

BACKGROUND

LOS ALAMOS NATIONAL LABORATORY

Los Alamos National Laboratory (LANL) is a multidisciplinary research and national security facility owned by the Department of Energy's (DOE) National Nuclear Security Administration (NNSA) and managed by the University of California. LANL is located in north-central New Mexico and covers 37 square miles of the Pajarito Plateau; a series of finger-like mesas separated by deep canyons with perennial and intermittent streams running from west to east.

ENVIRONMENTAL REMEDIATION & SURVEILLANCE PROJECT

DOE's environmental restoration efforts began in 1989. The Environmental Remediation and Surveillance (ER) Project is the LANL part of a nationwide DOE program to investigate the presence of chemical and radioactive waste as a result of past LANL operations and to clean up and restore such sites to protect human health and the environment.

GROUNDWATER MONITORING AT LANL

The communities of Los Alamos, Espanola, Santa Fe, and neighboring Pueblos obtain drinking water from the regional groundwater aquifer. The Laboratory monitors the groundwater beneath the Pajarito Plateau to assure that contamination from its operations does not impact human or ecosystem health. Currently, there are 71?? sampling locations where the Laboratory monitors the quality of the water in the regional aquifer. These locations include deep groundwater wells (reaching 600 to 2000 ft below the ground) and springs. In addition, the Laboratory has 250+ groundwater wells of 40-600 feet deep to monitor the shallow and intermediate groundwater located between the surface and the regional aquifer water table. The Laboratory also monitors the drinking water wells of the neighboring communities.

There are two types of regional groundwater monitoring wells at Los Alamos: single screen and multi-screen. The screen is the portion of the well where water enters from the surrounding rock formations. Single screen wells produce water at only one location below ground level. Multi-screen wells can have 2-9 screens below ground level.

GROUNDWATER CHARACTERIZATION PROGRAM

From 1998-2005, the Laboratory expanded its groundwater monitoring network as part of an effort to understand its groundwater systems. The ultimate goal is to design an appropriate groundwater monitoring network. A total of 33 deep groundwater wells were drilled under an agreement (called the Hydrogeologic Workplan) between the DOE, the University of California, and the New Mexico Environment Department (NMED). Deep well locations were chosen to identify (1) important geologic zones, (2) the location and depth of groundwater, (3) the presence of contaminants in different groundwater zones, and (4) the direction of water flow (and thus the flow of contaminants). It was understood by the parties to the agreement that, when characterization activities were complete, not all wells would be required for an appropriate monitoring network.

GROUNDWATER WELL CONSTRUCTION

Due to the complex nature of the geology, drilling to the regional aquifer of the Pajarito Plateau requires the use of drilling fluids, such as foams or drilling muds. For example, drilling fluids keep the boreholes from collapsing during the tests needed to select the specific depth for a characterization well.

Well development is a process, at the end of well construction; where by the drilling fluids are scrubbed out of the wells. High pressure water and specially designed scrubbing tools are used to remove drilling fluids. In some wells at LANL, the drilling fluids were not completely removed during well development.

SOLUTIONS TO PROBLEMS CAUSED BY RESIDUAL DRILLING FLUIDS

Left over drilling fluids can mask the presence of some, but not all, Laboratory-derived contaminants. Sixteen of the 33 characterization wells show some impacts from left over drilling fluids. LANL is planning corrective actions to assure that sampling from all wells in the monitoring network can accurately identify contamination. These actions will include (1) a pilot test for redeveloping 2 groundwater wells, (2) evaluating the pilot test results, and (3) corrective actions for the remaining wells. Depending on the pilot test results, corrective actions might include redeveloping wells, replacing multiple screen wells with single screen wells, and/or replacing wells. The pilot test will be completed during the summer and fall of 2006. The proposed corrective actions will be submitted to NMED for approval.

COMMUNITY INVOLVEMENT, INFORMATION AND ASSISTANCE

LANL is committed to gathering community input, involvement and assistance in our groundwater monitoring program. Presentations and other communications venues are available to interested persons on groundwater monitoring.

FOR MORE INFORMATION CONTACT:

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