



Waste Encapsulation Storage Facility: Cesium/Strontium Capsules



RICHLAND
OPERATIONS OFFICE
United States Department of Energy

Hanford Advisory Board, River and Plateau
Committee Presentation

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History and Regulatory Background



- Hanford Site established in 1943 to produce plutonium for national defense
 - Production ended by 1989
 - Significant amounts of waste created
- Mission shifted to environmental cleanup and waste management operations; Hanford cleanup one of the largest, most complex environmental projects in the United States
- The Resource Conservation and Recovery Act of 1976 (RCRA) is a key regulatory statute related to WESF and the Capsule Storage Area

History and Regulatory Background (cont.)



Washington State authorized to implement state variation of the RCRA program, known as the Dangerous Waste Regulations (WAC 173-303), under RCW 70.105.130 to:

- Ensure dangerous waste is handled in a manner that protects human health and the environment
- Regulate facilities that manage (e.g., store, treat, and/or dispose) waste



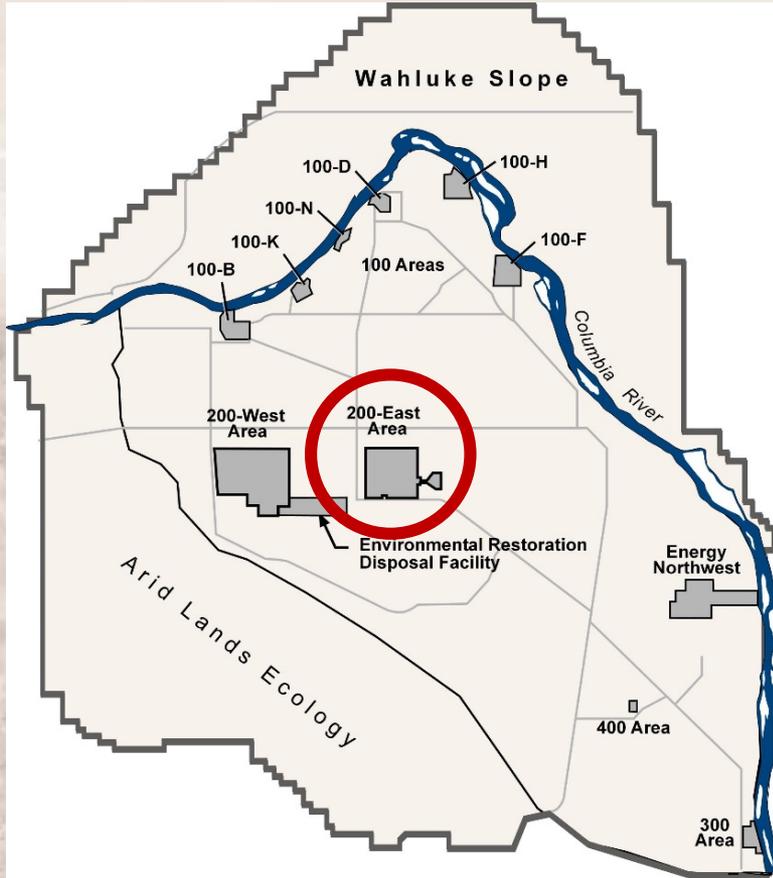
Permitting Background

- Washington State Department of Ecology (Ecology) issued the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment Storage, and Disposal of Dangerous Waste, Permit Number WA7890008967 in 1994
 - Current Permit Revision is known as “Rev. 8C”
- The permit provides standard and general facility conditions, as well as, unit-specific conditions for the operation, closure and post-closure of operating unit groups
 - Standard Conditions (Part I)
 - General Facility Conditions (Part II)
 - Unit-Specific Conditions for the Final Status Operations (Part III)
 - Unit-Specific Conditions Corrective Action (Part IV)
 - Unit-Specific Conditions for Units Undergoing Closure (Part V)
 - Unit-Specific Conditions for Units in Post-Closure (Part VI)



WESF

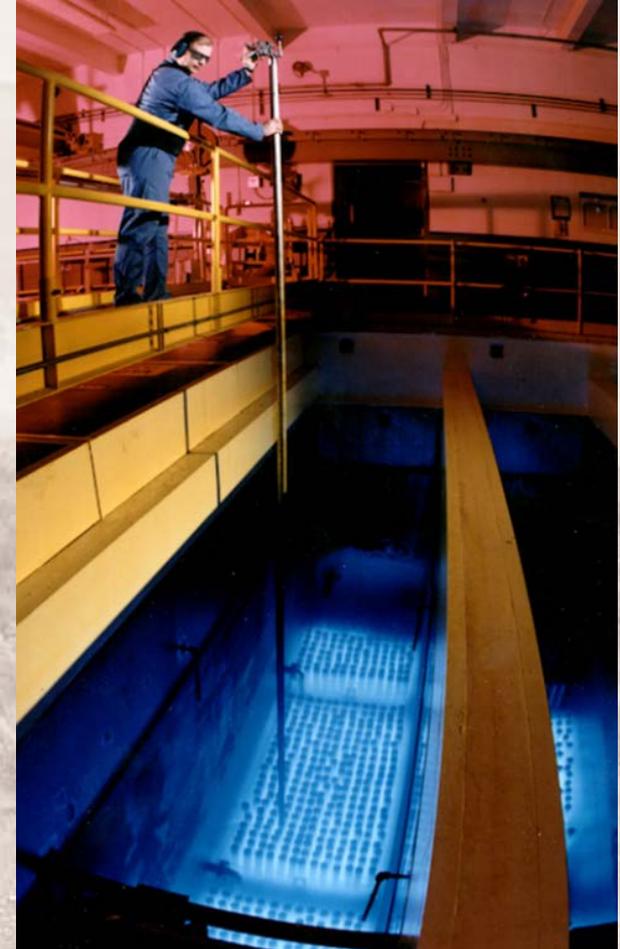
WESF constructed in 1973 in the 200 East Area of the Hanford Site





WESF Overview

- From 1974 to 1985, WESF encapsulated radioactive cesium and strontium
- 1,936 capsules stored in pool cells filled with water to protect workers from high levels of radioactivity and keep capsules cool
- Impurities in isotopes require classification as mixed waste, requiring RCRA management
- While capsules are currently in safe and compliant configuration, WESF is aging





Overview

- Department of Energy, Richland Operations Office (DOE-RL) proposing to transport capsules out of WESF and store them in concrete casks on the proposed Capsule Storage Area
- Capsule storage area will support DOE cleanup goals by relocating the capsules, into a dry storage configuration
- Building the storage area requires a permit from Ecology as a dangerous waste management unit subject to state dangerous waste regulations



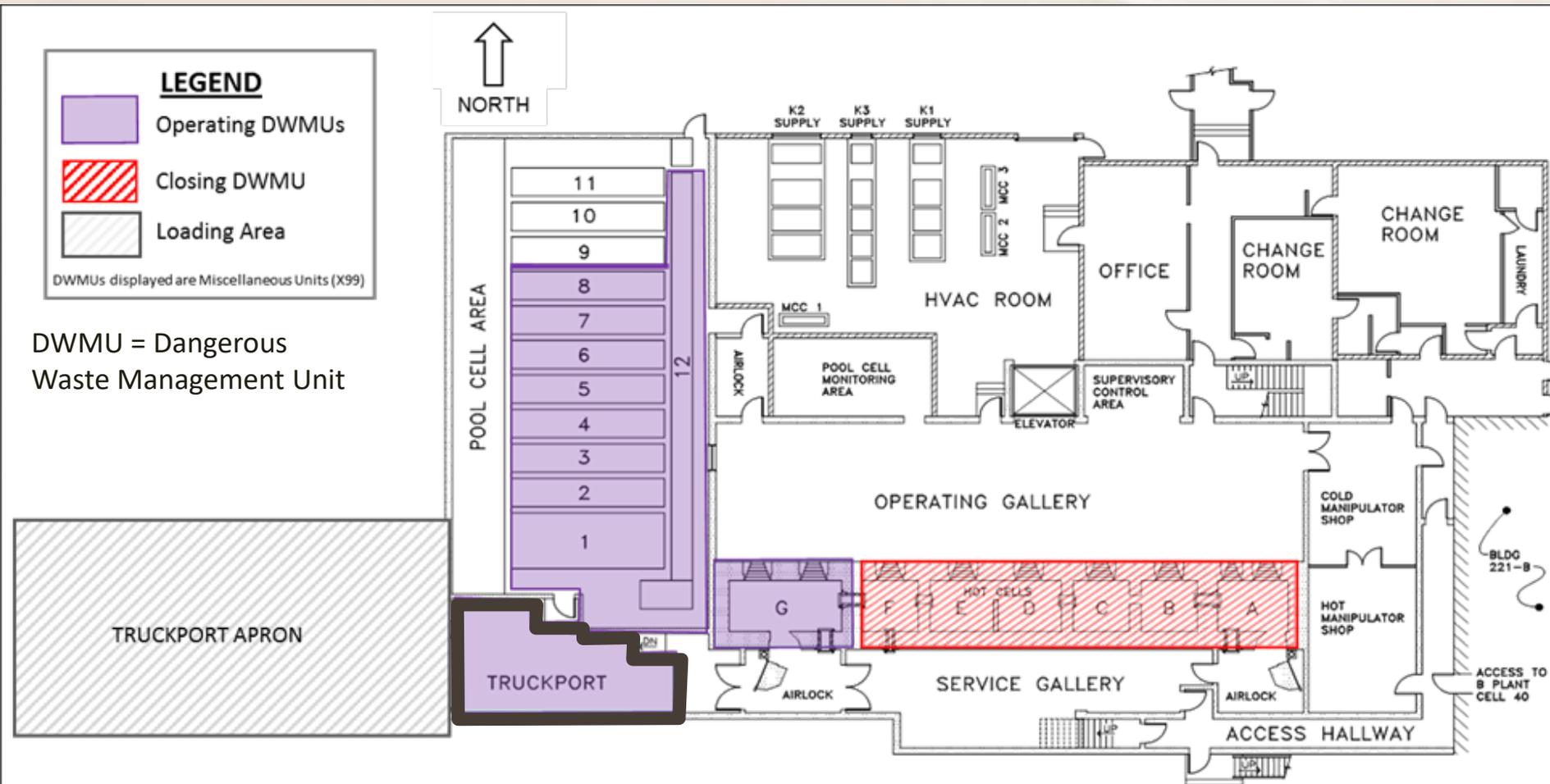
The proposed storage area location



Proposed Changes - WESF

Four miscellaneous Dangerous Waste Management Units (DWMUs):

- Hot Cells A-F
- Hot Cell G
- Pool Cells
- Truckport





Proposed Changes

- Hot Cell G will contain loading and sealing equipment for packaging and sealing capsules into protective sleeves, called Universal Capsule Sleeves
 - Up to six capsules will be loaded into universal capsule sleeves, loaded into transportable storage canisters and contained within concrete casks
- Sleeves containing capsules will be lifted out of Hot Cell G and transported by crane to the truckport



Depiction of transfer system used to lift sleeves out of Hot Cell G



Proposed Changes

- Storage casks are designed with radiation shielding to protect workers and to limit release of contamination
- Designed for passive cooling by air flow within the cask
 - Cool air is drawn into the cask and warm air goes out, no need for fans or mechanical equipment
- Capsules are sealed. The waste inside does not come into contact with the air



Transportable storage canisters will hold rows of capsules contained in universal capsule sleeves



Proposed Changes

- Installation of capsule packaging and loading equipment in Hot Cell G., new cover block to allow transfer of capsules to the truckport by crane
- Expansion of the truckport apron to facilitate cask movement and to support cask load and equipment
- Up to 22 sleeves, each housing up to six capsules (132 capsules) will be loaded into a transportable storage canister within a concrete cask



Cask model outside of WESF (conceptual)

Proposed Changes – Transporting Capsules



- Once the capsules have been loaded into the Cask Storage System at WESF, casks will be transported to proposed Capsule Interim Storage Operating Unit Group (Capsule Storage Area) using a vertical cask transporter
- The proposed Capsule Interim Storage Operating Unit Group would consist of one miscellaneous Dangerous Waste Management Unit (DWMU) – the Capsule Storage Area



Representation of a vertical cask transporter



Conceptual Capsule Storage Area illustration



Class 3 Permit Modification Process

- DOE-RL Responsibilities
 - Submitted permit modification request to Ecology (the permitting agency)
 - Notified public: Public mailing lists, local newspaper
 - Hosted public meeting
- Written comments due to Ecology
- Following comment period, Ecology responds with either denial or approval of permit modification request
 - Ecology will perform a completeness review and notify the permittees if the application is complete
 - Once application is complete
 - Ecology prepares draft permit and draft permit conditions
 - Hosts public hearing (if requested)
 - After 45-day public comment period, Ecology will perform the steps detailed in WAC 173-303-840 (7) or (8) dependent on the public comments during the comment period

60-Day
Public
Comment
Period

Completed

45-Day
Public
Comment
Period



Conclusion

- The 60-day public comment periods for the permit modifications ended on **January 31, 2018**
- The permit modification request may be accessed online:
 - Hanford Event Calendar at <http://www.hanford.gov/pageAction.cfm/calendar?&IndEventID=8661>
 - Hanford Facility Administrative Record at 2440 Stevens Center Place in Richland or online at <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0067755H>



Questions?
