Portsmouth Site Update
Portsmouth Site History

- 3,700-acre federal site
- Uranium enrichment operations started in 1954
- DOE cleanup mission began in 1989
- Full-scale D&D began in 2010

COLD WAR
1954-1989
- Nuclear Defense

POST COLD WAR
1989-2001
- Commercial Nuclear Power
- Environmental Cleanup

CLEANUP
2001-Current
- Environmental Cleanup
- Decontamination & Decommissioning
- Property Transfer & Reuse
Portsmouth Ten Year Cleanup Focus

- Complete deactivation and demolition of X-326, X-333 and X-330 Process Buildings
- Complete construction of On Site Waste Disposal Facility (OSWDF) cells to support disposal of demolition debris
- Excavate landfills and plumes within Perimeter Road for OSWDF fill and provide contiguous land for future economic development
- Transfer land to the Southern Ohio Diversification Initiative (SODI) for reuse
X-326 Process Building Demolition

- Demolition began in May 2021
- Demolition on target for completion by July 2022
- Will generate ~135,000 cubic yards of debris, which is size reduced and sent to the OSWDF for disposal.
Demolition Safety Planning

- A safe and methodical demolition plan, approved by Ohio EPA
- Lessons learned from decommissioning experience at DOE projects across the country
- Hazards removed from the building to make it safe for demolition
- Trained, experienced and capable workforce
- Protective measures to minimize disturbance of any residual radiological or chemical contaminants during demolition
- Robust environmental monitoring program
Project Air Monitoring Approach

• Real Time Monitoring provides the first line of defense
• Thresholds are established so emissions at the project boundary meet established limits then assurance is provided that limits at the property boundary will be safe and compliant
• This provides the ability to immediately react to field activity to adjust operations or apply additional controls
• Weather conditions are also monitored real-time to ensure activities are conducted within acceptable conditions
Ohio EPA/DOE Co-Located

- 5 locations on site
- Monitoring for:
  - Particulate matter
  - VOCs
  - Metals
  - Asbestos
- Data is gathered, analyzed and validated independent of DOE
- Data published quarterly

ODH/DOE Co-Located

- 18 locations on site and off site
- Monitoring for:
  - RADs (radiological)
  - Fluoride*
- Data is gathered, analyzed and validated independent of DOE
- Data published quarterly
• 5 landfills and plumes closed within Perimeter Road
• Fill for OSWDF
• Established regulatory commitment tied to OSWDF
• Offers large contiguous site for reuse
Contaminated Plume Excavation

- Provides compaction fill for debris disposal at OSWDF
- Leaves behind more acreage for site redevelopment

**X-740 Plume Excavation**
- Excavation complete
- Delivered 40,000 cubic yards of soil/fill to the OSWDF

**X-231B Plume Excavation**
- In progress
- Excavation anticipated to be complete summer 2022
Contaminated Plume Excavation

First of five groundwater plumes excavated and remediated
• 130,000 cy overburden
• 24,500 cy impacted soil
• NRD obligation of 14,000 cy impacted soil per the DFF&O
• Backfilled and regraded the area
• Installed monitoring wells

Excavation underway on the second groundwater plume
• Site prep complete
• Installation of 2M gallon modular sedimentation tank
• ~25% of 190,000 cy excavated
• Remainder targeted in 2022
The OSWDF is a specially engineered disposal site with a multi-layer liner and cap system designed to consolidate demolition debris and rubble into one centralized confined space that protects public health and the environment.

- Accommodates more than 5M cubic yards of waste and engineered fill.
- Divided into individual cells (12). One process building takes up approximately 3 cells.
WAC Prohibited Wastes

<table>
<thead>
<tr>
<th>Prohibitions in the Record of Decision</th>
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<tbody>
<tr>
<td>Waste generated off site</td>
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<tr>
<td>Liquids, oils, refrigerants from equipment</td>
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<tr>
<td>Bulk liquid hazardous waste</td>
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<tr>
<td>Hazardous waste above treatment standards</td>
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<tr>
<td>Explosive or reactive wastes</td>
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<tr>
<td>Transuranic and high levels of wastes</td>
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<tr>
<td>Pyrophoric waste</td>
</tr>
<tr>
<td>Building X-326 converters, compressors and coolers</td>
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<tr>
<td>Containerized nuclear compounds greater than 20% enrichment</td>
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<tr>
<th>Additional Ohio EPA Approved Prohibitions from Design Plans and Public Input</th>
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<tbody>
<tr>
<td>Residues removed from process gas equipment &amp; piping regardless of enrichment</td>
</tr>
<tr>
<td>Equipment and piping that do not meet nuclear safety limits (criticality incredible)</td>
</tr>
<tr>
<td>Depleted uranium or converted uranium material</td>
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<tr>
<td>Nickel barrier tubes from enrichment converters</td>
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</tbody>
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WAC Permitted Wastes

- Building debris, including piping, wiring, structural steel, transite, concrete and roofing materials
- Portions of process gas equipment from lower enriched operations
- Soil from old groundwater plumes and landfills
- Acceptable debris from landfills

DOE commitment to remove plumes and landfills inside Perimeter Road established in OSWDF Remedial Design/Remedial Action Work Plan.
OSWDF Status

- First 3 cells constructed
- First waste placement - May 2021
- >3M yds$^3$ of soil moved
- ~2M ft$^2$ of 80-mil HDPE installed and welded
- >500,000 tons of stone installed
- 21 acres of waste disposal capacity
- 32-acre soil management area
- Initiated Third Capital Asset Project

2022 GOAL: Complete Disposal of X-326 Demolition Debris
• The next building to be demolished, it is the largest of the three process buildings (66 acres of floor space)

• The material sizing area has reached steady-state operations of large component disassembly for safe placement in the OSWDF.
DUF6 Mission

Convert DOE’s inventory of DUF6, produced during uranium enrichment, into a more stable uranium oxide for:

- Reuse
- Storage
- Transportation
- Disposition
• DUF₆ resulted from the uranium enrichment process at three Gaseous Diffusion Plants (GDP) at Portsmouth, OH, Paducah, Kentucky, and Oak Ridge, Tennessee

• DUF₆ placed in steel cylinders that accumulated over time in site storage yards

• Facilities constructed at Portsmouth and Paducah that convert DUF₆ into aqueous hydrofluoric acid (HF), which is recycled into commerce, and stable uranium oxide for storage, beneficial reuse, or disposal
DUF6 Cylinders

- Typical size for a cylinder is four feet high (48 inches in diameter, ~12 feet long)

- 48Y: 10-ton thick-walled cylinder weighs 4,500 lbs. (can hold 20,000 lbs. of DUF6)

- 48G: 14-ton thin-walled cylinder weighs 2,600 lbs. (can hold 28,000 lbs. of DUF6)
• Safe processing of DUF6 materials at the Paducah and Portsmouth DUF6 facilities

• Oxide transportation and disposal
Site Reuse

- DOE is implementing a systematic approach to turn over parcels of the Portsmouth Site for potential reuse by private industry.
- The parcels are transferred to the Southern Ohio Diversification Initiative (SODI), the recognized Community Reuse Organization:
  - Parcel 1 – 80 acres
  - Parcel 2 – 227 acres
  - Parcel 3 – 48 acres
- SODI is working to find industries/companies interested.
QUESTIONS?