



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
ENVIRONMENTAL
MANAGEMENT

West Valley Demonstration Project Project Update

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Waste and Site Operations Manager

Waste Management Program Overview

- **Waste Planning and Disposition**
 - Waste Generator Services – Waste characterization and generator support
 - Waste Process, Packaging, and Transportation – Waste shipping, and design and procurement of waste containers
 - Waste characterization and shipping are done to Waste Management Procedures
- **Waste Operations and Compliance**
 - Logistics – Site support and waste inventory storage and management
 - Remote-Handle Waste Facility (RHWF) – Processing and size reduction of high dose rate low-level radioactive waste (LLW) and remote-handle transuranic (TRU) (RH-TRU) waste
 - Waste Operations – Intermodal preparation, rail car loading, and other waste operations as needed
 - Waste processing, waste container storage, and management is done to Standard Operating Procedures (SOP's)

Program Oversight

- Self-Assessments – Quarterly Conduct of Operations (CONOPS) assessments of various areas, programs, and procedures required of all Managers and Supervisors
- Quality Assurance/Waste Certification Official Surveillances – Ongoing review of all shipping documents and surveillances of the Nevada National Security Site (NNSS) certification program, including in the field review of waste generation
- DOE Surveillances – Ongoing surveillances from DOE counterparts
- Disposal Facility Audits and Surveillances – Annual audit or surveillance of our certified program by a DOE disposal facility and by Waste Control Specialists (WCS)

Program Oversight (Cont.)

- Regulatory Audits and Surveillances – Annual New York State Department of Environmental Conservation (NYSDEC) audit and periodic U.S. Environmental Protection Agency (EPA) of the waste storage operation, record keeping, and shipping documents
- Independent Audits and Surveillances – Annual independent NNS program audit and other surveillances
- The Waste Management Program is a Safety Management Program (SMP) and subject to biannual review and approval of the SMP Board

Categories of Waste Managed at WVDP

- **Low-Level Waste (LLW)** – Includes radioactive project and “job” waste from deactivation, decommissioning, and demolition for off-site disposal
- **WVDP Transuranic Waste (TRU)** – Includes both Remote-Handle TRU (RH-TRU) and Contact-Handle TRU (CH-TRU), high alpha containing waste for long-term storage
- **Mixed Low-Level Waste and Mixed TRU Waste (MLLW, MTRU)** – Includes radioactive waste with RCRA constituents above regulatory limits for onsite storage (MTRU) or off-site treatment and disposal (MLLW); MTRU is managed under the WVDP Site Treatment Plan (STP)
- **High-Level Radioactive Waste (HLW)** – 278 canisters of high-level vitrified waste for long term storage

Categories of Waste Managed at WVDP (Cont.)

- **Hazardous Waste** – Non-radioactive waste with RCRA constituents above regulatory limits sent for off-site treatment and disposal
- **Industrial Waste** – Waste from non-radioactive areas and do not contain Resource Conservation and Recovery Act (RCRA) constituents above regulatory levels sent for off-site disposal
- **Paper and Cardboard** – Office waste sent for recycling
- **Metal** – From non-radioactive areas sent for metal recycling
- **Electronic Waste (E-Waste)** – Computers and monitors for electronic recycling
- **Trash** – Dumpster waste sent for off-site disposal

- **Waste Type Packaging**
 - B-25 Boxes (approximately 6' x 4' x 4')
– Metal box used for LLW and MLLW
 - 55 Gallon Metal Drums – Used primarily for Remote-Handle and Contact-Handle TRU Waste, hazardous, industrial, and MLLW
 - Standard and Large Standard Waste Box – For Contact-Handle TRU waste
 - Special Boxes – Various sizes from small to very large primarily for project wastes



Waste being loaded into an intermodal during Utility Room demolition



- **Waste Type Packaging**

- Shield Containers – Boxes or overpack drums of various thicknesses of metal for project waste with high dose rates
- Intermodals – Various sizes (20, 25, and 32 cubic yards) primarily for demolition and soil waste
- Industrial Bags – Various sizes primarily used as an overpack for very low fixed contamination waste
- Roll-Off and Dumpsters – Various sizes for industrial, trash, paper and cardboard, and metal recycling



Waste loaded during Vitrification Facility demolition



All containers meet USDOT specifications for their specific use and transportation.

Treatment and Disposal Facilities

- **EnergySolutions, Clive Utah** – Permitted to accept Nuclear Regulatory Commission (NRC) Class A LLW for disposal and MLLW for treatment and disposal
- **Waste Control Specialists (WCS), Andrews Texas** – Permitted to accept NRC Class A, B, and C LLW for disposal and all three classes of MLLW for treatment and disposal
- **Nevada National Security Site, Mercury Nevada** – This is a DOE owned site to accept DOE LLW and MLLW that meets the USEPA Land Disposal Restriction (LDR) requirements
- **PermaFix Environmental, Gainesville Florida** – Permitted to treat/stabilize LLW and MLLW to meet the LDR's prior to off-site disposal
- **Energy Solutions, Bear Creek, TN** – Permitted to treat/stabilize LLW and MLLW to meet the LDR's prior to off-site disposal
- **Waste Management** – For paper recycling, trash, and industrial waste disposal
- **Metalico** – For metal recycling

- **Transportation Safety Record**
 - Waste Shipping Activity Since 2011
 - Completed more than 2,100 waste shipments for a total of more than 1,200,000 cubic feet of waste
 - Most of the shipments were low-level waste shipments that were sent to *EnergySolutions*; Waste Control Specialists; and Nevada National Security Site
 - Truck shipments traveled more than 980,000 highway miles with no accidents or Department of Transportation (DOT) violations
 - Rail shipments traveled more than 1,700,000 rail miles with no Federal Rail Administration or DOT violations
 - Vitrification demolition debris intermodal was breached during transportation; however, there was no release of contamination and no DOT violation

Previous Demolition Waste Shipments

- Following is a list of previous demolition projects and the waste shipments to support those projects
 - **O1-14 Building demolition**
 - 89 intermodals (IMs) sent by truck to Alaron in Wampum, PA for transload to Gondola rail cars and shipped by rail to *EnergySolutions*
 - Thirteen IMs shipped by rail to Studsvik in Tennessee for Bulk Survey for Release
 - **Vitrification Building**
 - 48 IMs of waste from the exterior and aisle were shipped by transload to NNSS for disposal
 - 368 IMs were shipped by truck to Alaron for transload to rail to *EnergySolutions* for disposal
 - **Ancillary Buildings (surrounding Main Plant) and Balance of Site Facilities**
 - 55 IMs by transload to *EnergySolutions* for disposal
 - 350 IMs by transload to WCS for disposal



Workers prep a waste box for demolition debris



Vitrification Facility demolition

Lessons Learned from Previous Demolitions

- Lessons Learned from previous demolitions have been applied to MPPB Demolition waste management and transportation:
 - Piping and structural steel is limited to 6 feet in length and must be loaded width-wise
 - Concrete and large debris are limited to 3 feet and 5,000 pounds
 - IMs of debris contain a three-layer bag to cushion and protect the IM
 - The IM bag liner floor must be completely covered with plywood
 - The two ends of the IM must be protected with three-quarter inch plywood

Preparation for Rail Shipments from the WVDP

- **Extensive actions were undertaken to ready the rail line for use**
 - WVDP contracted with Buffalo Pittsburg Railroad (BPRR) to inspect and repair the main portion of their line to the WVDP site (2020)
 - Stone Consulting and Engineering has contracted to perform a detailed inspection and engineering evaluation of the onsite rail (2020)
 - The Department of Transportation/Federal Railroad Administration inspected the rail and performed an audit on the program and training records (2021)
 - Performed a Management Self-Assessment and Checklist with Lines of Inquiries (LOIs) for all areas (e.g. Safety, Environmental) (2021)
 - Contracted for corporate reach back to perform an independent readiness review (2021)
 - DOE performed an Oversight Assessment of the readiness to restart the rail (2021)
 - Monthly inspections and corrections of the onsite rail (ongoing)



Rail Line is cleared for use



Workers train on Rail King rail car mover

Resumption of Rail Line Shipments

- **Shipment of *PTW Soils and Structure Debris by Direct Rail**
 - The first rail shipment since 2007 was two rail cars with 12 IMs of soil from the PTW soil structure which was shipped on June 24, 2021
 - The PTW plans for a total of 335 IMs of Soil and 89 IMs of debris
 - The waste is being shipped directly from the WVDP to *EnergySolutions* in Clive, UT
 - Shipments occur once per week (usually Thursdays) with 1 to 5 rail cars depending on number of IMs filled
 - The soil and debris shipments provide an excellent “mockup” for the rail shipments of Main Plant Process Building demolition debris
 - To date 363 IMs have been successfully and safely shipped for disposal
 - The average turnaround time for IMs shipped, received, unloaded, and shipped back to the WVDP is 45 days



Workers load PTW soils for shipment on rail line



**Removal of soil that was excavated to build the permeable treatment wall, and its associated structure. The PTW will remain in place.*

MPPB Demolition Planning

- **Waste Types and Containers**

- General Demolition Debris

- Includes process piping, block and concrete walls and floors, roofing, structural steel, wall board, fixtures, etc.
 - Will be characterized as Low-Level Waste, Asbestos-Containing Material and Polychlorinated Biphenyls Bulk Product
 - Approximately 1,500 Intermodals (IMs) to be shipped by rail to *EnergySolutions* in Clive, UT

- Specialty Items

- Includes process vessels, large/heavy objects and equipment, higher dose rate ventilation ducts, and other objects not suitable for IMs or demolition processing
 - These will be removed and packaged in special boxes and shipped by truck to an off-site DOE disposal facility

- Mixed Waste

- Includes lead shielding in various areas of the plant painted a bright color to identify for removal during demo
 - Leaded glass shield windows from several hot cells
 - Will be packaged in boxes and shipped by truck to *EnergySolutions* or Waste Management Control Specialists for treatment and disposal

Summary

- The Waste Management Program is a mature, robust and effective program
 - The Waste Management team has more than 20 years of experience at the WVDP
 - Waste characterization, shipping, and container storage is done in accordance with WVDP procedures and Documented Safety Analysis, DOE Orders, and Federal and State regulations
 - The program is subject to extensive oversight and audits, both internal and external, with minimal findings or observations but frequent notable practices reported
 - Excellent safety record for shipping over 980,000 highway miles and 1,700,000 rail miles without an accident or Department of Transportation/Federal Rail Administration violation
 - Excellent record of safe and compliant transportation with more than 2,100 shipments (1.2 million cubic feet) with no accidents or contamination incidents