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Title:	**Surface Water Monitoring at Los Alamos National Laboratory, ADEP Surface Water and Canyons Investigations Program, Poster, Individual Permit for Storm Water, NPDES Permit No. NM0030759**
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Intended for:	Public
Purpose:	This poster was prepared for the December 2012 Individual Permit for Storm Water (IP) public meeting. The purpose of the meeting was to update the public on implementation of the permit as required under Part 1.I (7) of the IP (National Pollutant Discharge Elimination System Permit No. NM0030759). The poster will be available on Los Alamos National Laboratory's (LANL's) public website.

SURFACE WATER MONITORING AT LOS ALAMOS NATIONAL LABORATORY

ADEP Surface Water and Canyons Investigations Program

Introduction

Los Alamos National Laboratory (LANL or the Laboratory) is located in northern New Mexico on the Pajarito Plateau, on the east flanks of the Jemez Mountains. The Laboratory monitors perennial and ephemeral surface water discharge at approximately 50 locations on and off Laboratory property; a typical gage station is shown in Figure 1. The predominant discharge events are in response to summer monsoon rain that are typically intense, short-lived convective storms (Figure 2). Select drainages support snowmelt runoff for several months in the spring as well.

Monitoring Objectives

Surface water is monitored to evaluate water quality and identify and quantify types and amounts of LANL-derived contaminants transported in stormwater runoff within, at, or near the LANL boundary.

Contaminant concentrations are highest in stormwater near sources, and data from upcanyon gages allows better identification of primary source areas.

Primary focus is on boundary stations to monitor for contaminant transport off-site. Contaminant concentrations and contaminant flux are highest in stormwater, and off-site transport is of highest concern to stakeholders. Data from Guaje Canyon are used for perspective as a background or reference location.

Samples are collected from multiple storm events during the year to account for environmental variability. Equipment is maintained to sample larger floods in the event that flow is greater than what was observed in the current monitoring season.

Methods

Surface water samples are obtained using automated samplers that collect accross the hydrograph. Stage discharge is measured by gas purge pressure system (bubblers), shaft encoder, and ultrasonic probes depending upon channel configuration.

Analytical suites address each watersheds inventory of constituents of concern including radiological constituents, metals, select organics (i.e., PCBs, dioxins/furans), and suspended solids.

Regulatory Framework

Monitoring supports

(1) March 1, 2005, Compliance Order on Consent (modified June 2008), requirements for Los Alamos/Pueblo monitoring (Figure 3)

(2) Memorandum of understanding between the Buckman Direct Diversion Board and the DOE, Emergency Notification System monitoring for the drinking water treatment plant (Figure 4a)

(3) U.S. Department of Energy (DOE) Order 436, Departmental Sustainability, Environmental Surveillance Monitoring (Figure 4b)

Figure 1. Typical gage station (E040) monitoring discharge in lower DP Canyon at the confluence of Los Alamos Canyon

Figure 2. Summer monsoon flood event and resulting erosion damage in Mortandad Canyon (2a) and storm flow in Sandia Canyon (2b)

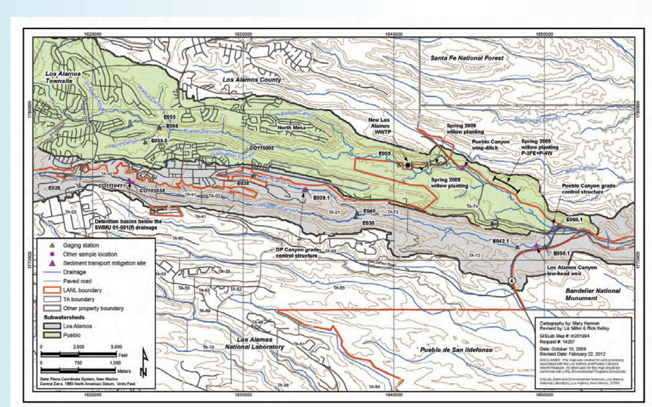

Figure 3. Los Alamos/Pueblo watershed monitoring network. Flow monitored all year, and surface water samples collected from June through October.

The surface water monitoring program is transitioning to telemetry networks to provide environmental data via radio frequency (RF) ultra-high frequency (UHF) transmissions (Figure 4). This is a more cost-effective, efficient, and safer method of data aquisition. Valuable resources will be conserved when the transition is complete.

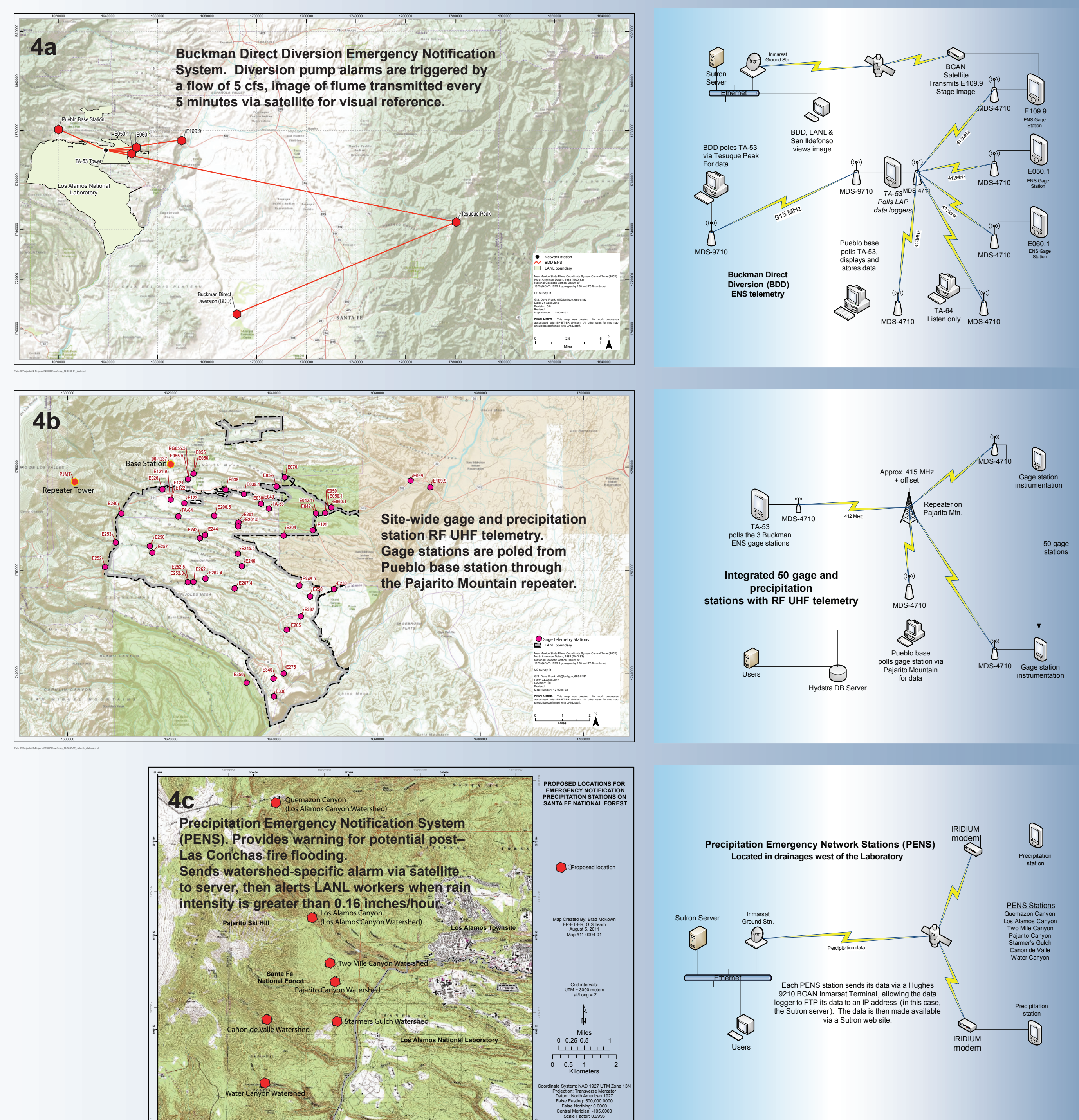

Figure 4. Telemetry networks for surface water and precipitation monitoring stations at LANL

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