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**Watershed Management on the Pajarito Plateau:
Past, Present, and Future**

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Watershed Management on the Pajarito Plateau: Past, Present, and Future

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Los Alamos National Laboratory (LANL) developed a draft watershed-management plan that pertains to the 43-mi² area within the LANL boundaries. The watershed-management plan was started in 1996 with a number of overall goals: (1) to be a good steward of the natural resources entrusted to the laboratory, (2) to provide long-term evaluation regarding success of the Environmental Restoration Project in acceptably cleaning up sites, (3) compliance with the storm water National Pollution Discharge Elimination System program, and (4) upgrading the LANL environmental surveillance program that has been ongoing since the 1940s.

LANL has an extensive network consisting of 53 surface-water-monitoring stations located in every major canyon, upstream and downstream of LANL, and at most confluences (Fig. 1). Monitoring of the network has been ongoing for about 20 years. The stations are equipped with ultrasonic transducers that trip automated samplers to collect water samples from every flow event. These data have been reported every year in the report series *Environmental Surveillance at Los Alamos*, but have not been used to analyze watershed health. The focus of the LANL watershed-management plan is to use water quality data to monitor watershed health and to implement manage-

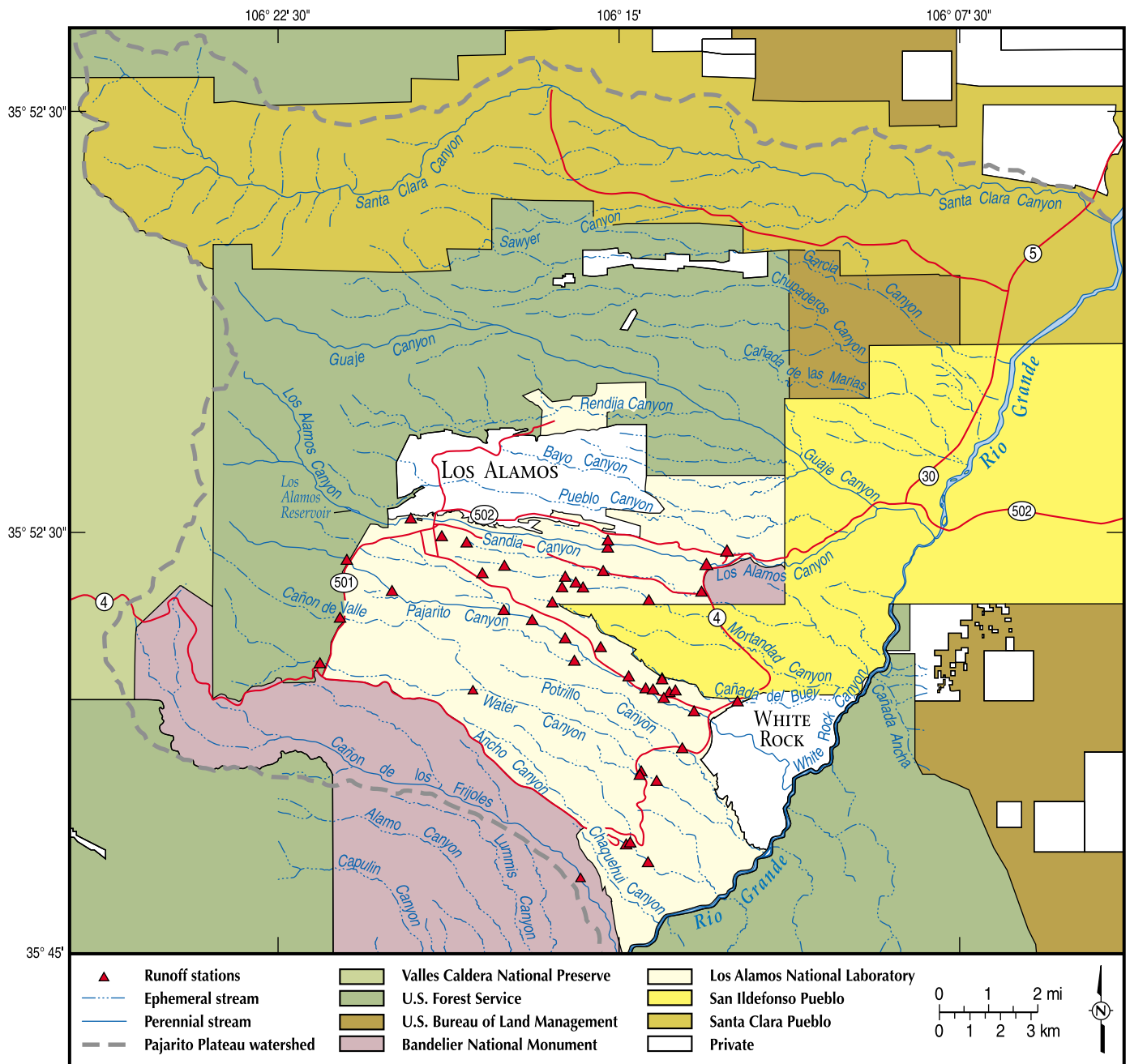


FIGURE 1—Los Alamos National Laboratory surface-water monitoring stations.

ment actions when LANL activities, past or present, adversely impact the health of the watershed.

Comments from stakeholders on the draft watershed-management plan criticized the development of a plan that did not include the entire watershed or the perspectives of the stakeholders that share the watershed: the U.S. Forest Service, National Park Service, Los Alamos County, U.S. Bureau of Land Management, San Ildefonso Pueblo, Cochiti Pueblo, and Santa Clara Pueblo. In response, LANL has sought stakeholder participation in revising the draft plan to include the entire watershed comprising the eastern flank of the Jemez Mountains. At a meeting held on September 16, 1999, most land managers within that watershed and the New Mexico Environment Department committed to participating in the development and implementation of a Pajarito Plateau Watershed Management Plan that covers the entire area.

LANL initiated the formation of the Pajarito Plateau Watershed Partnership, composed of the major stakeholders in the watershed, whose purpose is to plan and implement a program to identify and address the primary issues that affect water quality in all parts of the watershed and are shared by all members of the partnership. One such issue that unifies the partnership and requires a shared-management strategy is erosion. One example of a shared-management strategy to address erosion is vegetation thinning to encourage growth of herbaceous cover. The herbaceous cover holds soil in place, increases surface roughness, and encourages infiltration—all of which decrease erosion by slowing down water. Storm water flow in the aftermath of the Cerro Grande fire has demonstrated how important vegetation is to flood protection.

The Pajarito Plateau Partnership, through grant funding from the NMED or other sources, hopes to implement watershed restoration activities that include reforestation, replanting vegetation in the urban/forest interface, and thinning of ponderosa and piñon-juniper to enhance herbaceous growth in Los Alamos County, Bandelier National Monument, Santa Fe National Forest, and Santa Clara Pueblo.

Other important goals of the Pajarito Plateau Watershed Partnership are outreach and education. These are critical elements of the Pajarito Plateau Watershed Management Plan, and all members of the watershed partnership have agreed to develop and participate in outreach and education activities. Decisions made by the partnership need to be communicated and justified to the public, officials, and other stakeholders. It is anticipated that active participation of partnership members will result in outreach that is effective across all jurisdictional boundaries.

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Ken Mullen is the Hydrology Team Leader within the Water Quality and Hydrology Group at Los Alamos National Laboratory (LANL). He is the project manager for LANL watershed planning efforts, including the LANL-specific watershed plan and as the primary LANL participant in the Pajarito Plateau Watershed Partnership. In addition, he oversees the LANL environmental surveillance program for ground water, surface water, and sediments. He has been responsible for making data from water-related programs at LANL available from the Water Quality Database, through a web interface.

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Kelly Bitner is a registered geologist (California) with 20 years of experience in geologic and hydrogeologic investigations for environmental regulatory compliance. She has been a facilitator of the Data Quality Objective (DQO) process for major ground water, surface water, and hazardous waste site projects.

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Kevin Buckley is involved in diverse activities within the Water Quality and Hydrology Group at Los Alamos National Laboratory. He directed watershed rehabilitation on the laboratory after the Cerro Grande fire. He maintains gaging stations on the laboratory and collects surface water and storm water runoff samples. He is also directing outreach activities for the Pajarito Plateau Watershed Partnership. Formerly, Kevin was the hydrologist for the Mescalero Apache in southeastern New Mexico where he developed a watershed management plan for the Mescalero Apache Reservation. Kevin also worked for 6 years as a Biological Technician for the U.S. Forest Service in many western locations.