

Jackpile-Paguate Uranium Mine Site

July 1, 2018



Background

The Jackpile-Paguate Uranium Mine site once operated between 1953 to 1982 and was perhaps the largest open pit uranium mine in the world. About 22 million tons of ore were extracted from 2,656 acres of mined area. Historically, mine reclamation work was first conducted by the Anaconda Copper and Mining Company, a predecessor to the Atlantic Richfield Company. Reclamation was later conducted by the Laguna Construction Company under a U.S. Department of Interior Record of Decision (ROD), which is a public document that explains the remediation plan for a site. Elevated uranium levels in surface water samples led the Pueblo of Laguna (POL) to seek potential National Priorities List (NPL) site listing from the U.S. Environmental Protection Agency (EPA). See Page 2 for more information on reclamation.

The Jackpile-Paguate Uranium Mine Superfund site was placed on the NPL on December 12, 2013, making the site eligible for cleanup under the EPA's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program and authority. "CERCLA", also known as EPA's "Superfund" program, addresses the nation's most complex hazardous-waste sites. Superfund responses are conducted either as emergency response actions to reduce or eliminate immediate threats to human health, or as permanent remedial actions for cleanup.

A CERCLA Administrative Order on Consent (AOC) was issued on July 1, 2017, which requires the Atlantic Richfield Company to perform a CERCLA Remedial Investigation and Feasibility Study (RI/FS) under EPA's technical oversight and approval. This Newsletter update was produced under EPA's Superfund Community Involvement process to update the POL community on the current RI/FS actions taking place at the site.

HOW THE SUPERFUND PROCESS WORKS FOR COMMUNITIES

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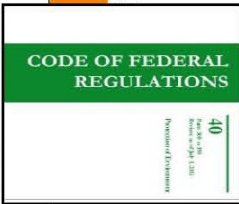
STEP ONE: DISCOVERY & NOTIFICATION
Contaminated sites are brought to the attention of EPA by states, tribes or the public.

2



STEP TWO: SITE EVALUATION
EPA conducts a preliminary assessment (PA) and a site investigation (SI). A PA involves gathering historical and current information. The SI focuses on sampling to determine if there is a release of hazardous substances. This information is used to determine if a site threat exists and if further investigation is needed.

3



STEP THREE: NPL LISTING
EPA uses its Hazard Ranking System to determine if the site could be eligible for listing onto the National Priorities List (NPL) and eligible for cleanup under Superfund remedial authority. Sites are added to the NPL by Agency rulemaking, with public comment.

4



STEP FOUR: REMEDIAL INVESTIGATION & FEASIBILITY STUDY BEGINS
Sampling is conducted to understand the nature and extent of the contamination. The level of risk to human health and the environment is quantified. Cleanup options are developed to address the risks. A Proposed Plan is created with a Preferred Alternative cleanup plan.

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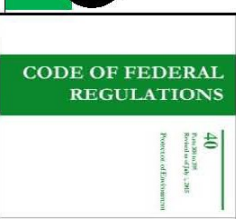
STEP FIVE: PROPOSED PLAN/RECORD OF DECISION
After input from any affected state or tribe, and after public comments are received on the Proposed Plan, a final decision on the remedy is made by EPA in the Record of Decision (ROD).

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STEP SIX: REMEDIAL ACTION
A Remedial Design is developed with the cleanup criteria and engineering requirements for the remedy selected in the ROD. The Remedial Action includes building the remedy.

7



STEP SEVEN: CLOSE OUT AND REMOVAL FROM NPL
When Cleanup Goals have been met by achieving all objectives, data is collected to support the deletion of the Site from the NPL Listing. Sites are deleted from the NPL by Agency rulemaking, with public comment.

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STEP EIGHT: FIVE-YEAR REVIEW
An evaluation is performed every five years to determine if the remedy remains protective at sites not cleared for unlimited use and unrestricted exposure.



AT ANY TIME DURING THE PROCESS, Sites can be referred to the **Removal Program** if an imminent threat or endangerment to public health or the environment is present. This enacts an Immediate Removal Action.

Enforcement and Community Involvement Activities occur throughout the Superfund process.



Current RI/FS Activities

Following are current RI/FS activities being performed:
Finalize/approve Preliminary Conceptual Site Model: Atlantic Richfield Company is finalizing the PCSM for EPA's approval. The Final PCSM will be completed prior to development of, and will serve as a significant basis for, the development and submittal of the RI/FS Work Plans. See "*What is the Purpose of the Preliminary Conceptual Site Model?*" below for more details.

Finalize/approve/ Implement Interim Work Plans: Atlantic Richfield Company is finalizing the IWPs for EPA's approval. EPA's goal is for the field work associated with the IWPs to be completed before the end of the Fall 2018 field season. See "*What are the Goals and Objectives for the Interim Work Plans?*" below for more details.

Future RI/FS Activities

Interim Work Plan Field Efforts: EPA and the POL ENRD are working with the Atlantic Richfield Company on scheduling field activities associated with the IWPs.

Development of RI/FS Work Plans: Atlantic Richfield Company will develop the Draft RI/FS Work Plans for EPA technical review and comment. Atlantic Richfield Company will then develop and submit the Draft Final RI/FS work plans.

RI Field Efforts: Upon completion and EPA approval of the Final RI/FS Work Plans, Atlantic Richfield Company will initiate the RI field efforts. Work is anticipated to begin in 2019.

What is the Difference Between Reclamation and Remediation?

Reclamation restores land that has been mined to a natural or economically usable state. Reclamation often does not require quantifiable risk analysis prior to reclamation. **Remediation** addresses contamination-related risks to human health and the environment to the extent practicable, or above acceptable and quantifiable cancer risk ranges. Site **reclamation** efforts took place both while the mine was operational and after the mine closed. Previous reclamation efforts focused on *mitigating* hazards, restoring the areas disturbed by filling and contouring, and returning it to natural landscape conditions. The results of the RI/FS will help determine any remediation that may be required.

What is the Purpose of a Preliminary Conceptual Site Model?

The Atlantic Richfield Company is developing a PCSM to summarize what is presently known about the site conditions, and to use that knowledge as the basis for identifying what is not known. Site unknowns identify what information is needed ("data gaps") to fully characterize the site. The RI/FS Work Plans are developed to describe the RI activities to be performed, specifically the collection of new site data for the purposes of addressing the data gaps. The RI/FS Work Plans outline the investigation goals and methods to be used to evaluate how much contamination remains, the sources of contamination, and how it is transported within various site media, such as soil, sediment, surface water, groundwater and air. This information is then used to identify and determine where and how site contaminants could potentially affect human health or the environment.

The EPA commonly refers to contaminant migration as defining the "fate and transport" of site contaminants. Understanding fate and transport of site contaminants is a key basis for supporting a remedy evaluation, selection, design and implementation for a site.

What are the Goals and Objectives for the Interim Work Plans?

The Atlantic Richfield Company developed five Interim Work Plans (IWPs) to collect preliminary information about the site to better inform the development of the comprehensive RI/FS Work Plans. The following summaries describe each of the IWPs:

- ◆ **Meteorological System Interim Work Plan:** This IWP describes efforts to identify an appropriate location for setting up a meteorological monitoring station (met station), which is comprised of various instruments for measuring weather-related information. Collection of long-term meteorological data from the site, for example, how frequently and how much rainfall or snowfall is observed on-site, will help identify how erosion is affecting the site and how contaminants in surface water and sediments are moving in, and outside of the site boundaries. Other weather conditions will be measured and monitored, including 24-hour wind speed and wind direction. This information will also better inform efforts to monitor air for radiological exposure.

- ◆ **Air Monitoring for Radiological Exposure Interim Work Plan:** This IWP will improve the understanding of current air quality conditions occurring on and near the site. The initial work step is to determine the best locations for setting up a network of instruments for sampling airborne radioactive contaminants and ambient radiation levels occurring on-site and that could be migrating off-site.
- ◆ **Monitoring Well Inspection Interim Work Plan:** This IWP describes efforts to locate existing groundwater monitoring wells on site and to assess their current condition regarding potential future use in the RI field efforts. The team will evaluate well construction, physical integrity, total well depth, and well-screen interval.
- ◆ **Visual Site Inspection Interim Work Plan:** This IWP describes efforts to visually inspect the entire site to identify areas of concern related to erosion occurring from former waste or protore piles. An additional goal is to develop an initial understanding of the surface water flow patterns and conditions in relation to potential contaminant transport in surface water and sediments.
- ◆ **Unmanned Aerial Vehicle Survey Interim Work Plan:** This IWP describes efforts to collect visual imagery at the former mine site from an unmanned aerial vehicle (UAV). The objective of the survey is collect information about the disturbed mining areas, including areas within the former leased boundaries, and includes the Rio Paguete, Rio Moquino and Mesita Dam. The UAV can access difficult and inaccessible terrain more efficiently than land-based vehicles or foot travel. EPA deferred oversight of this field effort to the POL ENRD.

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For more information on the site see the following website:
<https://www.epa.gov/superfund/jackpile-paguete>

