New Mexico Environment Department

Cleanup Actions Update

Radioactive and Hazardous Materials Committee

Rebecca Roose, Deputy Cabinet Secretary of Administration
Chris Catechis, Resource Protection Division Acting Director
Rick Shean, Hazardous Waste Bureau Chief

November 12, 2021

Photo credit Rhett Zyla #IamNMED

Topics

- PFAS at Cannon and Holloman Air Force Bases
- Kirtland Air Force Base Bulk Fuels Facility Spill
- Los Alamos National Laboratory Clean-up
- Sandia Mixed Waste Landfill Long Term Monitoring
- Chlorinated Solvent Contamination in Española

What are PFAS?

- Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals that have been in use since the 1950s for items such as food packaging, cleaning products, stain resistant carpet treatments, nonstick cookware and firefighting foam, among other products.
- PFAS do not break-down in the natural environment.
- PFAS may affect reproductive health, increase the risk of some cancers, affect childhood development, increase cholesterol levels, affect the immune system, and interfere with the body's hormones.

Image Credit: Interstate Technology and Regulatory Council

PFAS Regulatory Authority

- State authority includes the Hazardous Waste Act and the ground and surface water protection regulations promulgated pursuant to the Water Quality Act.

- In response to a petition from Governor Lujan Grisham, last month EPA committed to list several PFAS chemicals as hazardous constituents under the federal hazardous waste law, the Resource Conservation and Recovery Act (RCRA).

- Federal government is also taking action to add some PFAS chemicals to drinking water regulations and list some PFAS chemicals as hazardous substances under Superfund.

PFAS Litigation

- New Mexico is engaged in two legal actions with the Department of Defense (DOD) on PFAS:
  - DOD sued NMED to stop state enforcement of Cannon Air Force Base's RCRA corrective action permit as it pertains to PFAS.
    - This matter is fully briefed and awaiting decision in the New Mexico Federal District Court.
  - NMED and the NM Attorney General filed suit against the United States for a finding of imminent and substantial endangerment at and around Cannon and Holloman Air Force Bases.
    - To compel corrective action and remediation at the sites.
    - Multi-District Litigation with products liability lawsuits against PFAS manufacturers.

PFAS Plume Delineation at Air Force Bases

- Special Appropriation to NMED from Legislature in 2020 to investigate contamination.
- Project to map the size and boundaries of the PFAS groundwater contamination plumes at Cannon and Holloman Air Force Bases underway since Feb. 2021.
- Mapping the plumes is essential to inform cleanup strategies.
- Sampling all participating public and private water supply wells that have had PFAS detections or are at potential risk for PFAS contamination.
- Project will continue in 2022.

Photo Credit: U.S. Army/Patrick Hodges

Kirtland Bulk Fuels Facility Cleanup

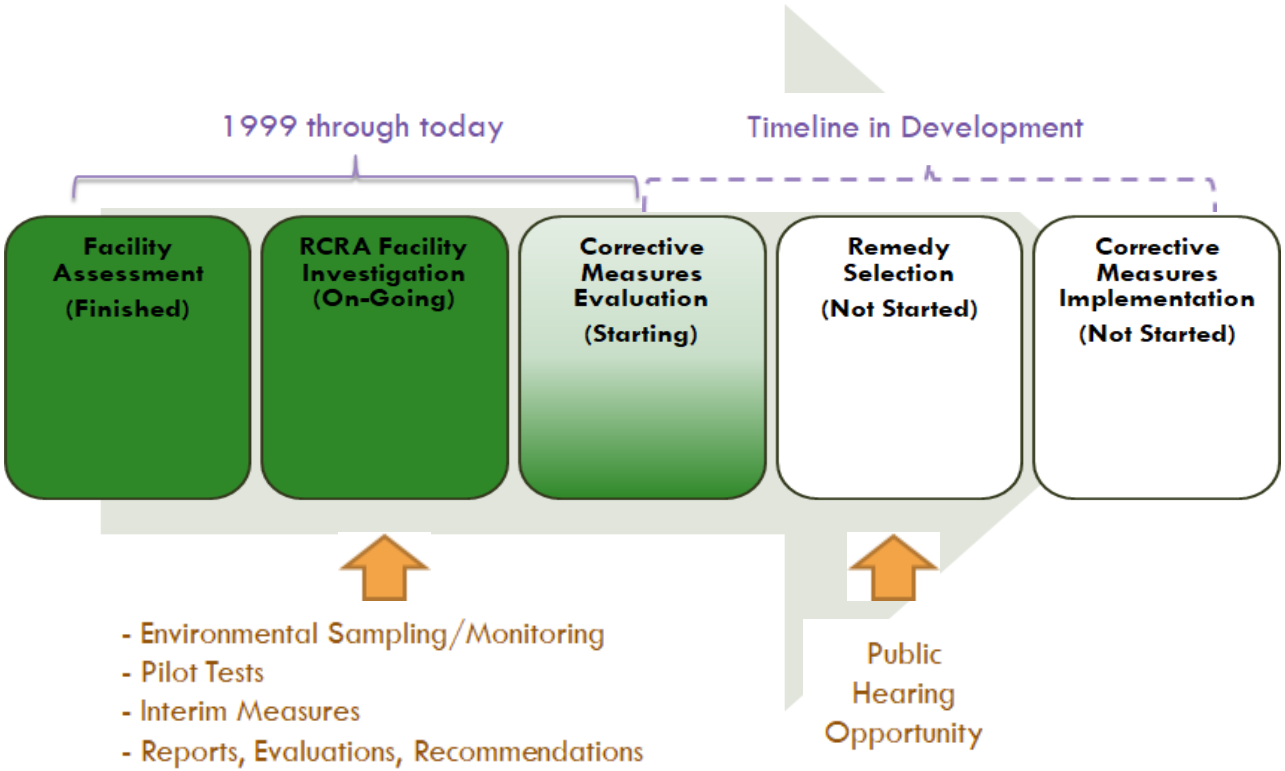
Background

- In November 1999, the Air Force detected evidence of a fuel leak in an underground pipeline at the Bulk Fuels Facility on Kirtland Air Force Base (KAFB).
- Comprehensive cleanup (i.e., corrective action) of the fuel plume is imperative to ensure drinking water supply wells continue to provide safe, clean drinking water to Albuquerque residents.
- The contaminant of concern is ethylene dibromide (EDB), which is known to cause damage to the kidneys, lungs, and liver.

Image Credit: NMED

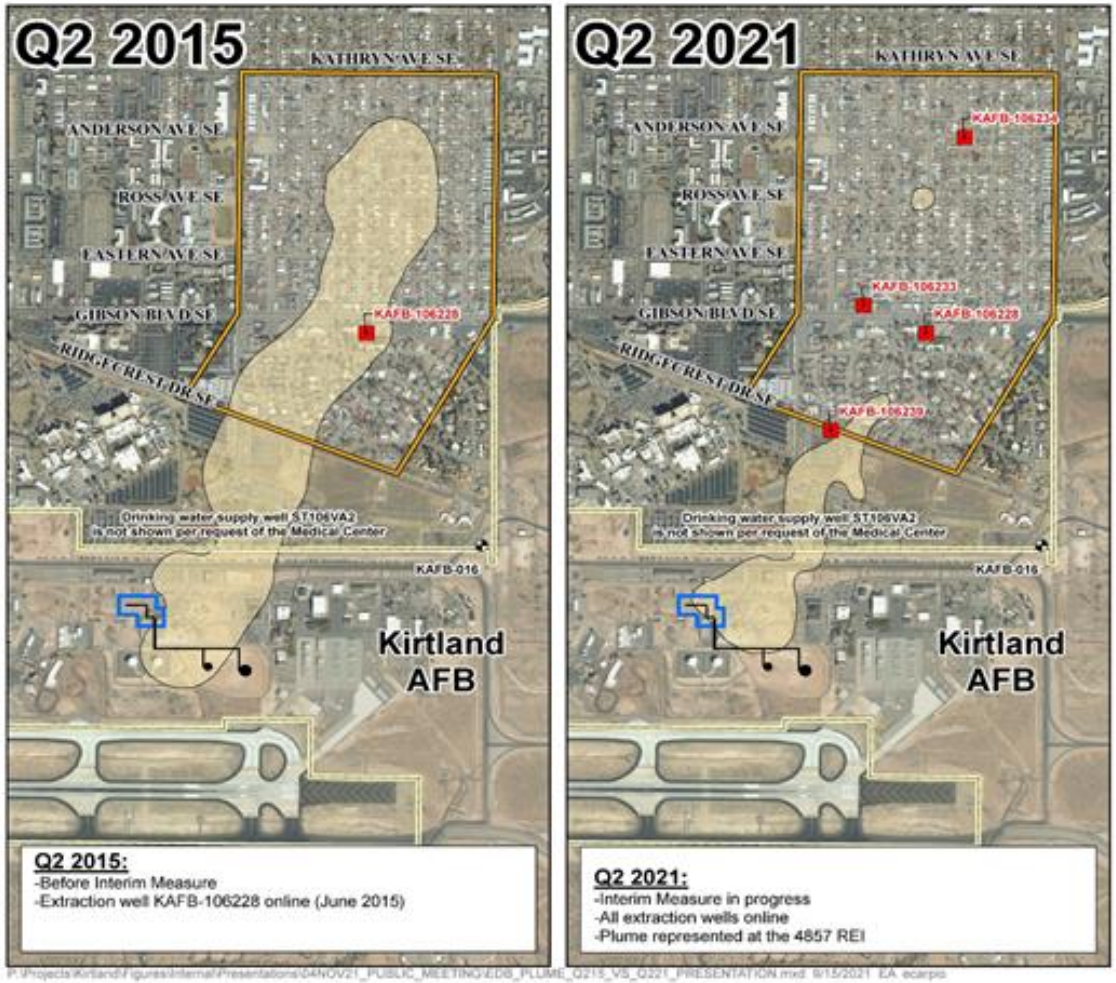
Kirtland Bulk Fuels Facility Cleanup

- Corrective Action Process



Kirtland Bulk Fuels Facility Cleanup

EDB PLUME - 2015 vs 2021



Legend

- Drinking Water Supply Well
- Kirtland AFB Extraction Well
- Kirtland AFB Installation Fence Boundary
- Former Fuel Transfer Lines
- Former Aboveground Storage Tank
- Bulk Fuels Facility (SWMUs ST-106/SS-111)
- Interim Measure Operational Area
- Dissolved-Phase EDB ≥ 0.05 µg/L (EPA MCL)

N

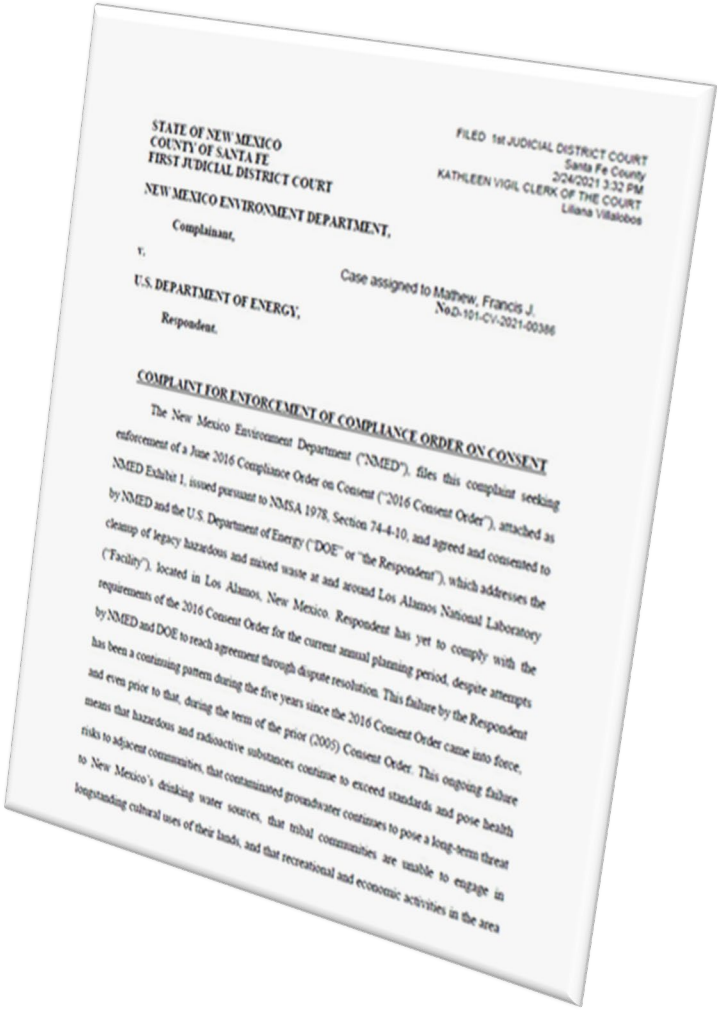
0 700 1,400 2,800
Feet

General Notes:
-Aerial imagery provided by ESRI Online service
-EDB plume models generated with C-Tech MVS Premier Version 9.94

Acronym(s):
AFB = Air Force Base
EDB = 1,2-dibromoethane (ethylene dibromide)
EPA MCL = Environmental Protection Agency maximum contaminant level
REI = reference elevation interval
SWMU = solid waste management unit
µg/L = microgram(s) per liter
Q2 = quarter 2
Q4 = quarter 4

Los Alamos National Lab – 2016 Consent Order

- NMED and the U.S. Department of Energy (DOE) signed the Compliance Order on Consent (Consent Order) in June 2016.
- Most corrective action for releases of hazardous waste at Los Alamos National Laboratory (LANL) are conducted under the Consent Order, which is enforceable under state and federal law.
- In February 2021, NMED filed a civil complaint in District Court seeking to terminate the 2016 Consent Order and negotiate new terms that expedite cleanup of legacy waste and increase accountability for DOE.



STATE OF NEW MEXICO
COUNTY OF SANTA FE
FIRST JUDICIAL DISTRICT COURT

FILED 1st JUDICIAL DISTRICT COURT
Santa Fe County
2/24/2021 3:32 PM
KATHLEEN VIGIL CLERK OF THE COURT
Liliana Villalobos

NEW MEXICO ENVIRONMENT DEPARTMENT,
Complainant,
v.
U.S. DEPARTMENT OF ENERGY,
Respondent.

Case assigned to Mathew, Francis J.
No. D-101-CV-2021-00386

COMPLAINT FOR ENFORCEMENT OF COMPLIANCE ORDER ON CONSENT

The New Mexico Environment Department ("NMED"), files this complaint seeking enforcement of a June 2016 Compliance Order on Consent ("2016 Consent Order"), attached as NMED Exhibit 1, issued pursuant to NMSA 1978, Section 74-4-10, and agreed and consented to by NMED and the U.S. Department of Energy ("DOE" or "the Respondent"), which addresses the cleanup of legacy hazardous and mixed waste at and around Los Alamos National Laboratory ("Facility"), located in Los Alamos, New Mexico. Respondent has yet to comply with the requirements of the 2016 Consent Order for the current annual planning period, despite attempts by NMED and DOE to reach agreement through dispute resolution. This failure by the Respondent has been a continuing pattern during the five years since the 2016 Consent Order came into force, and even prior to that, during the term of the prior (2005) Consent Order. This ongoing failure means that hazardous and radioactive substances continue to exceed standards and pose health risks to adjacent communities, that contaminated groundwater continues to pose a long-term threat to New Mexico's drinking water sources, that tribal communities are unable to engage in longstanding cultural uses of their lands, and that recreational and economic activities in the area

Los Alamos National Lab – 2016 Consent Order

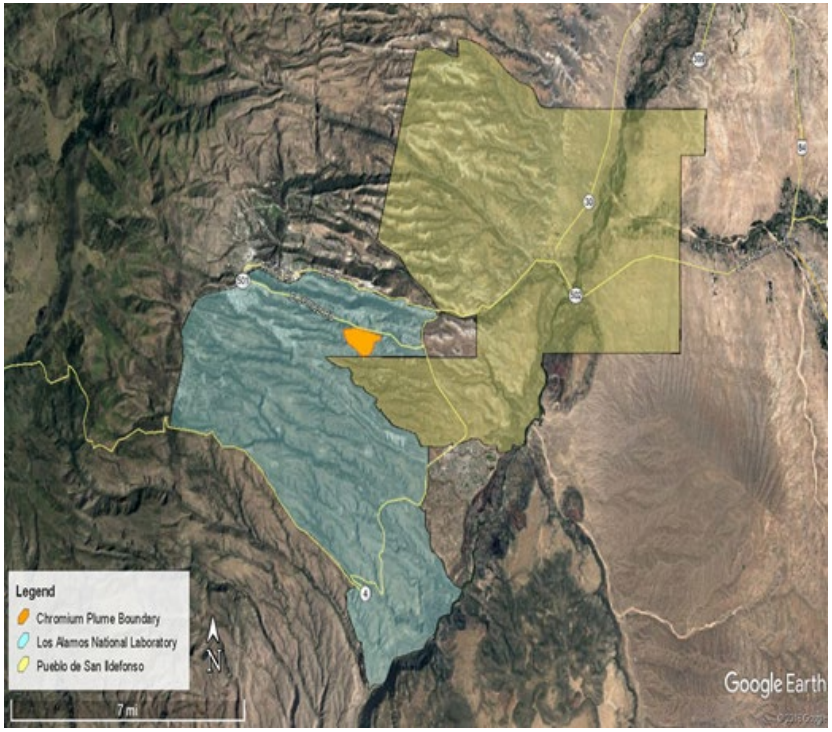
Example: LANL did not commit to enforceable milestones to install and monitor wells in 2020-21

- DOE proposed FY2021 milestones/targets were insufficient due to a lack of substantive and appropriate clean-up targets for coming years
- Mandated dispute resolution ended in January 2021 without agreement between NMED and DOE

- In February 2021, NMED filed a civil complaint in District Court, seeking to terminate the 2016 Consent Order and negotiate new terms that expedite cleanup of legacy waste

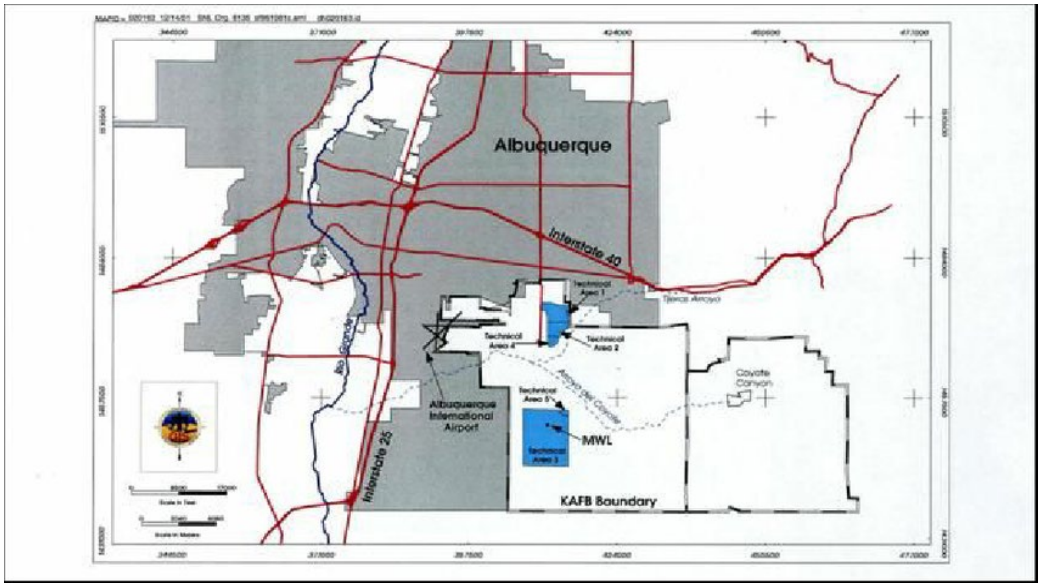
LANL Hexavalent Chromium Contamination

- Potassium dichromate used to control corrosion in power plant cooling towers.
- **160,000 lbs. released** to canyons between 1956-1972 as Cr(VI).
- Migration from perched aquifer to regional aquifer formed multiple sources.
- Discovered in regional aquifer in 2005.
- NMED regulates chromium in groundwater at 50 parts per billion; levels at the site have been measured as high as 1,270 parts per billion
- Plume is one mile long and half mile wide.
- NMED overseeing DOE work to determine nature and extent of the contamination.
- To date, implementation of Interim Measures along Pueblo de San Ildefonso boundary has resulted in approximately **470 lbs. of Cr removed**.



Sandia Mixed Waste Landfill Status

- July 9, 2021, NMED approved the *Mixed Waste Landfill Five-Year Report, January 2019.* The selected remedy continues to function as intended and there is no threat to human health or the environment.
- DOE and Sandia National Laboratories must continue monitoring in accordance with the Long-Term Monitoring and Maintenance Plan.
- Next five-year report is due January 2024, and must account for emerging contaminants of concern, such as PFAS, and continued residential and commercial growth near the Mixed Waste Landfill.



Contamination in Española

- Two groundwater plumes of chlorinated solvent contamination in Española
  - North Railroad Avenue Plume (NRAP): Superfund Site under the oversight of the Superfund Oversight Section, Groundwater Quality Bureau
  - Calle Chavez Plume: Under the oversight of the State Cleanup Program Section, Groundwater Quality Bureau

NRAP Superfund Site

Brief Timeline:

- 1989 – Contamination discovered; chlorinated solvents from the Norge Town dry cleaning operation
- 2001 – EPA selects the cleanup remedy in a Record of Decision informed by Baseline Risk Assessment
- 2008 – Construction of remedy complete
- 2009 – Long-term response action begins
- 2019 – Cleanup continues; state assumes costs of ongoing operation and maintenance
- 2020 – EPA issues third Five Year Review report

Cleanup Goals:

- Restore groundwater to less than drinking water Maximum Contaminant Levels (MCLs)
- Cleanup to MCLs will achieve Santa Clara Pueblo surface water quality standards

NRAP Cleanup Status

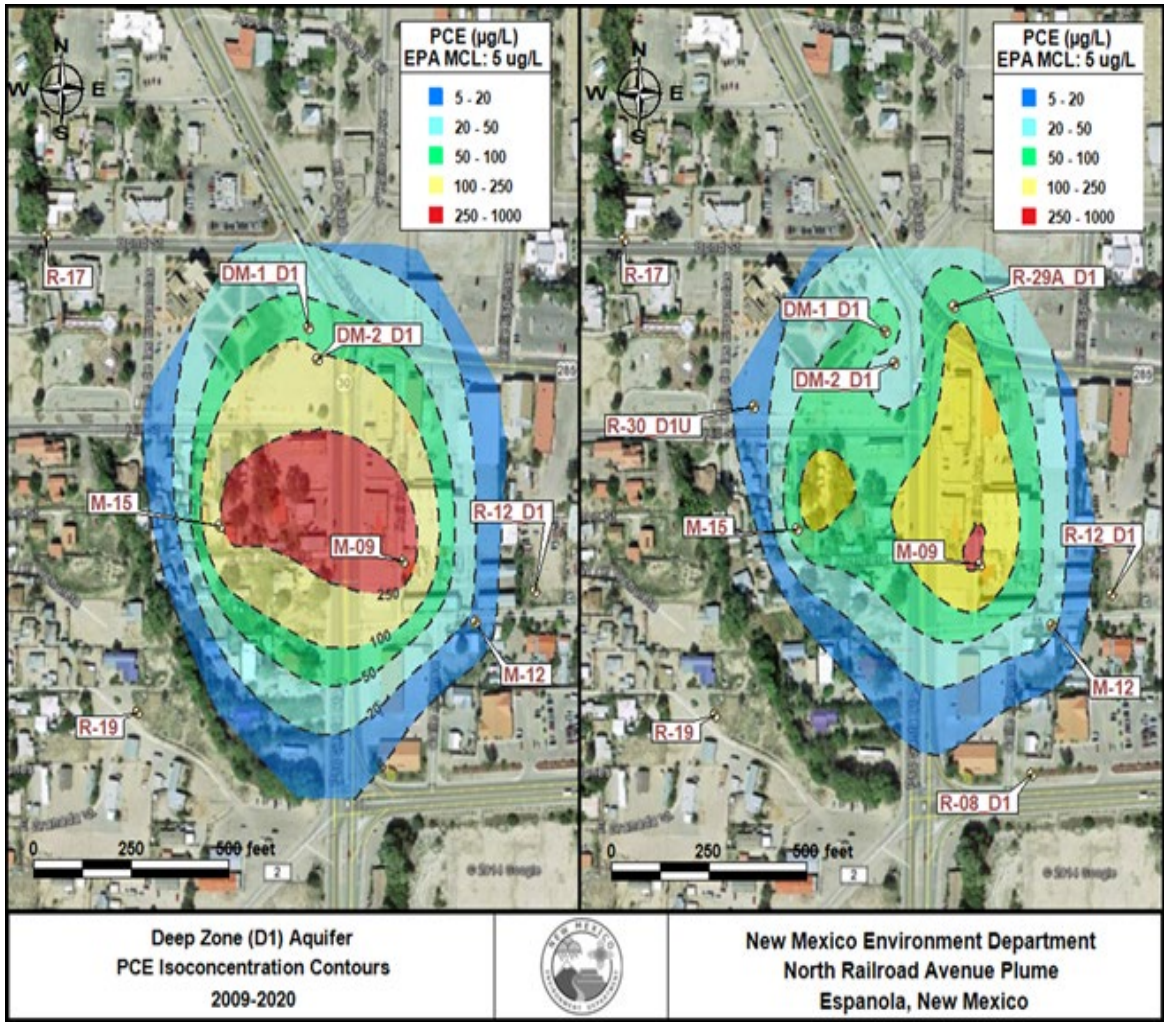
Progress from 2009-2020:

- Shallow Zone plume area decreased from 60 acres to less than one acre.
- Tetrachloroethylene (PCE) concentrations decreased by more than 90 percent from maximum of 40,000 µg/L

Progress since 2020:

- Source Area pilot test injections in March 2020
- June 2020 groundwater sampling - PCE concentrations decreased from maximum of 4,900 µg/L to 51 µg/L
- Annual groundwater and indoor air monitoring
    - Indoor air concentrations remain protective

NRAP Cleanup Status



Deep Zones of Contamination

- Five rounds of injections from 2008 to 2012; 60 percent PCE decrease in monitoring well M-09.
- Pilot test injections in March 2020; sustained injection rates ~10 times higher than previous injections.
- PCE in DM-1(D1) reduced by 70 percent one year after pilot test (June 2021).
- Full scale injections near M-09 in February 2021; Results TBD.

NRAP Cleanup Next Steps

- Evaluate June 2021 groundwater monitoring results
- Annual report and Fact Sheet update – Winter 2021
- New monitoring wells near Cook's Hardware to monitor injection performance – late 2021/early 2022
- Next round of injections targeted for Fall 2022

New Mexico Environment Department
SCIENCE | INNOVATION | COLLABORATION | COMPLIANCE

Site Status Update
North Railroad Avenue Plume Superfund Site
Española, New Mexico (July 2021)

This fact sheet will tell you about...

- Site History and Background
- 2020 Five Year Review
- Recent Site Activities
- What Happens Next
- Where to Find More Information

Site History and Background

Contamination of water resources is a serious problem in many communities which can reduce the supply of available drinking water and present health risks to the public. To reduce these risks, the New Mexico Environment Department (NMED), in cooperation with the U.S. Environmental Protection Agency (EPA), is working to clean up contaminated groundwater at the North Railroad Avenue Plume Superfund Site (Site) in Española, New Mexico, and within the exterior boundary of Santa Clara Pueblo.

NMED discovered groundwater contamination at the Site in 1989 when two City of Española drinking water supply wells showed elevated concentrations of the chemicals tetrachloroethene (PCE) and trichloroethene (TCE). The City immediately stopped using those wells. PCE and TCE have not been detected in any other City drinking water supply wells based on routine sampling data collected through 2020.

The contamination at the Site is divided into two plumes: the Shallow Zone plume and the Deep Zone plume. The Shallow Zone plume once extended approximately three-quarters of a mile south of the source of contamination, the former Norge Town Laundry and Dry Cleaners facility located at 113 North Railroad Avenue. Today, only an isolated area of contamination in the Shallow Zone remains near the Source Area.

The Deep Zone plume covers a smaller area extending north to the Plaza de Española and south to Santa Clara Bridge Road. The Deep Zone plume extends from approximately 55 feet to 260 feet underground.

Groundwater clean-up using enhanced reductive dechlorination

Enhanced reductive dechlorination (ERD) is the process of changing the conditions in groundwater to stimulate the breakdown of contaminants, such as PCE or TCE. This is achieved by injecting materials into the contaminated groundwater that will interact with the chemicals. The byproducts of this process are harmless.

EPA and NMED compared this method with other options, including a "pump and treat" system, and selected this method because it is the most likely option to meet clean-up goals within 30 years.

2020 Five Year Review

The purpose of a Five Year Review is to determine if a clean-up remedy at a site is still protective of human health and the environment and is functioning as designed. The EPA, in coordination with NMED, completed the third Five Year Review of the Site in August 2020. The 2020 Five Year Review report is available at www.epa.gov/superfund/north-railroad-avenue-plume.

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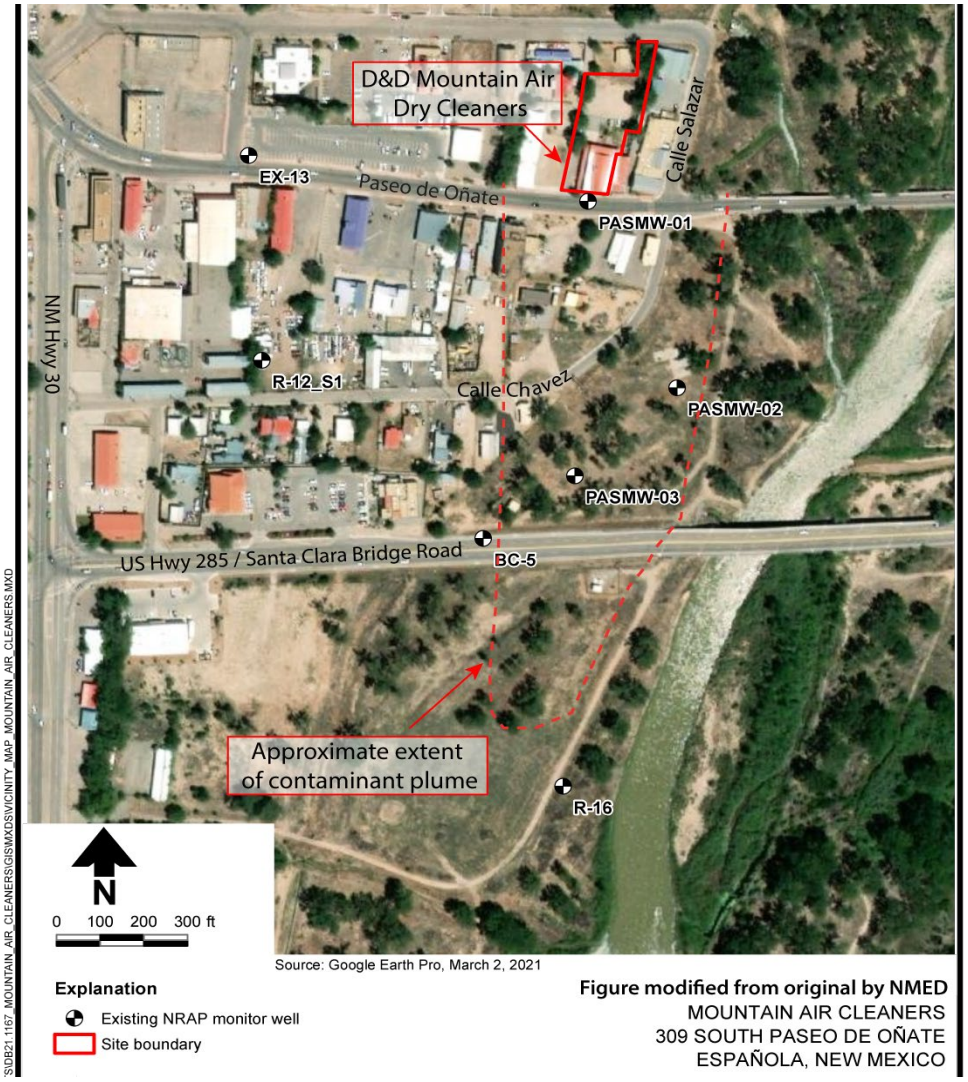
Find the July 2021 Site Status Update at
https://www.env.nm.gov/gwqb/gwqb-sites-of-interest/.

Calle Chavez Plume in Española

- Between 2015-2019, NMED discovered a new area of chlorinated solvent contamination during work east of the NRAP Superfund Site.
- Data identifies the source to be the Mountain Air Cleaners facility located on Paseo de Oñate; No other locations in the area that would use these chemicals.



Calle Chavez Plume – Abatement Process

- State law gives NMED authority to require responsible parties to cleanup groundwater contamination.
- 2021 Abatement Timeline

Date	Action
Feb. 25	NMED issued abatement requirement to Mountain Air
May 17	Mountain Air submitted Stage 1 Abatement Plan (i.e., fully characterize contamination)
July 16	NMED conditional approval of State 1 Abatement Plan
Oct. 5	NMED approved Mountain Air's sampling and analysis plan

Calle Chavez Plume – Abatement Process

- Iterative, data driven process
  - Ensure quality, robust data throughout
  - Begin investigation at the source, expand out
- Eventually move from Stage 1 (characterization) to Stage 2 (propose and select cleanup strategy)
- 30-day public comment period for Stage 2 Abatement Plan
- Implement cleanup pursuant to approved Stage 2 Abatement Plan
- Ongoing NMED engagement with local officials, community members, and Santa Clara Pueblo

Questions?

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