



Los Alamos National Laboratory RDX Characterization Fact Sheet



CAMPAIGN:

Royal Demolition
Explosives (RDX)
Characterization

LOCATION:

Technical Areas 16
and 9 at Los Alamos
National Laboratory
(LANL)

CAMPAIGN DESCRIPTION:

Characterize
groundwater movement
and RDX concentrations
through aquifer tests and
tracer studies, and issue
a corrective measures
evaluation (CME), as
needed

CAMPAIGN GOAL:

Ensure contamination
from past LANL
operations does not
threaten human and
environmental health

ESTIMATED COMPLETION:

2020-2024

HISTORY

Building 260 at LANL's Technical Area 16 was the conventional, high explosive machining facility. From 1951-1996, 13 sumps discharged effluent containing high explosive compounds (RDX, HMX and TNT) and barium through the building outfall and into Cañon de Valle. Soils, surface water and groundwater beneath Cañon de Valle were contaminated. RDX in groundwater was first identified in the late 1990s and discovered in the regional aquifer in 2005.

FEBRUARY 2019 STATUS

- No drinking water is at risk.
- Analyses of groundwater hydrology and RDX movement continue.
- Nine wells monitor RDX concentrations in groundwater. Wells R-68 and R-69 exceed the state's tap water screening level of 7.02 parts per billion (ppb)

REGULATING WATER QUALITY

The New Mexico Water Quality Control Commission establishes standards based on the Environmental Protection Agency drinking water standards. New Mexico's standards are applied to regional aquifers.

RDX AT A GLANCE

- ✓ RDX was used widely in World War II and remains common in military applications.
- ✓ RDX is an organic man-made product that does not occur in nature.
- ✓ RDX has a low water solubility but does not bind significantly to soils, so it can leach into groundwater.
- ✓ The state's tap water screening level of 7.02 ppb is based on a 150-pound person drinking 1 liter of contaminated water per day, 350 days a year, for 70 years. That person's increased cancer risk would be 1 in 10,000.

AREA HYDROLOGY

Scientists are working to refine their understanding of how RDX migrated through the subsurface at LANL. Conceptual models based on multi-year studies indicate the primary RDX migration pathway is via surface water moving down Cañon de Valle and seeping downward through the rock layers into the underlying groundwater zones (shallow to deep). Monitoring wells located in each of the groundwater zones provide information on the hydrologic connections and changes over time.

CLEANUP WORK CONDUCTED TO DATE

Surface soil cleanup in 2000-2001 and in 2009-2010 removed, and properly disposed of, approximately 1,500 cubic yards of high explosive-contaminated soil from the outfall area. Residual RDX remains in the subsurface groundwater. Long-term monitoring and maintenance is conducted to evaluate the effectiveness of the corrective measure and provide information for the conceptual site model for RDX movement through surface water, springs and groundwater.

THE RDX MONITORING NETWORK

Nine wells in TA-16 and TA-9 monitor groundwater in the regional aquifer that provides water for Los Alamos County. Groundwater samples from the nearest monitoring wells (R-68 and R-69), which are more than three miles from Los Alamos County water supply wells, show contamination above the New Mexico tap water screening level of 7.02 ppb. The Department of Energy (DOE) has not detected RDX in water supply wells.

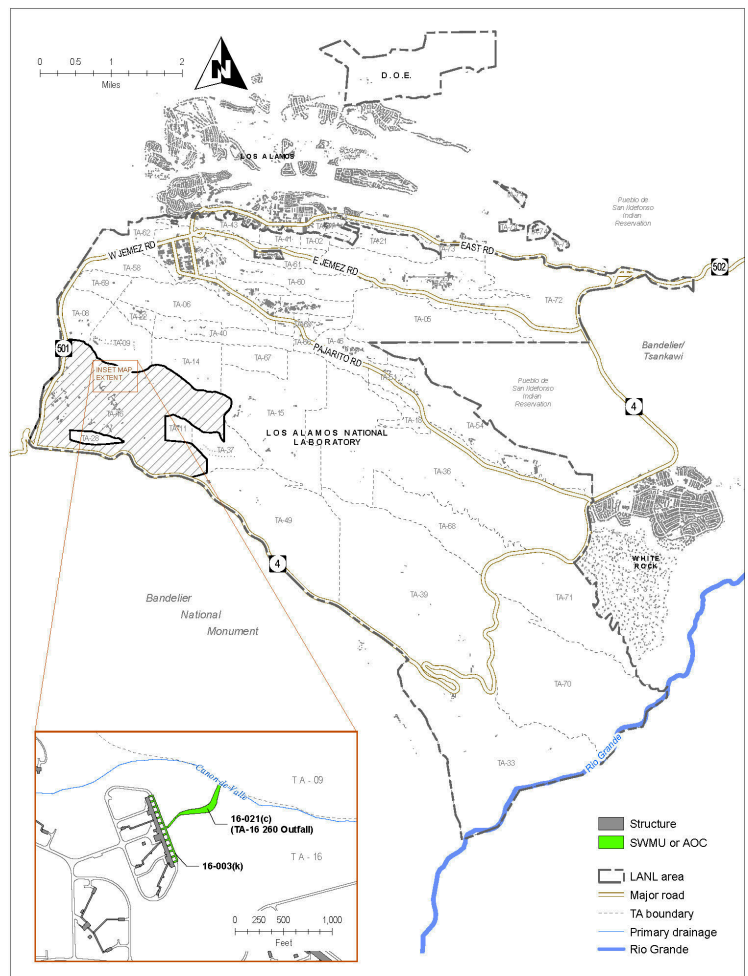
DEFINITION: CORRECTIVE MEASURES EVALUATION

A study or report evaluating alternatives for the removal, containment, and/or treatment of contamination, and recommending a preferred remedial alternative.

RDX CHARACTERIZATION AND THE 2016 CONSENT ORDER

The 2016 Consent Order between DOE and New Mexico Environment Department (NMED) divides cleanup work into 16 campaigns. One of these campaigns is RDX Characterization. The Consent Order milestones for 2019 and targets for 2020 for the RDX Characterization campaign include:

- ✓ Submit to NMED the annual Long-term Monitoring and Maintenance Report.
- ✓ Continue collecting samples at well R-69. This newly-completed well will provide important information of how RDX contamination has reached the groundwater.
- ✓ Prepare and submit to NMED the Deep Groundwater Investigation Report. The report will present the results of hydrology, geology, and geochemistry studies, and include an assessment of the long-term fate and transport of RDX contamination and the associated risk.
- ✓ If further remediation is necessary to protect groundwater, issue the CME for RDX in the deep groundwater.



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