U.S. Department of Energy
Environmental Management Los Alamos Field Office
Chromium Project Status

Radioactive and Hazardous Materials Committee

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ENVIRONMENTAL MANAGEMENT
SAFETY ❖ PERFORMANCE ❖ CLEANUP ❖ CLOSURE

Background

❑ Chromium Plume

- Hexavalent chromium plume in the regional aquifer beneath Mortandad and Sandia canyons
- The plume's size is approximately 1 mile x 1/2 mile x <100 feet thick
- Plume edge is approximately 1/2 mile from the closest drinking water well

❑ Goal of the Chromium Project

- The near-term goal is to prevent migration of the chromium plume while the best possible method of removing it from the aquifer is assessed
- DOE is taking action as part of its commitment to protect groundwater and the health and safety of New Mexico residents and the environment

Analyzing water samples

History of the Chromium Issue

Origin of Chromium in Groundwater

- From 1956 to 1972, a non-nuclear power plant at Los Alamos National Laboratory periodically flushed water out of its cooling towers into Sandia Canyon
- Chromium was commonly used in the industry as a corrosion inhibitor in cooling tower systems
- Flushed water with chromium flowed down Sandia Canyon as surface water, penetrated the underlying rock layers, and ultimately infiltrated the regional aquifer beneath Sandia Canyon and Mortandad Canyon, the present location of the plume

Discovery of the Plume

- Chromium was discovered in the regional aquifer during the installation of a groundwater monitoring well in late 2005
- Detailed scientific characterization of the nature and extent of the plume has been conducted since then

Chromium Project Today

Pilot-scale Pumping

- After several years of detailed characterization, including the installation of numerous deep groundwater-monitoring wells, pilot-scale pumping began at the downgradient edge of the plume in 2014
- The purpose of pumping was to determine the feasibility of hydraulically controlling migration of the plume
- Pumping for one year will provide extensive new input for hydrology and model updates

Mortandad Canyon

Environmental Assessment

- Draft Environmental Assessment of proposed actions in the Chromium Project has been prepared
- 30-day public comment period started September 23, 2015

Plume-Control Interim Measure

❑ Need for an Interim Measure

- DOE has identified the need to conduct an interim measure to hydraulically control the downgradient migration of the chromium plume
- The interim measure is needed to address the increasing concentration of chromium at the Laboratory boundary

❑ Scope of the Interim Measure

- Continuous pumping at CrEx-1, the extraction well in Mortandad Canyon
- Possible installation of a second extraction well
- Installation of up to six injection wells for both plume control and management of treated groundwater
- Proposed plume-control interim measure will take place over the next several years until a remedy has been identified and implemented
- Treated water will either be land applied or returned to the aquifer through injection wells

Plume-Center Characterization

- **Purpose of Plume-Center Characterization**
  - In addition to the interim measure, a chromium plume-center characterization is proposed
  - Information obtained from the additional characterization will be used in identifying remediation alternatives for chromium contamination in groundwater
- **Additional Technologies**
  - Additional technologies for application toward a final remediation approach will continue to be explored
  - This includes installation of a pilot extraction well near the center of the plume to test feasibility and operational efficiency for source removal
- **Use of Injections Wells**
  - Contaminated groundwater will be treated at the surface and largely returned to the aquifer via injection wells

Drilling of a corehole in Mortandad Canyon