



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,
perform risk assessment, and issue
a corrective measures evaluation
(CME), as needed

CAMPAIGN GOAL:

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

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.

JUNE 2021 STATUS

- No drinking water supply wells are 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 9.66 parts per billion (ppb).

REGULATING WATER QUALITY

The New Mexico Water Quality Control Commission's tap water screening level of 9.66 ppb is based on the Environmental Protection Agency screening levels. Exceeding the screening levels may warrant further investigation or site cleanup.

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 is based on a 150-pound person drinking one liter of contaminated water per day, 350 days a year, for 26 years. That person's increased cancer risk over 70 years would be 1 in 100,000.

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 more than three miles upgradient from the nearest Los Alamos County water supply well. 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 9.66 ppb. The Department of Energy (DOE) has not detected RDX in water supply wells.

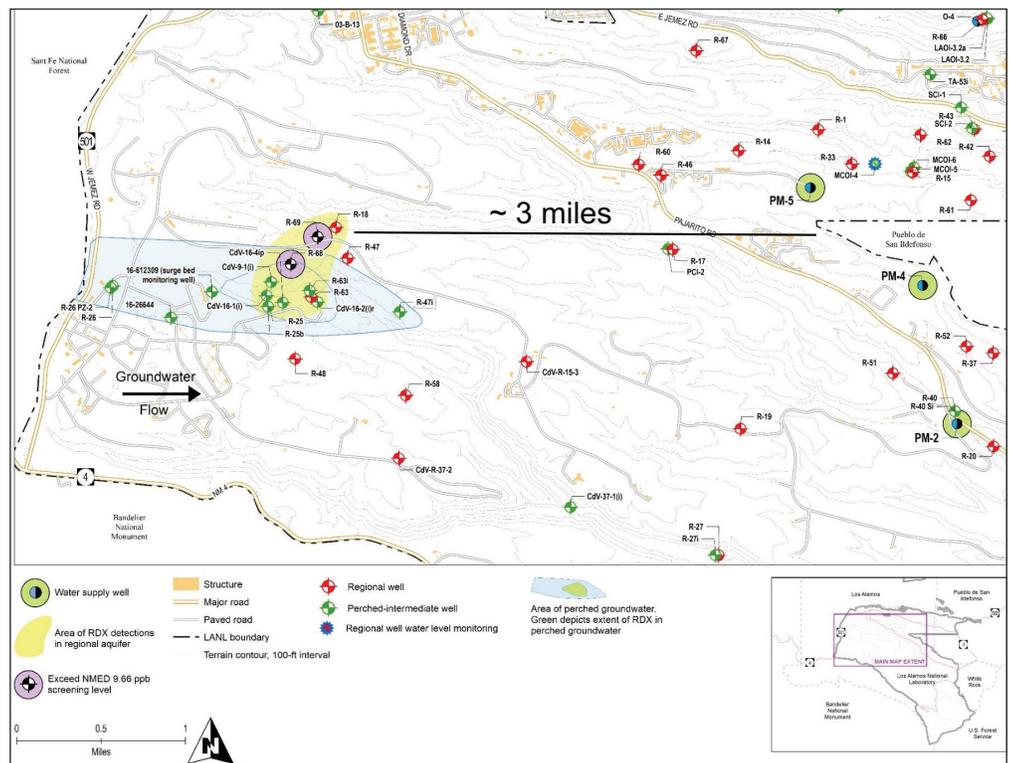
DEFINITION: CORRECTIVE MEASURES EVALUATION

A study or report identifying, developing, and evaluating potential corrective measures alternatives for removal, containment, and/or treatment of site-related contamination and recommending a preferred alternative for remediation of such contamination.

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. Recent and near future work includes:

- ✓ Continue monitoring network of wells.
- ✓ In FY 21 two annual reports will be submitted to NMED. It is anticipated that the Investigation Report and Risk Assessment Report will be finalized.
- ✓ Submitted to NMED the Investigation Report for Royal Demolition Explosive in Deep Groundwater (FY19 Milestone). The report presents the results of hydrology, geology, and geochemistry studies, nature and extent of RDX, updates the Conceptual Site Model, and the screening of potential risk.
- ✓ Submitted to NMED the Fate and Transport Modeling and Risk Assessment Report for RDX Contamination in Deep Groundwater (FY20 Milestone). The report evaluates risk to human health from exposure to RDX in groundwater. The report concludes that there is no risk to human health and that long term groundwater monitoring is protective.



If active remediation is necessary to protect groundwater, the DOE Office of Environmental Management Los Alamos Field Office will submit to NMED a CME for RDX in the deep groundwater.

CONTACT DOE Environmental Management Los Alamos Field Office | LegacyCleanupFeedback@em-la.doe.gov

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