Idaho National Engineering and Environmental Laboratory

Innovative Grouting Technologies for the Subsurface Disposal Area at the Idaho National Engineering and Environmental Laboratory

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INEEL's Subsurface Disposal Area

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- *100,000 cubic meters of waste*
- *Buried in boxes, drums, and a variety of vaults*
- *Radioactive contaminants of concern in this material include Sr-90, Tc-99, C-14, H-3, Nb-94, Pu-239, Am-241, Np-237, U-234, and U238*

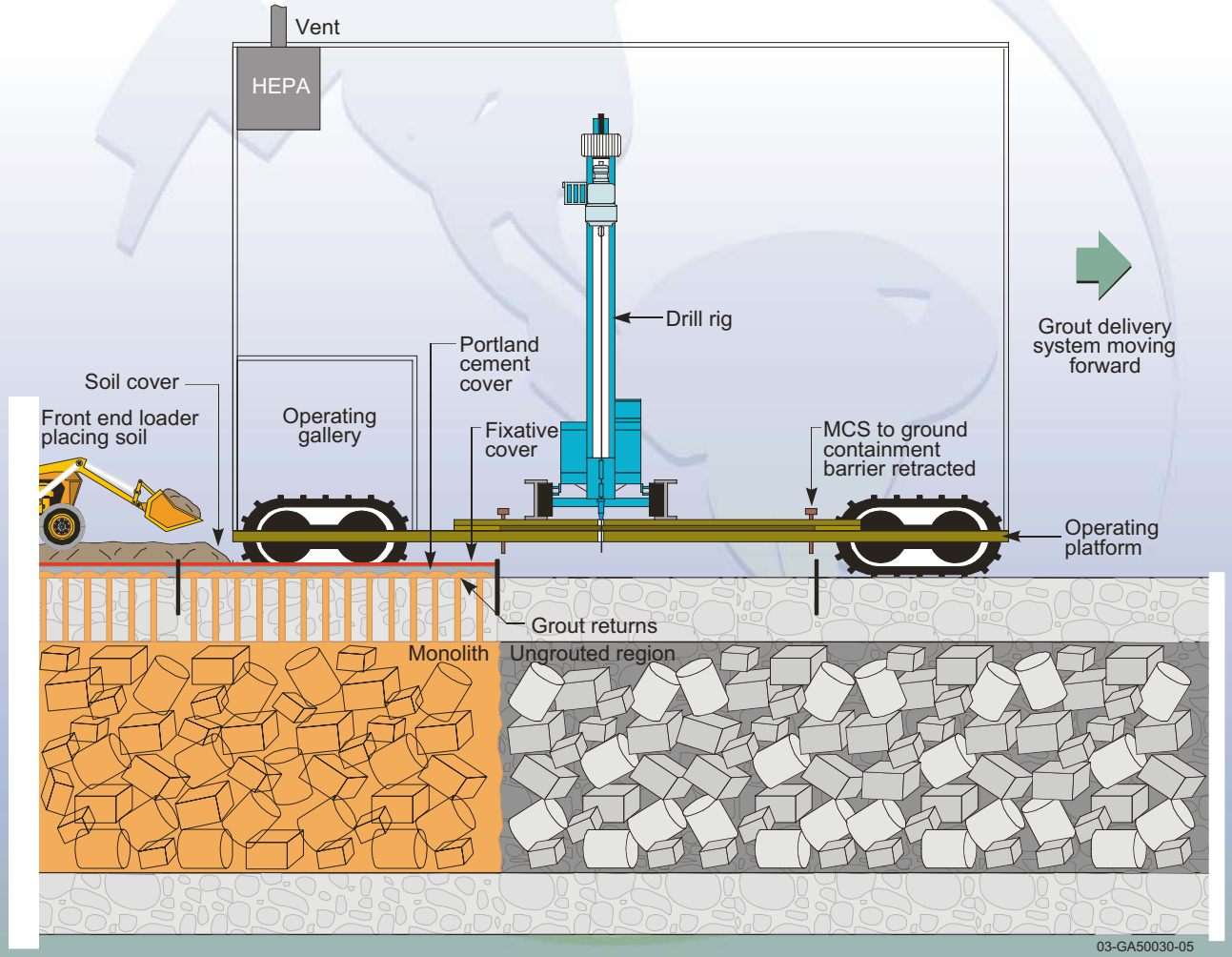
Disposal of Waste at the SDA

Disposal of Drums at the SDA

In Situ Grouting Drill Rig

Jet Grouting Drill Stem

In Situ Grouting Process



System Moving to New Location (Side View)

Jet Grouting Simulated Waste

Grouted Debris Using Molten Paraffin

Debris Soaked by Waxfix

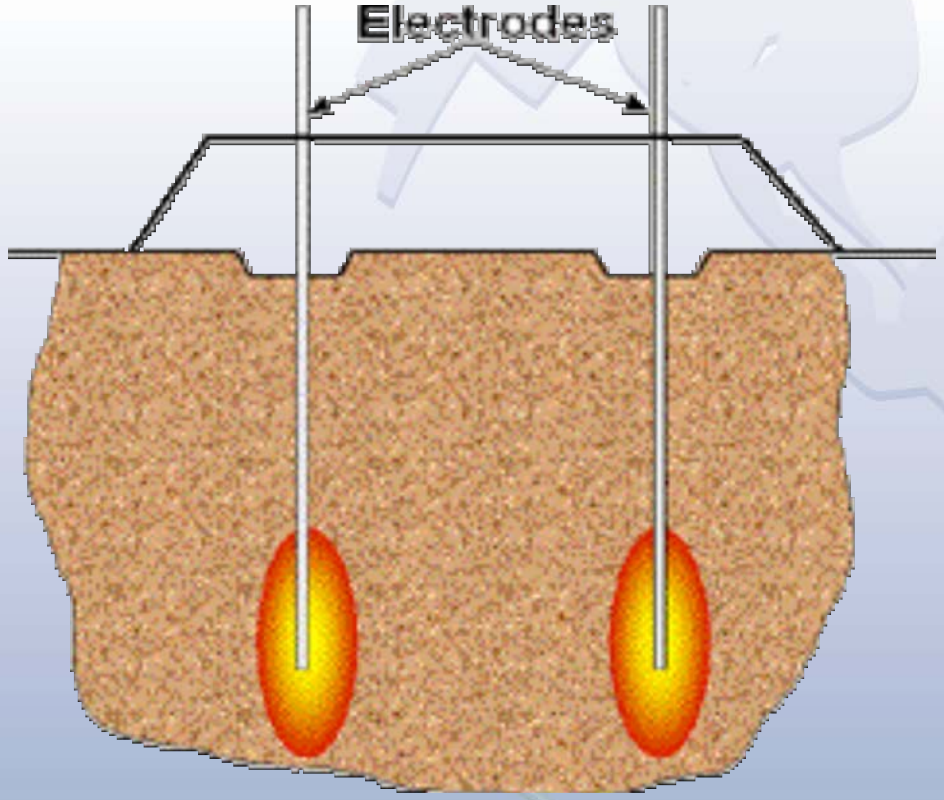
Retrieved Soil/Waxfix Wasteform

Retrieved Soil/Gment-12 Wasteform

Retrieval of Grouted Debris

Cryogenic Retrieval

In Situ Vitrification



- *Initiates melt below grade*
- *Focus treatment on area of contamination*
- *Overburden is not consumed*
- *Maximizes safety by enhancing offgas release pathways*
- *Reduces offgas treatment requirements due to overburden filtration and cooling*
- *Improves processing depth capability*
- *Experience - WAG 1 Tank Melt & LANL Soil Melt*

Vitrified Waste

Summary

- *There are a variety of technologies available for stabilizing waste in place*
- *Grouting can be used to stabilize the waste in place or make it so that the waste can be retrieved with minimal contamination spread*
- *In situ vitrification can be used to treat and stabilize the waste to a nonleachable form*