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

Risk Reduction in Excess Contaminated Facilities at ORNL and Y-12

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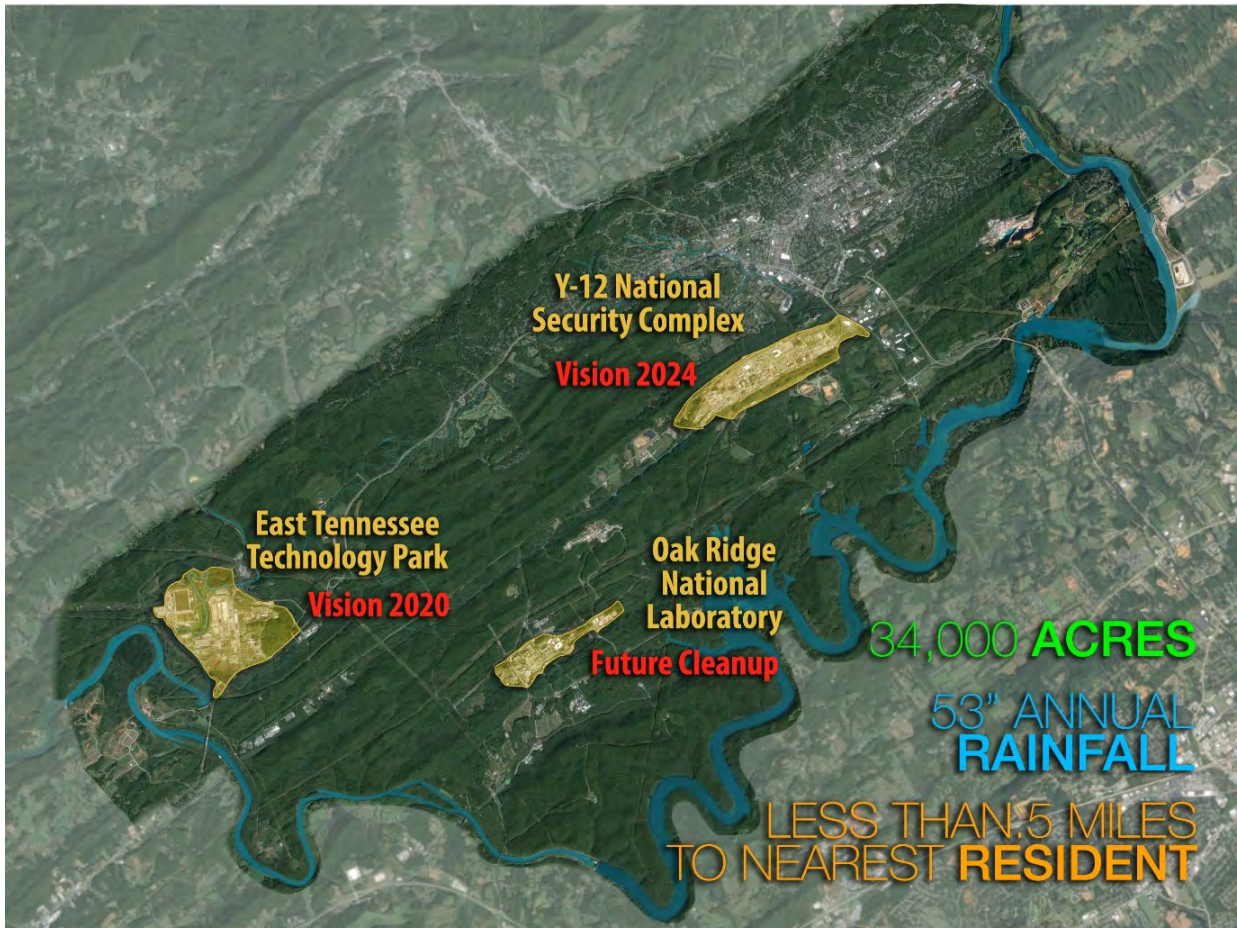
The Oak Ridge Reservation includes three distinct sites with a variety of cleanup challenges

- **Lifecycle cost** risk at the East Tennessee Technology Park
- **Environmental** risk at the Y-12 National Security Complex (Y-12)
- **Radiological** risk at the Oak Ridge National Laboratory (ORNL)



DOE has a number of excess facilities that are in deteriorated condition

- Government Accountability Office and Inspector General audits conducted in 2015 identified numerous high risk excess facilities in deteriorating conditions across the DOE complex
- An Excess Facilities Working Group was established and led by the Department of Energy (DOE) Headquarters to examine and prioritize excess facilities to address risks
- The Working Group used information from sites to develop a draft report to Congress on excess facilities disposition across the DOE complex

Oak Ridge's planning has prepared us to address high-risk excess facilities

- In 2007, the Integrated Facilities Disposition Program (IFDP) was developed to plan for accomplishing the cleanup of the Oak Ridge Reservation
- The Oak Ridge Office of Environmental Management (OREM) partnered with ORNL and Y-12 to build an integrated cleanup plan
- The IFDP received Critical Decision 1 approval in 2008, with a $9-14 billion cost range and a 25-year duration
- The IFDP baseline allowed Oak Ridge to respond to the HQ data call and move out quickly with risk reduction activities
  - Mature understanding of scope, cost & schedule
  - Investment worthiness with shovel ready field activities

OREM further examined facility risks to identify high-priority needs

- Decommissioning and Demolition activities at OREM excess facilities is not anticipated to begin until the mid 2020s – much later than anticipated during IFDP development
- OREM established an Integrated Project Team to identify and prioritize activities that are needed to enhance worker safety, minimize further degradation of the facilities, and prevent additional environmental risk
- OREM applied this prioritization to identify the highest priorities for use of funding appropriated by Congress

Additional funding was provided by Congress for Risk Reduction work in OREM facilities

- Enacted appropriation provided $28 million to begin work in FY 2016
- Objectives were clear in the purpose of the appropriated funds
  - Characterize hazards
  - Abate hazards and stabilize buildings to reduce near-term risks
- OREM funded work at both ORNL and Y-12
  - ORNL:
    - Building 7500 Homogenous Reactor Experiment
    - Building 3026 Hazard Abatement Actions
    - Building 3038 Risk Reduction Actions
    - Buildings 3028/3029 Risk Reduction
  - Y-12:
    - Biology Complex
    - Alpha 4 COLEX Facility
    - Alpha 4 Roof Repair
- In addition, funds were used for an Engineering Evaluation of risks at the Molten Salt Reactor Experiment

Reducing risk at ORNL protects investments in science and isotope missions

Building 7500 Homogenous Reactor Experiment risk is driven by worker safety

The HRE housed two reactor experiments, associated chemical processing facilities and a research facility to evaluate commercial reactor containment.

- Constructed in 1951
- Operated 1952 – 1980s in various missions
- 14,695 square feet, three levels
- Previous remediation activities completed

Risk-Reduction Scope:

- Remove combustibles
- Remove asbestos
- Remove water from basement and grout

Combustible removal work has been completed

- Removal of combustible materials address fire hazard risk

Building 7500 Combustible Material Removal

Damaged asbestos needs to be removed from Building 7500

- Removal of asbestos addresses inhalation hazards

Building 7500 Damaged Asbestos

The basement of Building 7500 needs water removal and grouting work

- Removal of water and excess moisture addresses risk of continued generation of mold and degradation of materials.

Building 7500 Flooded Basement

Building 7500 work is ongoing

- Removed combustibles from building
- Characterized waste and shipped to disposal site
- Deactivation of the building heat detection system completed
- Awaiting additional funding to proceed with asbestos abatement and water removal

Risk-reduction activities need to be performed at Building 3038

Building 3038 is a former Radioisotope Laboratory, which was used for isotopic research and development, production, and shipping.

- Constructed in 1949
- 7,773 square feet, one level
- Previous remediation activities completed

Risk-Reduction Scope:

- Characterize and stabilize glove box contamination
- Remove HEPA filter housing on roof
- Goal is to reduce nuclear hazards

Building 3038

Activities focus on source term removal to reduce radiological inventory

Building 3038 Glove Boxes

Building 3038 HEPA Filter Housing

Characterization work is underway at Building 3038

- Characterizing the glove boxes in the building
  - Characterization activities will determine the ability to meet radiological goal
- Developing plans for removal of the HEPA unit on the roof and stabilizing glove boxes for removal

Glove Box Characterization

Building 3026 risk-reduction activities have focused on environmental protection

Building 3026 was a hot cell facility used for isotope production.

- Previous remedial actions removed building structure
- Two hot cell structures remain with connecting tunnel

Risk-Reduction Scope:

- Remove wind enclosure and seal roof of hot cell
- Characterize water in tunnel and stabilize contamination
- Stabilize contamination of concrete pads

Building 3026 Structures

3026 Hot Cell wind enclosure has been removed and roof sealed

Concrete caps have been placed on the Building 3026 west pedestals

Building 3026 activities are nearly complete

- Wind enclosure removed from hot cell and new roof cover installed
- Pedestals from previously removed hot cells have been sealed
- Water drained from inter-connecting tunnel
- Current work is focused on characterizing the tunnel and observations for re-intrusion of water

Building 3026 Tunnel

Fogging at Building 3028/3029 will reduce the potential for radiation contamination exposure

Buildings 3028 and 3029 were radioisotope hot cell facilities used in isotope production and research.

- Operated from 1950s to 1980s
- Contain several hot cells
- Materials de-inventoried in 1990s

Risk-Reduction Scope:

- Conduct fogging in hot cells to fix loose contamination

DOE oversees a large number of excess facilities at Y-12

Remaining Biology Complex facilities continue to degrade

- Four of the twelve Biology Complex buildings were demolished under ARRA
- Remaining facilities inactive and deactivated for more than a decade

Risk reduction within the Biology Complex facilities is a high priority

Characterization work is underway in the Biology Complex to support future demolition

Roof repairs have been completed at Alpha 4

- Contractor mobilized and started working on August 15
- Completed roofing repair on October 13

Several challenges exist in completing West COLEX equipment characterization and removal activities

Challenges:

- Working inside the Limited Area at Y-12
- Close proximity to the PIDAS fence
- Working with mercury-contaminated equipment
- Working in an area that has mercury contamination
- Waste disposal
- Not disrupting ongoing Y-12 operations

South and East COLEX equipment at Y-12 also need to be addressed

Questions?