

618-10 & 11 Burial Grounds Status/Update

Hanford Advisory Board
River and Plateau Committee

December 9, 2010



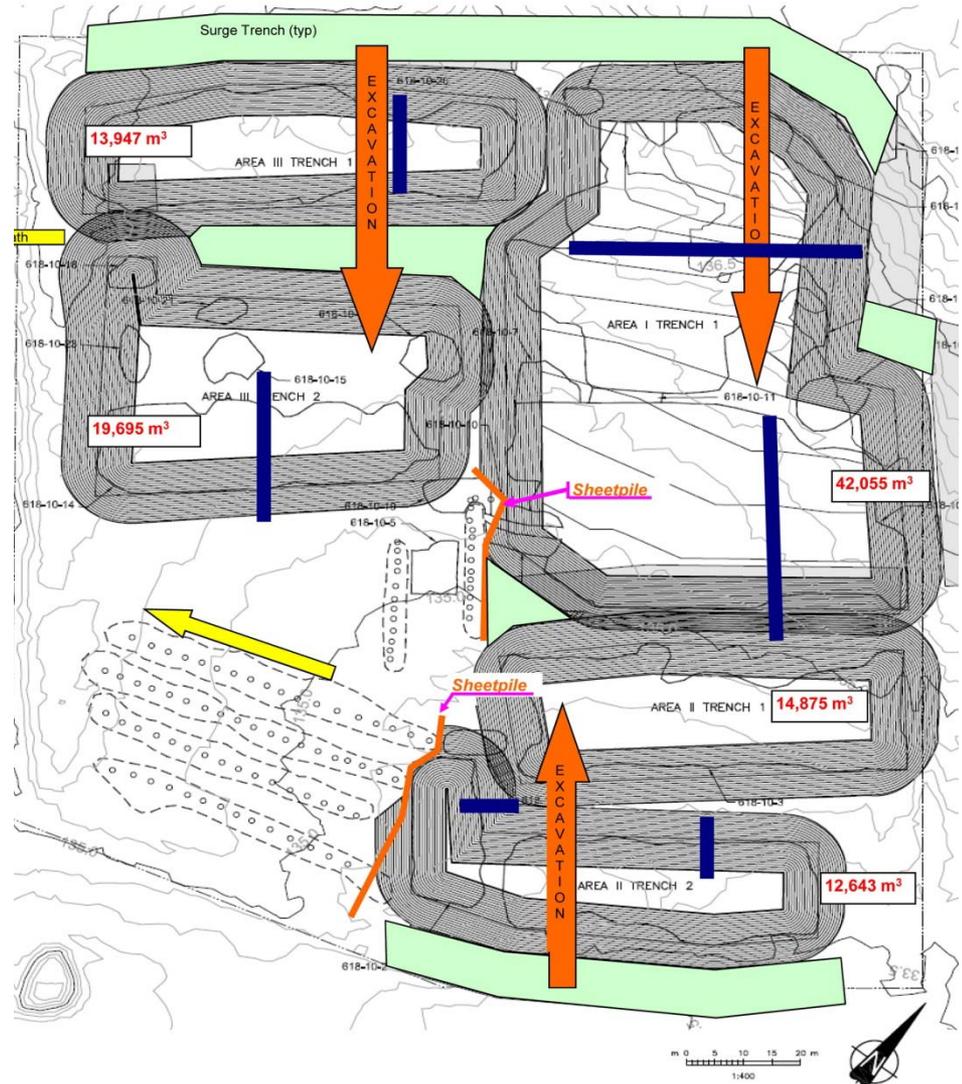
U.S. Department of Energy
Richland Operations Office

618-10 & 11 Burial Grounds

- Introduction Jamie Zeisloft, DOE
- Nonintrusive characterization Nelson Little, WCH
- VPU remediation technologies Nelson Little, WCH
- Intrusive characterization John Darby, WCH
- Dust suppression and potential groundwater impact John Darby, WCH
- 618-11 nonintrusive characterization Jamie Zeisloft, DOE
- Next steps Jamie Zeisloft, DOE

Introduction

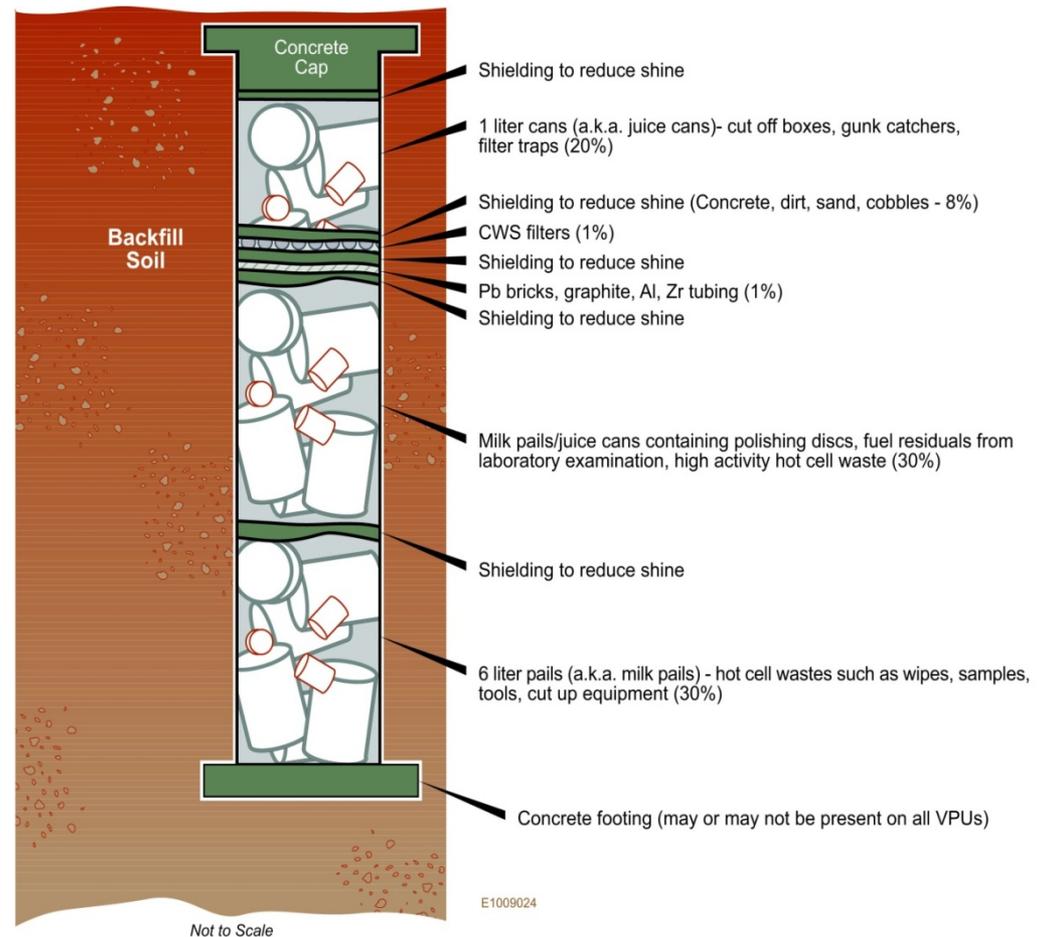
- Characterization report will be available in late December
- 618-10 trench remediation starts in March 2011
- 618-11 nonintrusive characterization starts in spring 2011



618-10 Nonintrusive Characterization

Description

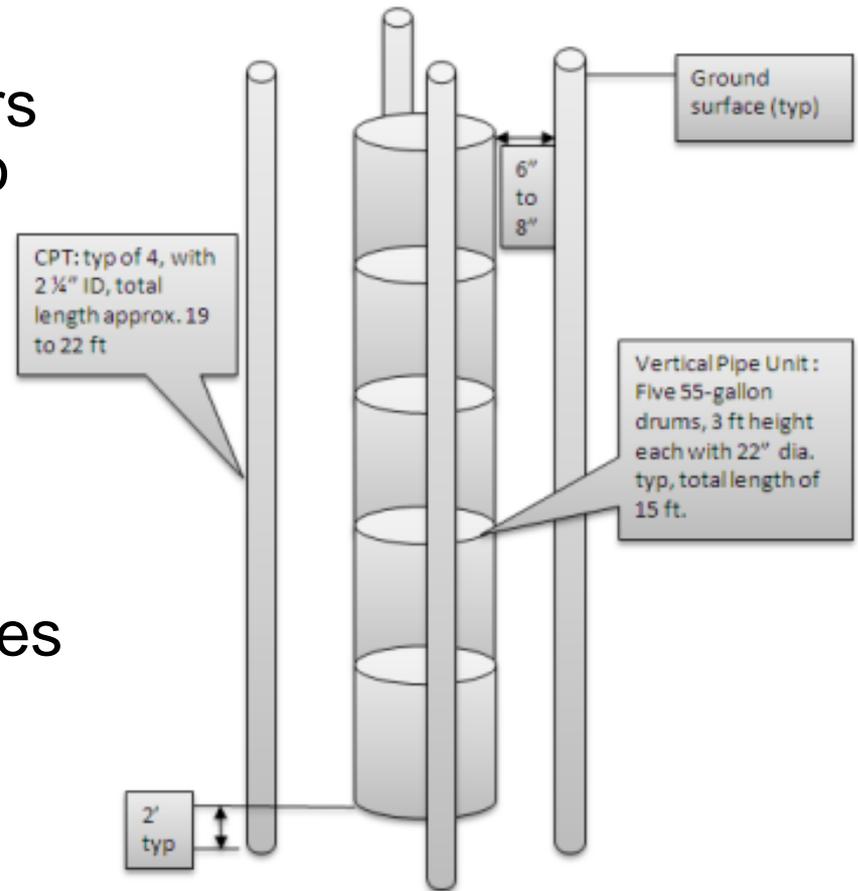
- Conducted geophysics to locate VPUs
- Collected data on 94 vertical pipe units and 100 trench locations
- Designed to prevent opening or exposing contents to personnel or the environment



618-10 Nonintrusive Characterization

Description

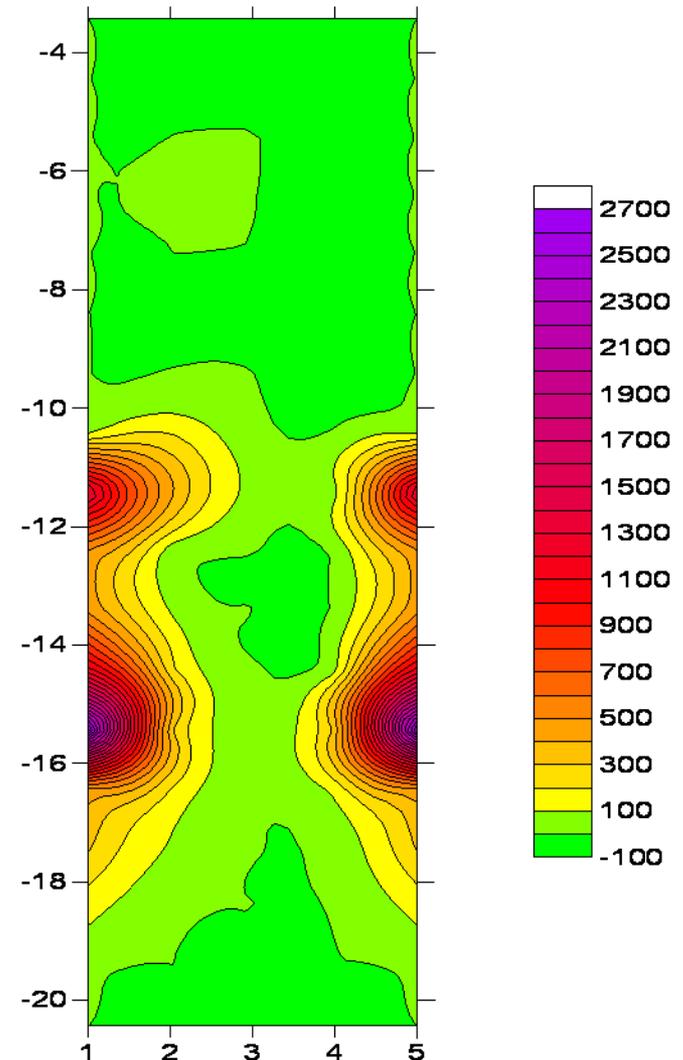
- Installed cone penetrometers and multi-detector probes to survey contents
- Installed 376 cone penetrometers around 94 VPUs
- Installed 100 cone penetrometers in the trenches
- Completed in June 2010



618-10 Nonintrusive Characterization

Results

- Identified/located all 94 VPUs
- Primary radionuclides detected were cesium-137 with concentrations of cobalt-60
- Average cesium content was 1.3 curies in VPUs, lower in trenches
- Maximum hot spot was 1.1 r/hr
- Hot spot locations in VPUs averaged 13 feet deep
- Soil samples revealed no measurable contamination
- Characterization is factored into the decision-making process at 618-11



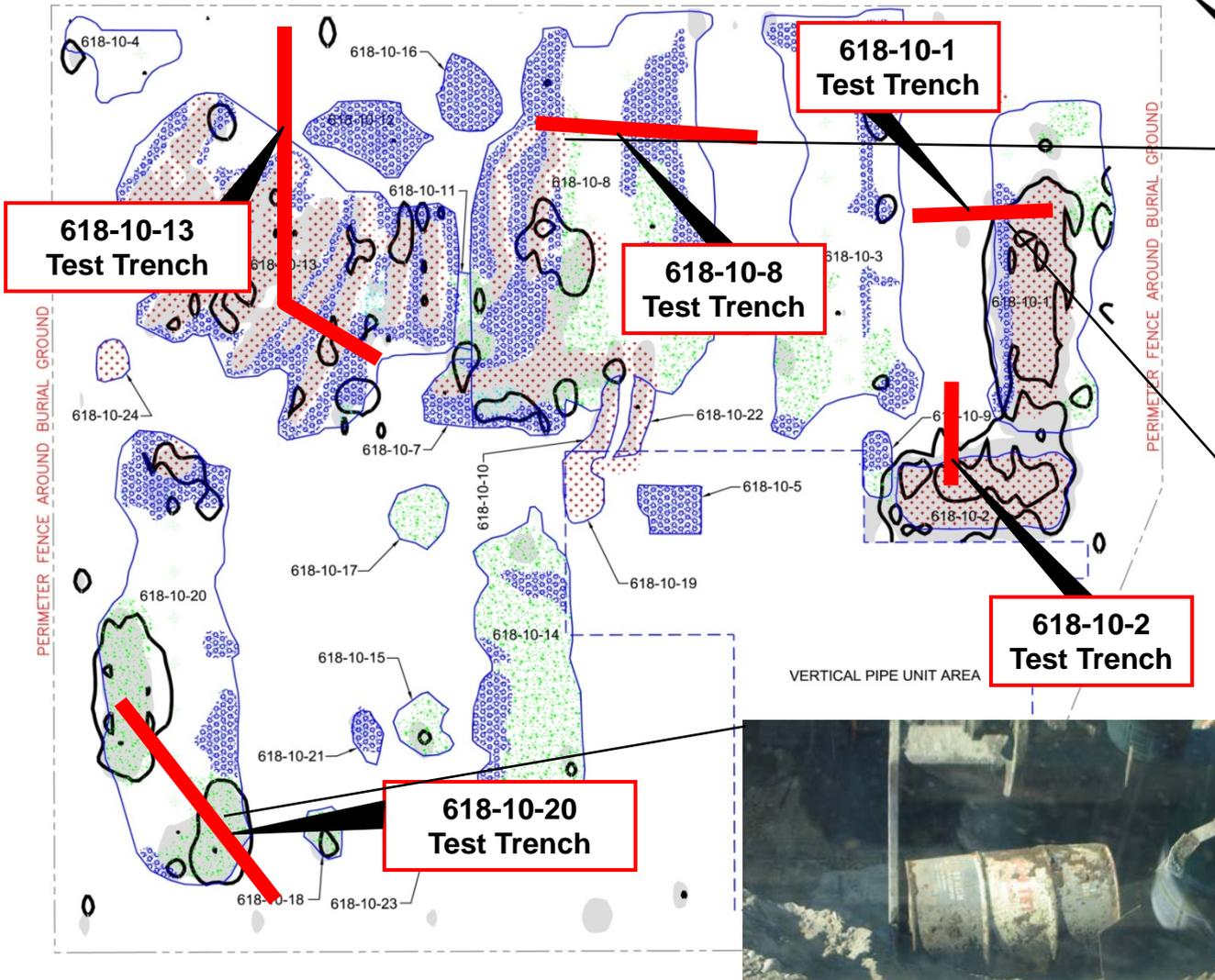
VPU Remediation Technologies

- Conducted VPU Technology Workshop in September
- Evaluated 6 potential remediation technologies
- Selected 3 technologies for potential demonstration
 - In-situ vitrification
 - Conventional remediation
 - Overcasing and in-situ mixing
- Conduct technology demonstration summer 2011 – spring 2012

618-10 Intrusive Characterization

- Conducted during August 2010
- Objectives
 - Demonstrate methodologies for remediation and material handling
 - Obtain physical, chemical and radiological information for trench remediation planning
 - Investigate several of the features shown on the geophysical survey maps
 - Identify any new waste forms in order to incorporate them into the planning
- Performed excavation for 14 days
- Excavated 5 strips into suspect trench areas

618-10 Burial Ground Test Trenches



618-10 Intrusive Characterization

Lessons Learned

- Confirmed the presence of several waste streams
 - Depleted uranium chips in oil
 - Uranium oxide
 - Concreted drums
- Confirmed the means and methods planned for remediation
 - Successfully controlled the radiological contamination
- Trench locations are not easily identified
- Wind blown layers of sand
- Layers of gravel were used to stabilize the surface throughout the site
- Sand dune has built up over the years in the north corner of the site



Dust Suppression and Potential GW Impact

- Dust suppression at 618-7 caused rise in uranium and chromium in monitoring wells
- Dust suppression is necessary to protect workers and prevent airborne contamination
- Learned that suppression can have an impact, and to not use more than necessary
- 618-10 workers will be trained to apply appropriate amounts of dust suppressants and soil fixatives
- Fixative will be applied at the point of excavation and controlled by the heavy equipment operators
- Nearby GW monitoring wells will be monitored during trench remediation

618-11 Nonintrusive Characterization

- NRC has approved Energy Northwest license amendment to allow NIC activities to proceed
- ENW personnel are implementing license amendment with concurrence expected in early January 2011
- Conducted data quality objective session to apply lessons learned from 618-10
- Revise sample and analysis plan based on the results of the DQO session

618-11 Nonintrusive Characterization

- Energy Northwest concurrence to proceed January 2011
- Mobilize February 2011
- Conduct geophysics February-March 2011
- Install cone penetrometers March 2011
- Radiological characterization of VPUs April 2011
- Submit characterization report June 2011

Next Steps

618-10

- **Characterization report will be available in late December on CD**
- Select a VPU remediation technology
- Obtain Nuclear Safety Authorization Basis approval for trench remediation in January 2011
- Conduct mockups, field team training and drill responses for trench remediation in February 2011
- **Start trench remediation in March 2011**
- Begin VPU technology demonstration in summer 2011

618-11

- **Nonintrusive characterization in spring 2011**