

# West Valley Demonstration Project



## High-Level Waste Canister Relocation Project

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West Valley Demonstration Project

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# Environmental Impact Statement (EIS) – Record of Decision (ROD)

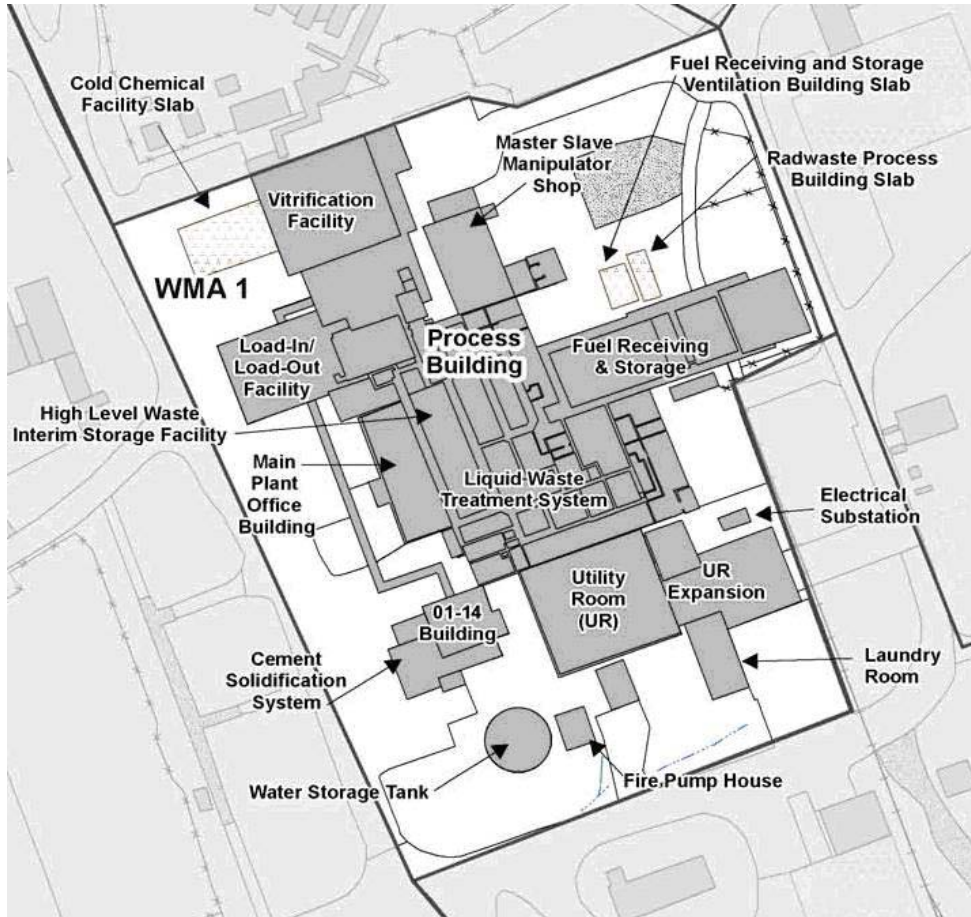
- Phased Decisionmaking Alternative
  - Two Phases
    - Phase 1
      - Expected to begin July 2011
      - Relocate HLW Canisters to a new on-site storage pad
      - Remove major facilities: Main Plant Process Building (Main Plant) and Vitrification Facility
      - Remove North Plateau Groundwater Plume source area
      - Remove Remote Handled Waste Facility and wastewater treatment facilities
    - Phase 2
      - Final decommissioning of remaining facilities
        - » HLW Tank Farm
        - » NRC-licensed Disposal Area
        - » Construction and Demolition Debris Landfill
        - » Non-source area of plume
        - » State-licensed Disposal Area

# WVDP Phase 1 Decommissioning

- HLW Canister Relocation Project
  - 275 canisters of vitrified HLW, 2 evacuated canisters, and 2 drums of spent nuclear fuel debris currently stored in the Chemical Process Cell of Main Plant
  - Removal of Main Plant requires removal and relocation of HLW canisters from Main Plant
  - Excavation of source area of North Plateau Plume requires removal of HLW canisters from Main Plant
  - HLW canisters will be stored on site until Federal repository becomes available

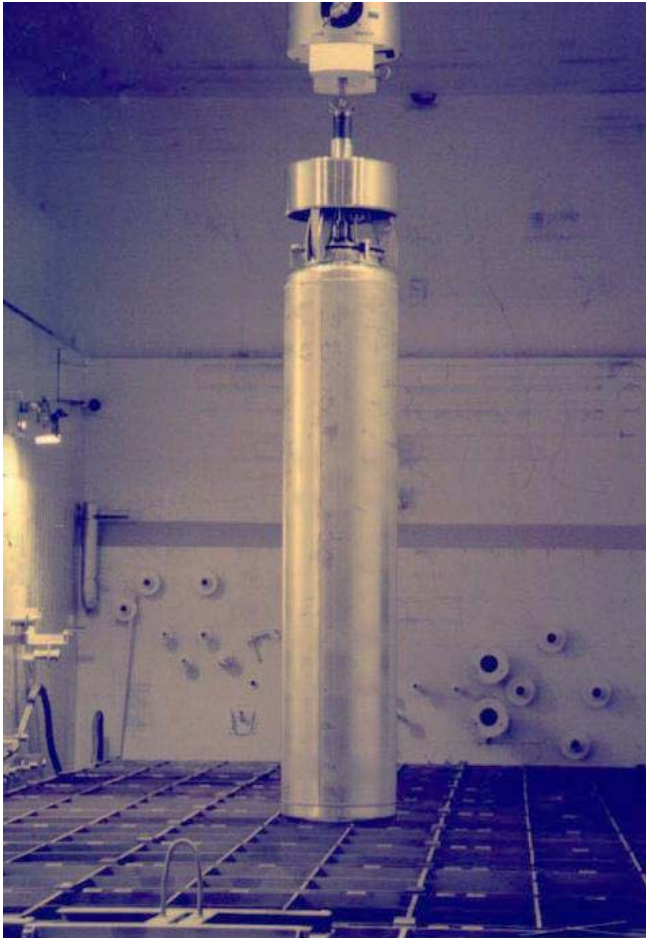


# HLW Canister Storage in the Main Plant



- HLW canisters in storage racks in Chemical Process Cell (HLW Interim Storage Facility)
- Concrete shield walls 5 feet thick
- Remotely placed using Chemical Process Cell crane

# High Level Waste Canisters



*WVDP HLW canister suspended by grapple fixture on CPC crane*

- Stainless steel construction
- 10 feet tall, 2 foot diameter
- Welded lid with grappling pintle on top
- Average weight 5,500 pounds
- Maximum contact dose 7,500 R/hr
- Average contact dose ~2,600 R/hr
- Canister inventories require revision and dose rate likely to change
- Drop tested to 23 feet



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# HLW Canister Relocation Conceptual Approach

- Use a modified independent spent fuel storage installation (ISFSI) dry cask storage system design currently in use at commercial nuclear power facilities in the United States
- Use a modified spent nuclear fuel (SNF) Multiple Purpose Canister (MPC) design with current NRC 10 CFR Part 71 Certificate of Compliance (COC) to store multiple HLW canisters and allow future transport without HLW canister repackaging
- Revise HLW canister inventory to facilitate storage cask designs and NRC MPC COC reviews



# HLW Canister Relocation Will Require . . .

- Engineering design preparation, reviews and approvals
- Regulatory submittals, reviews and approvals
- DOE operational reviews and approvals
- Modifications to existing facilities
- Construction of new facilities
- HLW canister relocation operations



# Engineering Design Preparation and Approvals

- Designs for potential modifications to existing facilities such as the Chemical Process Cell, Equipment Decontamination Room, Load Out Facility, and site roadways
- Construction designs for new facilities such as the HLW Canister Interim Storage Facility and, if required, the Multiple Purpose Canister (MPC) Storage Facility





# Regulatory Submittals, Reviews, and Approvals

- Prepare NRC Authorization Basis Review for changes to existing facilities
- Prepare NRC Authorization Basis Review for HLW Canister Interim Storage Facility
- File for NRC 10 CFR Part 71 COC for MPC Storage and Transport Cask
- Prepare NRC Preliminary Documented Safety Analysis and Final Documented Safety Analysis and perform reviews
- Prepare other Federal and State permit applications and modifications



# DOE Operational Reviews and Approvals

- Prepare NEPA Review for HLW Canister Interim Storage Facility
- Prepare DOE Authorization Basis Review for Changes to Existing Facilities
- Prepare DOE Authorization Basis Review for HLW Canister Interim Storage Facility
- Prepare DOE Preliminary Documented Safety Analysis and Perform Reviews
- Prepare DOE Final Documented Safety Analysis and perform reviews
- Perform DOE Readiness Assessment Review



# Potential Modifications to Existing Facilities

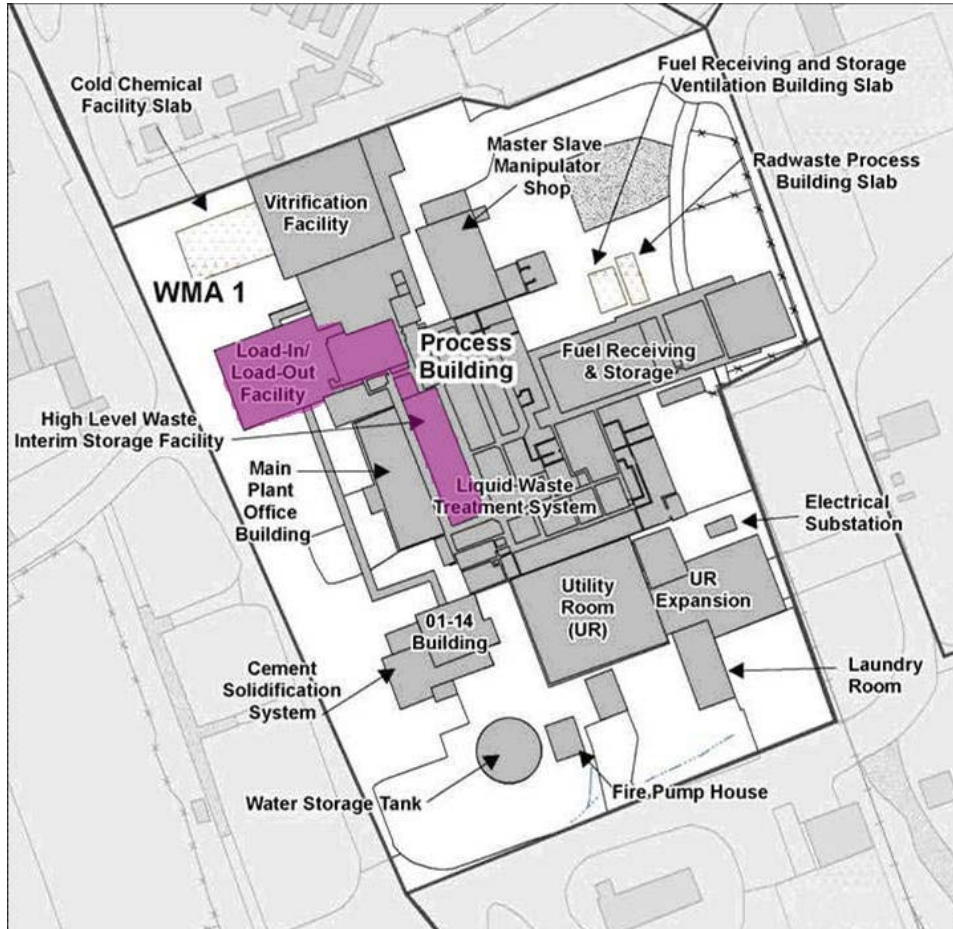
- **Chemical Process Cell**
  - Refurbish/replace shield doors, cranes, windows, transfer cart
  - Install initial canister decontamination and inspection stations
- **Equipment Decontamination Room**
  - Refurbish/replace shield doors, crane, transfer cart, backfill soaking pit, level floor
  - Install primary canister decontamination and inspection stations, and operating aisle to support Equipment Decontamination Room operations
- **Load Out Facility**
  - Install 100-ton crane, shielded HLW canister loading station, welding and helium testing station, procure storage cask transport system
- **Site Roadways**
  - Re-grade roadways, install culverts and additional egress



# Construction of New Facilities

- **HLW Canister Interim Storage Facility**
  - Proposed location on South Plateau of WVDP
  - Reinforced concrete slab on grade
  - Long-term (50-year) facility capable of storing required number of vertical or horizontal shielded storage systems
  - Includes security fencing and lighting and if required, stormwater runoff controls
- **MPC Storage Facility**
  - If required, a temporary onsite facility to store and prepare MPC for loading HLW canisters
  - Steel sided building on concrete slab on grade

# Potential HLW Canister Relocation Operations



- Removal of HLW Canisters from Chemical Process Cell to HLW Canister Interim Storage Facility
- Potential path through Equipment Decontamination Room and the Load Out Facility

# HLW Canister Relocation Operations – Chemical Process Cell

- HLW canisters are remotely removed from the Chemical Process Cell storage racks with Chemical Process Cell crane
- HLW canisters transferred to Chemical Process Cell decontamination station for initial gross decontamination
- Decontaminated HLW canisters transferred to Chemical Process Cell transfer cart
- HLW canisters are transferred to Equipment Decontamination Room via Chemical Process Cell transfer cart



# HLW Canister Relocation Operations – Equipment Decontamination Room

- All Equipment Decontamination Room operations performed remotely from operating aisle
- HLW canister transferred from Chemical Process Cell transfer cart to EDR decontamination station with Equipment Decontamination Room crane
- Decontaminated HLW canister transferred to Equipment Decontamination Room HLW Canister Check Station (size, weight, dose rate)
- Following measurements, HLW Canister transferred to Equipment Decontamination Room transfer cart with Equipment Decontamination Room crane
- HLW canisters transferred into Load Out Facility with Equipment Decontamination Room transfer cart



# HLW Canister Relocation Operations – Load Out Facility

- Transport trailer containing shielded concrete storage cask with MPC positioned in shielded HLW canister loading station in Load Out Facility
- HLW canisters transferred into Load Out Facility with Equipment Decontamination Room transfer cart
- Load Out Facility crane transfers HLW canisters into MPC and when filled, places lid on MPC
- MPC lid remotely welded to MPC and MPC is helium-tested to assess weld integrity
- Shielded concrete storage cask lid placed and bolted, cask surveyed and transferred to HLW Canister Interim Storage Area on South Plateau of WVDP





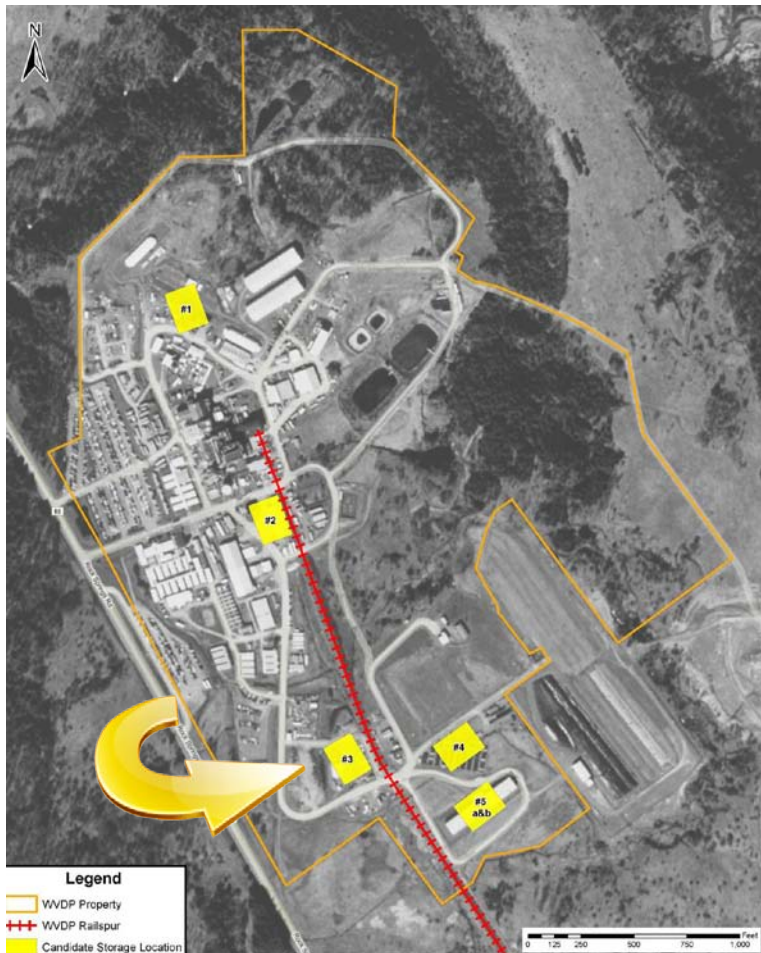
# Potential HLW Canister Loading in MPC



- MPC available in 5 or 7 (pictured) canister configuration
- 5-canister MPC configuration meets current offsite transport requirements
- Remote welding station welds MPC lid and MPC is helium-tested to evaluate welds
- MPC placed within shielded transport cask and transferred to Vertical or Horizontal Storage Systems on the HLW Canister Interim Storage Facility
- For final shipment MPC transferred from storage system to Type B offsite transportation cask



# Proposed HLW Canister Storage Pad



- Located in South Plateau of WVDP
- Soil contamination not expected
- Concrete storage pad similar to ISFSI pads
- $\approx$  120 feet x 300 feet x 3 feet thick
- Vertical or Horizontal HLW Canister Storage
- Potential roadway upgrade



# Typical Vertical HLW Canister Storage



- Welded MPC used to house HLW canisters in concrete or concrete/metal storage overpack
- Current storage systems accommodate up to 7 MPCs
- Transportation casks currently limited to 5 MPCs
- Requires onsite fabrication of concrete storage overpacks
- Holtec International and NAC Inc current vendors for vertical storage modules



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# Typical Horizontal HLW Canister Storage

- Welded metal MPC used to house canisters in concrete storage modules
- Current designs accommodate up to 5 canisters
- Concrete module is fabricated off site
- TransNuclear currently is the sole vendor for horizontal storage modules



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# Vertical Canister Transfer and Storage Scenario



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# Horizontal Canister Transfer and Storage Scenario



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Questions?



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