



South lagoon before cleanup

- 1940s** The Laboratory was founded in 1943 as part of the Manhattan Project. Processes used to carry out the Laboratory's past and present missions involve the use of hazardous and radioactive materials.
- 1950s** During and after World War II, materials were disposed of on the Laboratory site or otherwise released into the environment.
- 1960s** Congress enacted basic legislation to protect the environment. The Department of Energy's predecessor, the Atomic Energy Commission, and the Laboratory began to conduct surveys and to clean up areas where spills and disposal had occurred.
- 1970s** Congress enacted the Resource Conservation and Recovery Act (RCRA) that governs the day-to-day operations of hazardous waste generation, treatment, storage, and disposal facilities (sites).
- 1980s** Congress amended RCRA by passing the Hazardous and Solid Waste Amendments (HSWA). HSWA prescribes a corrective action process that focuses primarily on the investigation and cleanup, if required, of inactive sites.
- 1989** Environmental restoration began at the Laboratory to clean up sites that were formerly involved in weapons research and production.
- 1990s** The ER Project investigates
- Present** and cleans up sites that have the potential to affect human health or the environment, in accordance with the Laboratory's RCRA permit.

### LOS ALAMOS NATIONAL LABORATORY

Los Alamos National Laboratory (the Laboratory) is a multidisciplinary research facility owned by the Department of Energy (DOE) and managed by the University of California. The Laboratory is located in north-central New Mexico approximately 20 miles northwest of Santa Fe. The Laboratory covers 43 square miles of the Pajarito Plateau; the Plateau consists of a series of finger-like mesas that are separated by deep canyons containing perennial and intermittent streams running from west to east.

### RISK REDUCTION AND ENVIRONMENTAL STEWARDSHIP ENVIRONMENTAL RESTORATION PROJECT

The Laboratory's Environmental Restoration (ER) Project (implemented by the Risk Reduction and Environmental Stewardship [RRES] Division) is a part of a DOE nationwide program. DOE's environmental restoration efforts began in 1989. The ER Project investigates whether hazardous chemicals and/or radioactive wastes are present as a result of past Laboratory operations and cleans up and restores such sites as needed.

### TECHNICAL AREA 53 LAGOONS DESCRIPTION

Three lagoons at Technical Area (TA) 53 were constructed in 1969 to collect excess sanitary, radioactive, and industrial wastewater. The wastewater came from various Los Alamos Neutron Scattering Center (LANSCE) activities as well as septic tank sludge from other laboratory activities. The lagoons operated until 1998, when the southern lagoon was replaced by a new liquid wastewater treatment facility at TA-53.

The southern lagoon – 305 feet long, 148 feet wide and 6 feet deep – had a storage capacity of 2.6 million gallons. This lagoon was constructed in 1985 to collect excess sanitary wastewater from the two smaller lagoons to the north. The southern lagoon mainly received radioactive-contaminated wastewater. The two northern lagoons are 210 feet long, 210 feet wide and 6 feet deep, and each could store 1.6 million gallons. The three lagoons worked via evaporation. The radioactive wastewater was first pumped into storage tanks to allow short-lived radioisotopes to decay away, and then was pumped into the lagoons to evaporate.

### SAMPLING AND CONTAMINANTS OF CONCERN

The sludge and water in the lagoons and surrounding area were sampled and analyzed in four separate sampling events. The DOE conducted the first in 1988, then the Laboratory conducted several in 1991/1992, 1994/1995, and 1999/2000.

The contaminants of concern found included cobalt-60, cesium-134, strontium-90, sodium-22, and tritium. Other inorganic and organic chemicals identified were lead, mercury, and polychlorinated biphenyls.

## INFORMATION SHEET: TECHNICAL AREA 53 LAGOONS



South lagoon after cleanup

### **SOUTH LAGOON CLEANUP**

Approximately 160 cubic yards of radioactive contaminated sludge and 60 cubic yards of liner from the south lagoons was removed in 2000. The samples from the lagoon sludge revealed radioactive isotopes of uranium, plutonium, tritium, lutetium and others at elevated levels (up to 180,000 pCi/g).

### **NORTH LAGOONS CLEANUP**

Approximately 5000 cubic yards of contaminated material (sludge and clay liner) from the two lagoons was removed in 2002. The sludge and clay liners contained radioisotopes (Cobalt-60, Cesium-134) and carcinogens (Aroclor-1260) at unacceptable levels, surpassing the target levels of 15 mrem/yr for dose and  $10^{-5}$  risk. One hundred and fifty-nine waste bins were filled with northeast lagoon waste and two hundred thirty waste bins from the northwest lagoon. Approximately 90 cubic yards of soil were removed from the lagoons outfall area located on the eastern side. Miscellaneous debris, from a previous interim action filled another 3 waste bins.



Dumpster-like containers filled with the waste

### **OUTCOME**

The ER Project performed the interim actions at the lagoons to prevent potential airborne emissions and protect human health and the environment. Because of the high exposure potential, worker health and safety became a major emphasis during removal activities. The team developed a stringent safety plan specific to the project. The project was a success due to all the protective measures put in place including exposure goals, which allowed the project to be completed on schedule, without an incident, and maintaining worker exposures well below established goals.



Workers in personal protective equipment

The next step for the lagoons is the characterization of a tritium plume believed to exist as a consequence of the operations at the site. A report to the New Mexico Environment Department (NMED) is planned for fiscal year 2003 summarizing cleanup activities and results of investigations at the site.

### **OPPORTUNITIES FOR PUBLIC INVOLVEMENT**

Contact the Communications & Outreach Team

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