



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**



Welcome to the Public Meetings for the Chromium Interim Measures and Final Remedy Draft Environmental Assessment

January 24, 2024

EM-LA thanks you for your participation.
The presentation will begin momentarily.



ENVIRONMENTAL MANAGEMENT
SAFETY ♦ PERFORMANCE ♦ CLEANUP ♦ CLOSURE



NEPA Process

- National Environmental Policy Act (NEPA)
- Comments Received During Scoping
- Purpose of Public Meetings

Project Background

- Purpose and Need
- Alternatives Evaluated
- Environmental Impacts Analyzed
- Impact Summary of Proposed Action

Comment Submission

- Timeline and Procedures
- How to Submit a Substantive Comment





NEPA is a Federal law that requires federal agencies to identify and consider the environmental consequences of implementing projects

The analysis of environmental consequences presented in an EA accomplishes the following objectives:

Identifies and describes the affected environment

Provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI)

Evaluates the potential environmental consequences of reasonable alternatives

The EA process concludes with a FONSI or decision to proceed with an EIS





The scoping period was from April 28, 2023 to June 6, 2023

- **7** scoping comment documents were submitted to EM-LA
- **99** individual comments were identified
- EM-LA responded to public comments in Appendix A of the Draft EA

Comment Delineations

- Alternatives
- Consultation and Coordination
- Environmental Impacts
- Human Health
- Nature and Extent of the Hexavalent Chromium Plume
- NEPA Process
- Public Participation
- Purpose and Need
- Regulatory Requirements
- Out of Scope





Purpose of Public Meetings

Provide the public with information regarding the Chromium Interim Measures (IM) and Final Remedy, and inform the public on how EM-LA will evaluate proposed alternatives in the EA

Inform the public about potential environmental impacts of the Proposed Action and Alternatives

Provide opportunities to make formal comments and ask questions to technical experts on the Draft EA

Seek feedback from stakeholders, including local, state, and federal agencies; local and state elected officials, pueblos, non-governmental organizations, and the public on the Draft EA

Public comments will be part of the official NEPA record, and EM-LA's responses will be included in the Final EA.





- In accordance with applicable Federal and state regulations, and the 2016 Compliance Order on Consent (Consent Order) between DOE and the New Mexico Environment Department (NMED), EM-LA needs to assess, identify, clean-up, and otherwise address environmental contamination at LANL

- The purpose of the proposed action is to remediate hexavalent chromium contaminated groundwater below Sandia and Mortandad canyons
- EM-LA needs to evaluate both the Interim Measures and a remedy

- The primary objective of the IM is to control downgradient migration of the hexavalent chromium plume beyond the LANL boundary, with the benefit of removing some chromium mass from the regional aquifer
- EM-LA needs to evaluate alternatives for groundwater remediation to achieve compliance with the New Mexico chromium groundwater standard





No Action Alternative Continue Interim Measures and Plume Characterization

- The No Action Alternative is the continuation of the preferred alternative in the 2015 Interim Measures EA (DOE/EA-2005) (DOE, 2015) and Finding of No Significant Impact (December 2015), whereby EM-LA would control plume migration and maintain chromium contamination concentrations within the LANL boundary while continuing to evaluate long-term corrective action remedies, including options for chromium mass removal
- “No action” does not necessarily mean doing nothing but involves maintaining or continuing the existing status or conditions
- Under the No Action Alternative, EM-LA would control plume migration and maintain hexavalent chromium contamination levels within the LANL boundary while long-term corrective action remedies continue to be evaluated and implemented
- EM-LA would continue to further characterize the plume to evaluate the effectiveness and feasibility of implementing a remedy





Proposed Action Adaptive Site Management

- EM-LA would use adaptive site management (ASM) to select, implement, and manage removal of hexavalent chromium from source areas and the groundwater
- The use of ASM helps develop effective cleanup strategies by ensuring continuous planning, implementation, and monitoring that accommodates new information and changing site conditions

- In accordance with the 2016 Consent Order, the remedy will be selected by NMED after EM-LA submits a Corrective Measures Evaluation (CME) Report to NMED
- The CME Report will identify and evaluate potential corrective measures for removal, containment, and/or treatment of the hexavalent chromium plume
- In the CME Report, DOE will also recommend a preferred alternative for remediation
- NMED will then issue a Statement of Basis, engage in a public comment period, and select a remedy





Proposed Action Adaptive Site Management (ASM)

ASM Options

Four ASM Options can be utilized individually or as a combination to remediate chromium contaminated groundwater:

Option 1: Mass Removal via Expanded Treatment

Option 2: Mass Removal with Land Application

Option 3: Mass Removal via In-situ Treatment

Option 4: Monitored Natural Attenuation (MNA)

Monitoring protocols to determine the effectiveness of the ASM options:

Groundwater monitoring, surface water monitoring, potentiometric mapping, and flow and solute monitoring

Desired Outcomes:

- Control migration of hexavalent chromium in groundwater
- Remove the mass of hexavalent chromium in groundwater
- Control, reduce, or eliminate the sources of hexavalent chromium in groundwater
- Protect human and ecological receptors
- Manage remediation waste in accordance with State and Federal regulations





- Air Quality
- Cultural Resources
- Ecological Resources (Vegetation, Wildlife, Special Status Species)
- Environmental Justice
- Geology and Soils
- Hazardous Materials and Waste Generation
- Human Health and Worker Safety
- Land Use
- Noise
- Socioeconomics
- Traffic and Transportation
- Utilities and Infrastructure
- Visual Resources
- Water Resources (Groundwater, Surface Water, Wetlands, and Floodplains)





Impact Summary of Proposed Action

Short-Term Impacts

- Minimal environmental consequences caused by construction activities
- Positive impacts on socioeconomics and groundwater quality

Long-Term Impacts

- Minimal environmental consequences caused by operations activities
- Positive impacts on socioeconomics and groundwater quality

Cumulative Environmental Impacts

- The Proposed Action is not expected to substantially contribute to cumulative impacts
- Positive impacts on socioeconomics and groundwater quality



To review an in-depth analysis of each resource area's impacts, please review the Draft EA at the following link:
<https://www.energy.gov/nepa/doeea-2216-chromium-interim-measure-and-final-remedy-los-alamos-new-mexico>



EM-LA, N3B, and Leidos Introductions

EM-LA Representatives

N3B Representatives

Brian Harcek, Director, Office of Quality and Regulatory Compliance

Alan Madsen , N3B NEPA Specialist

Cheryl Rodriguez, Director, Office of Cleanup Execution

Mike Erickson, N3B Director, Water Program

Hai Shen, NEPA Document Manager

Troy Thomson, N3B Program Manager, Environmental Remediation

Tom McCrory, Senior Geologist

Leidos Representative

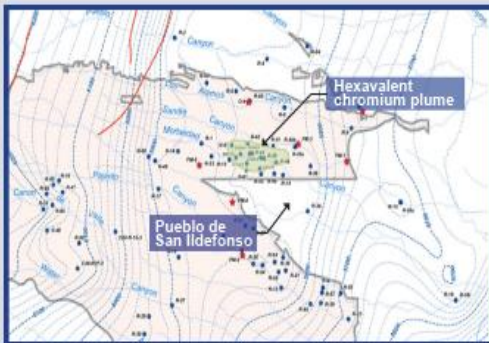
Miranda Lawson, Leidos, Public Outreach Coordinator



Historical Context of the Hexavalent Chromium (Cr) Plume

Origin of the Hexavalent Cr Plume

- The source of the hexavalent Cr plume was a non-nuclear power plant at Los Alamos National Laboratory (LANL) that periodically flushed water containing potassium dichromate from the plant's cooling towers into Sandia Canyon from 1956-1972.
- Up to 160,000 lbs of hexavalent Cr was released during this period, but not all of it migrated into the regional aquifer.
- Current measurements estimate the hexavalent Cr plume is ~1 mile long x ½ mile wide.



Movement of the Hexavalent Cr Plume

- Water containing hexavalent Cr traveled down Sandia Canyon.



- Unsaturated zones in tilted rock formations beneath the canyon allowed hexavalent Cr to infiltrate into the regional aquifer underlying Mortandad Canyon.

First Samples



- Monitoring Well R-28 was installed in Mortandad Canyon in 2004 to investigate the regional aquifer beneath LANL.
- The first groundwater samples from R-28 contained hexavalent Cr concentrations ~8x the New Mexico chromium groundwater standard.
- EM-LA prepared the Environmental Assessment for Chromium Plume Control Interim Measure and Plume-Center Characterization (DOE/EA-2005) to analyze environmental impacts of actions to limit downgradient migration of the plume edge in the regional aquifer.





The Interim Measures (IM) for Hexavalent Chromium Plume Control

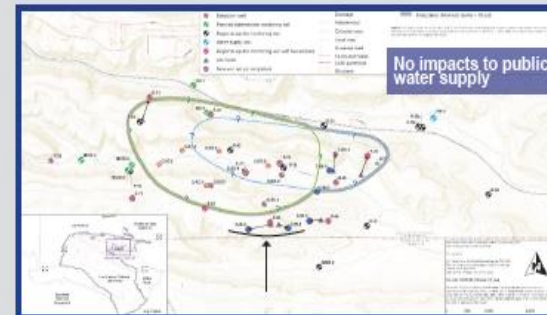
Primary Objective of the IM

- The objective of the IM is to control migration of the hexavalent chromium (Cr) groundwater plume beyond the Laboratory boundary.
- Plume control is achieved through extraction and treatment of contaminated groundwater (“pump and treat”) and injection of treated (clean) groundwater along the downgradient plume edge.
- The IM includes extraction and injection wells and associated equipment necessary to prevent migration of the hexavalent Cr plume beyond the LANL boundary.



Key Highlights Associated with IM Design

- Installed wells R-35a and R-35b in 2006 as an early warning for hexavalent Cr approaching Los Alamos County supply well PM-3.
- Prior to the IM, 10 regional monitoring wells, 2 perched-intermediate wells, and 6 core holes/piezometers were installed to define the nature and extent of the plume.
- Hydraulic control successfully moved the southern extent of the hexavalent Cr plume ~500 feet away from the Pueblo de San Ildefonso.





No Action Alternative – “Continue Interim Measures and Plume Characterization”

- Under the No Action Alternative, EM-LA would continue to control plume migration and maintain hexavalent chromium (Cr) contamination levels within the LANL boundary while long-term corrective action remedies continue to be evaluated and implemented.
- EM-LA would continue to further characterize the hexavalent Cr plume to evaluate the effectiveness and feasibility of implementing a remedy.



Proposed Action “Adaptive Site Management”

- EM-LA would use adaptive site management to remediate the hexavalent Cr plume.
- This approach would create a framework of structured and continuous planning, implementation, and monitoring that accommodates new information, changing site conditions, and public participation.
- Proposed Action Alternative includes four options, or a combination of these options:
 - **Option 1:** Mass Removal via Expanded Treatment
 - **Option 2:** Mass Removal with Land Application
 - **Option 3:** Mass Removal via In-situ Treatment
 - **Option 4:** Monitored Natural Attenuation





Adaptive Site Management: Proposed Action Alternative Options



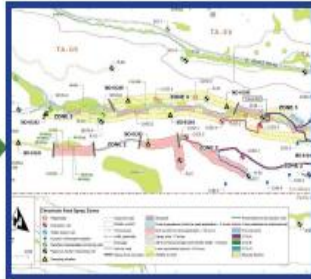
Continue Interim Measures and Plume Characterization:

Control plume migration and maintain chromium concentrations within LANL boundary while continuing to evaluate long-term corrective action remedies, including options for chromium mass removal. Continue characterization with additional monitoring wells, studies, and modeling.



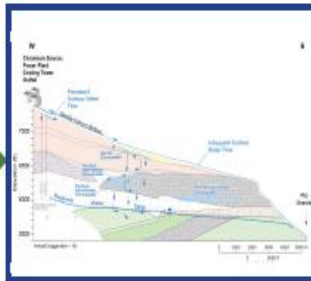
Option 1 - Mass Removal via Expanded Treatment:

Under this option, additional extraction, injection and monitoring wells would be added. These additional wells would raise the rate of groundwater extraction and increase the rate of mass removal, treatment, and injection into the regional aquifer.



Option 2 - Mass Removal with Land Application:

This option would use land application of treated groundwater as a disposition method. A Discharge Permit would regulate land application rates and requirements.



Option 3 - Mass Removal via In-situ Treatment:

This option would use in-situ treatment to address hexavalent chromium contaminated groundwater. In-situ treatment involves injecting reducing agents in untreated water and relying on chemical processes (e.g., sodium dithionite amendments) to immobilize and detoxify contaminants within soil or groundwater without removing them from the ground. In-situ treatments would be used to target both source area contamination in Sandia Canyon as well as groundwater contamination beneath Mortandad Canyon.



Option 4 - Monitored Natural Attenuation:

Monitored natural attenuation (MNA) relies on natural physical, chemical, or biological processes to reduce concentrations, toxicity, or mobility of chromium and incorporates regular monitoring to verify that MNA is working. In the case of chromium, attenuation occurs via the reduction of mobile Cr(VI) to insoluble Cr(III). EM-LA would consider MNA when contamination poses relatively low risks, the plume is stable or shrinking, and the natural attenuation processes are projected to achieve remedial objectives in a reasonable timeframe, compared to more active methods.





Purpose of the NEPA Environmental Assessment (EA)

- EM-LA is following the National Environmental Policy Act (NEPA) process to evaluate potential environmental impacts of continued operations of the Interim Measures (IM) to control migration of the hexavalent chromium plume and to evaluate the environmental impacts of alternatives for the remedy.
- Public meetings provide interested stakeholders with opportunities to ask questions and submit comments on the considered alternatives for the proposed EA. After public comments are received, EM-LA will prepare a Final EA.
- The proposed action may include well pad and access road installation and maintenance, piezometer placement, and pipeline placement in the 100-year floodplain in Mortandad and Sandia canyons on LANL.

NEPA Timeline

60-day Comment Period Starts

December 14, 2023



Public Meetings*

January 22 and 24, 2024



60-day Comment Period Ends

February 12, 2024



Final EA Notice of Availability*

Spring 2024

**Includes opportunities for public involvement*

How to Provide Comments

Submit comments by:

- **Email:** emla-nepa@em.doe.gov
Please include "Draft EA Comment" in the subject line

- **U.S. Mail** - Mail to:
ATTN: NEPA Document Manager
U.S. DOE Environmental Management
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, NM 87544

Comments should be postmarked by February 12, 2024 for consideration in the Final EA.





Environmental Impacts



- Air Quality
- Cultural Resources
- Ecological Resources
 - » Vegetation
 - » Wildlife
 - » Threatened and Endangered Species
 - » Migratory Birds and Sensitive Species
- Environmental Justice
- Geology and Soils
- Hazardous Materials and Waste Generation
- Human Health and Worker Safety
- Land Use
- Noise
- Socioeconomics
- Traffic and Transportation
- Utilities and Infrastructure
 - » Electricity
 - » Water
 - » Roads
- Visual Resources
- Water Resources
 - » Groundwater
 - » Surface Water





Timeline and Procedures for Comment Submission

December 14, 2023

EM-LA Posts Notice of Availability for the Draft EA (triggers a 60-day comment period)



January 22 and 24, 2024

Public Meetings



February 12, 2024

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Spring, 2024

EM-LA Posts and Distributes Final EA



TBD, 2024

DOE Announces Findings

Provide comments TODAY by:

- Recording a verbal comment via chat.
- Please start your comment with, “**Comment:**” so the virtual meeting team can differentiate your comments from questions

Submit comments LATER by:

- Submitting comments via email, with “Chromium Draft EA Public Comment” in the subject line to:

emla-nepa@em.doe.gov

- Or submitting comments by U.S. Mail to:

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How to Submit a Substantive Comment

NEPA requires an environmental analysis prior to taking a federal action, as a part of increasing meaningful involvement of affected communities, EM-LA requests public comments on the proposed action.

- Substantive comments identify potential alternatives, information, and analyses relevant to the NEPA evaluation; or identify potential impacts or feasible mitigation
- Non-substantive comments are those that express a conclusion, an opinion, a vote for or against the Proposed Action, or otherwise state a personal preference or opinion
- DOE respectfully requests substantive comments on the Draft EA

To receive a notice of availability of the Final EA, please sign up for the notification list by entering your contact information on the meeting sign-in form or sending an email to emla-nepa@em.doe.gov





Thank You for participating in this Public Meeting

EM-LA would like to thank all attendees for their
interest and participation

A review on how to submit comments outside of this
meeting is available on the following slide





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BACKUP SLIDE



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Current Status of Chromium Interim Measures

- **November 2022:** NMED directed EM-LA to cease injection
- **March 2023:** EM-LA ceased injection per regulatory direction and thus operation of the IM:
 - Extraction not feasible without injection
- Monitoring well data shows regulatory direction is adversely impacting regional aquifer:
 - EM-LA notified NMED of concern with chromium increases
- **December 2023:** EM-LA submitted response to NMED's September 2023 corrective action letter requesting approval for partial restart of Chromium Interim Measures; awaiting NMED response
- **Ongoing:** EM-LA conducting three-party technical meetings with EM-LA/N3B, NMED, and Pueblo de San Ildefonso

