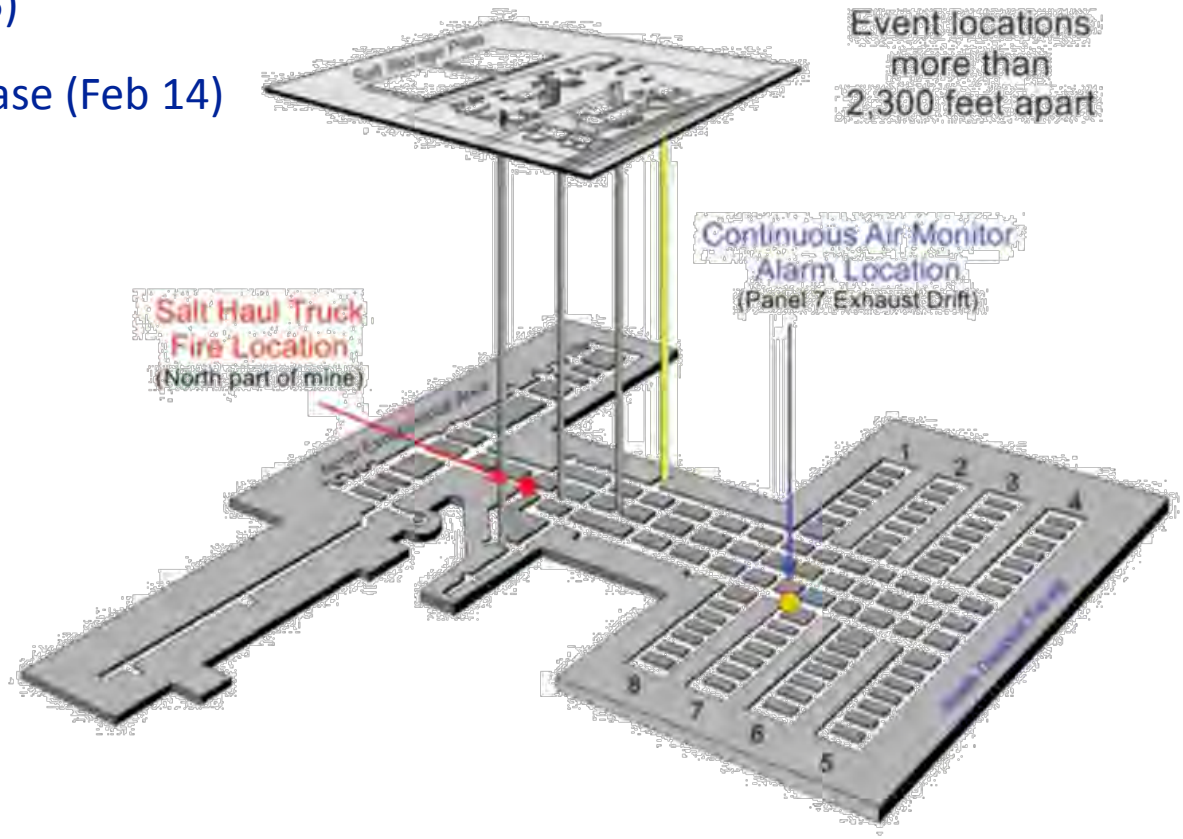


TWPC Mission Focus FY11-FY13

- In Spring 2011, the WIPP Central Characterization Project (CCP) suspended activities in Oak Ridge due to funding constraints
- Oak Ridge (DOE and Contractor) responded quickly by taking over field characterization operations in Fiscal Year (FY) 2011 to support continued waste processing at TWPC
  - Repackaged, characterized, and staged TRU waste for future CCP certification and shipment
  - Segregated, repackaged, and permanently disposed of LLW/MLLW
- CCP returned to the TWPC on October 1, 2013, as planned
- Approximately 3,000 CH waste drums in backlog awaiting certification and shipment when CCP returned

Suspension of Operations at WIPP

- WIPP is currently investigating the second of two operational events that drove the suspension of operations
  - Salt truck fire (Feb 5)
  - Contamination release (Feb 14)



Suspension of Operations at WIPP

- The cause of the WIPP contamination release is under investigation
- The duration for the suspension has not yet been determined
- Impacts to the OR TRU waste program are being evaluated
- Oak Ridge's preliminary plan maximizes continued progress and utilization of existing resources to process and certify wastes
  - Continue processing of CH waste and low dose RH waste casks
  - Leverage utilization of existing legacy TRU waste storage facilities at ORNL to allow for continued waste processing at TWPC
  - Delay processing of high dose RH waste casks (due to limited RH storage capacity)
  - May require establishing additional RH waste storage capacity

Key Near Term Mission Priorities – CH/RH Debris

- Complete CCP certification approval process
- Continue to prioritize and stage TRU waste drums for CCP certification activities
- Begin CH waste inventory relocation to allow continued processing operations during WIPP shipment suspension
- Complete CH and RH TRU debris processing

Staged CH Waste

CH TRU Marshaling Building

Future Work
RH Sludge Buildouts and Processing

- RH Sludge (and associated supernate) inventory ~2,000 m^3
  - Currently stored primarily in the Melton Valley Storage Tanks (MVSTs) at ORNL
    - 8 robust 50,000 gallon storage tanks inside an underground concrete vault
  - Remains to be processed and is a high regulatory priority for TDEC
- The TWPC needs to be modified to enable processing of the sludge and remaining supernate
- Sludge Facility Buildouts are currently in the Conceptual Design stage
  - Procurement process for Design Contractor currently underway

Summary

- The TRU Program has made good progress in processing and dispositioning the Oak Ridge TRU waste inventory
- Approval of the DOE Central Characterization Program to allow resumption of certification activities is expected in the near term
- Waste shipments to WIPP have been suspended as a result of recent operational events
- The duration of the shipment suspension has not been determined
- EM Oak Ridge plans to continue processing of TRU waste to enable progress under the *Site Treatment Plan* by leveraging existing resources and TRU storage capacity at ORNL
- RH-TRU storage capability may need to be established depending on the duration of the WIPP suspension