Soil Cleanup

Operable Unit I Remedial Design

May 2001

Last year, Brookhaven National Laboratory (BNL) began removing soil containing low levels of radioactive materials from several areas of the Lab site. Over the next few years, soil from an additional three areas on Laboratory property (see map on back) will be excavated and transported off of Long Island for disposal as low-level radioactive waste. Each of these areas is described later in this fact sheet.

In preparation for this project, a remedial design plan was completed to lay out the technical specifications for the soil cleanup. This remedial design expands on the actions described in the *Operable Unit I Record of Decision*, which was finalized in October 1999.

This fact sheet offers basic information about the remedial design and answers common questions about this soil removal project. More information is available online at *www.bnl.gov/erd*.

How will the cleanup be done?

Workers will use standard excavation equipment such as bulldozers and backhoes to dig up the contaminated soil. The Laboratory will guard the health and safety of employees and the public during these activities.

How will safety be assured?

Health and safety plans detailing safety precautions will guide all aspects of the project. These plans experience a rigorous review before work is allowed to start.

Two key considerations for this project are erosion and dust controls. Workers will install controls such as temporary plastic covers and surrounding berms to prevent erosion.

Dust control will be emphasized during excavation. Methods of dust control include misting the excavation area with water and suspending work during high winds. Air monitoring will be conducted to verify the effectiveness of these precautions and to assure worker and public protection.

Contaminated soil at the former Hazardous Waste Management Facility will be removed and shipped off site for disposal.

What other safety precautions will you take?

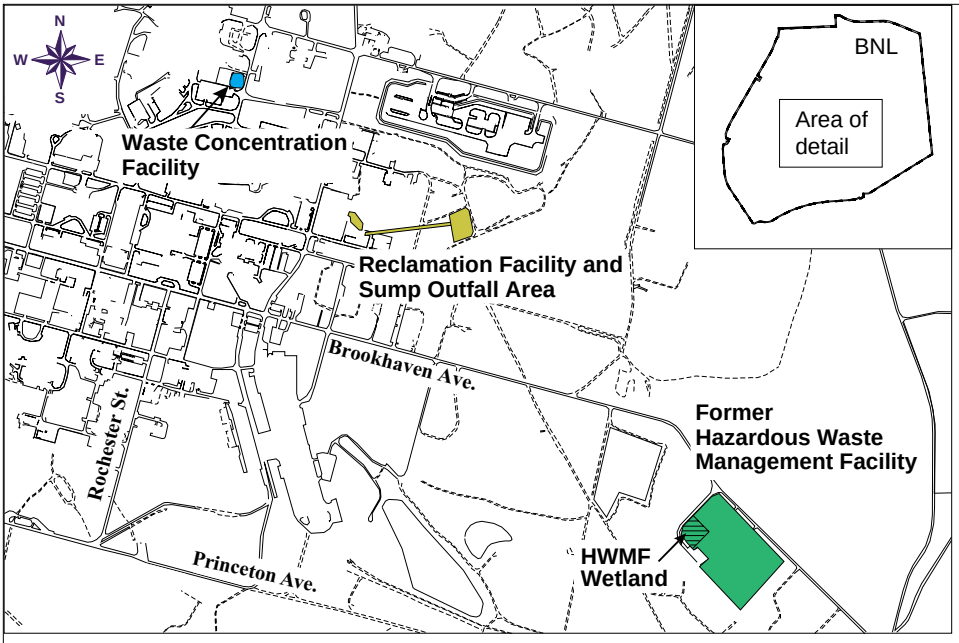
Worker safety is a top priority. All employees receive general and project-specific training, as well as mandatory safety training. Workers are required to comply with all health and safety plan requirements to assure their protection.

A primary concern for workers is the potential for exposure to radioactive materials during soil excavating and packaging. If necessary, workers will wear protective clothing and respirators to protect against skin contact with and inhalation of soil particles. As during all radiological work, worker doses will be constantly monitored to ensure that exposures remain low.

What will be done with the soil?

Excavated soil will be transported to a licensed disposal facility in railcars or in containers that will be placed on trucks. Railcars, which can hold about 75 cubic yards of soil, will probably be used more than trucks, which carry about 15 cubic yards each.

Most of the soils contain very low levels of radioactivity and will not require classification as radiological shipments. All waste shipments from the Laboratory comply with U.S. Department of Transportation regulations.



Radiologically contaminated soil will be removed from three areas on Laboratory property and disposed of at a licensed off-site facility.

What specific work is planned?

Brookhaven will conduct many activities at all three of the areas being addressed, including:

- Further surveys and sampling both before and during excavation
- Excavation and removal of contaminated soil and debris (including concrete, asphalt, piping, etc.)
- Implementation of dust control, air monitoring and other safety precautions
- Sampling and analysis of removed materials for transport and disposal
- Loading of contaminated materials into railcars or containers for transport and off-site disposal
- Testing of remaining soil to ensure that cleanup goals have been met
- Restoration of the excavated areas by filling them with clean soil, reseeding and replanting

The cleanup goal for cesium-137 is 67 picoCuries per gram (pCi/g) at the former Hazardous Waste Management Facility and 23 pCi/g elsewhere. The cleanup goal for strontium-90 is 15 pCi/g. These goals will meet the allowable radiation exposure above background levels in 50 years.

Waste Concentration Facility

The Waste Concentration Facility is used to store and distill liquid radioactive waste from several Laboratory facilities. It contains six 8,000-gallon underground, stainless steel tanks. These tanks will be removed, cut up, packaged, and transported off site for disposal. Contaminated sludge from these tanks has already been removed. Sludge disposal is under way.

Soil in this area contains levels of cesium-137 and strontium-90 above cleanup goals. Approximately 1,200 cubic yards of contaminated soil and concrete debris will be removed from an area of about one-tenth of an acre. Work at this facility is scheduled to begin in Spring 2001.

Reclamation Facility and Sump Outfall Area

The former Reclamation Facility was used until 1987to decontaminate radiologically contaminated clothing and equipment. Until 1969, contaminated equipment was steam-cleaned on a concrete pad behind the building. A pipe directed liquid draining from this pad to a natural depression about 800 feet to the northeast.

Soils at these areas have levels of cesium-137 and strontium-90 above cleanup goals, as well as lesser concentrations of other radioactive elements. An estimated 2,100 cubic yards of contaminated soil will be removed from an area of about one-sixth of an acre. Work here is planned to begin in Fall 2001.

Former Hazardous Waste Management Facility

The former Hazardous Waste Management Facility (HWMF) was used from the 1940s to 1997 for processing, treating, and storing Brookhaven's radioactive and hazardous wastes before transport and off-site disposal. As a result of several accidental releases during operations at the facility, soil in this area contains levels of cesium-137 and strontium-90 above cleanup goals. Isolated areas also contain elevated levels of mercury.

Buildings within the HWMF will be demolished prior to the soil excavation. After the buildings and foundations are removed, approximately 36,000 cubic yards of contaminated soil will be excavated from an area of about 13 acres.

HWMF Wetland

A shallow, seasonally-ponded wetland, approximately three-quarters of an acre in size, is located at the western end of the HWMF. As a result of runoff from the facility, the wetland has been contaminated by releases occurring within the HWMF. Soil in this area contains elevated levels of copper, zinc, lead, mercury, cesium-137, and strontium-90.

This wetland is a breeding ground of a state-endangered species, the tiger salamander. The Laboratory will conduct excavation and restoration activities in this area very carefully in order to minimize the impact to the tiger salamander. Soil excavation will take place in the dry season, after all adult and sub-adult tiger salamanders have left the wetland area.

For more information, see www.bnl.gov/erd or contact:

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