



Pacific Southwest, Region 9: Superfund

Serving Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations

Iron Mountain Mine

On this page

Description and History

Bulletin Board

EPA #: CAD980498612

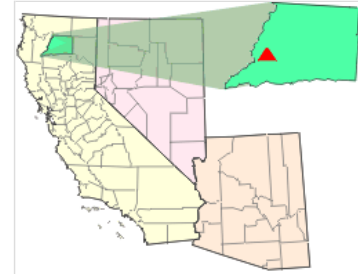
State: California(CA)

County: Shasta

City: 9 miles northwest of Redding

Congressional District: 02

Other Names:



[Map this site in Cleanups in My Community](#)

NPL Listing History

NPL Status: Final
Proposed Date: 12/30/82
Final Date: 09/08/83
Deleted Date:

Links

Iron Mountain Mine in the press!

[EXIT Disclaimer](#)

[San Francisco Chronicle - June 2009](#)

From the 1860s through 1963, the 4,400-acre Iron Mountain Mine (IMM) site periodically was mined for iron, silver, gold, copper, zinc, and pyrite. Though mining operations were discontinued in 1963, underground mine workings, waste rock dumps, piles of mine tailings, and an open mine pit still remain at the site. Historic mining activity at IMM has fractured the mountain, exposing minerals in the mountain to surface water, rain water, and oxygen. When pyrite is exposed to moisture and oxygen, sulfuric acid forms. This sulfuric acid runs through the mountain and leaches out copper, cadmium, zinc, and other heavy metals. This acid flows out of the seeps and portals of the mine. Much of the acidic mine drainage ultimately is channeled into the Spring Creek Reservoir by creeks surrounding IMM. The Bureau of Reclamation periodically releases the stored acid mine drainage into Keswick Reservoir. Planned releases are timed to coincide with the presence of diluting releases of water from Shasta Dam.

On occasion, uncontrolled spills and excessive waste releases have occurred when Spring Creek Reservoir reached capacity. Without sufficient dilution, this results in the release of harmful quantities of heavy metals into the Sacramento River. Approximately 70,000 people use surface water within 3 miles as their source of drinking water. The low pH and high heavy metal contamination from the mine have caused the virtual elimination of aquatic life in sections of Slickrock Creek, Boulder Creek, and Spring Creek. Since 1963, spills from the containment reservoir during large storms have caused at least 20 major fish kills in the Sacramento River [1.]. Winter-run Chinook salmon are listed as endangered by the National Marine Fisheries Service under the Endangered Species Act The Sacramento River downstream of its confluence with drainage from Iron Mountain Mine is the sole spawning ground for this species and a failure of the retention dam is considered a significant risk to their continued existence [2.]

- [Description and History](#)
- [Contaminants and Risks](#)
- [Who is Involved](#)
- [Investigation and Cleanup Activities](#)

- [Cleanup Results to Date](#)
- [Potentially Responsible Parties](#)
- [Documents and Reports](#)
- [Community Involvement](#)

- [Public Information Repositories](#)
- [Additional Links](#)
- [Contacts](#)
- [Progress Profile \(EPA Headquarters\)](#)

1. Nordstrom, D.K. and C. N. Alpers, 1999. Negative pH, efflorescent mineralogy, and consequences for environmental restoration at the Iron Mountain Superfund site, *California Proc. Natl. Acad. Sci. U.S.A.* 96, 3455.

2. Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-66, 598 p. available at: <http://www.nwr.noaa.gov/Publications/Biological-Status-Reviews/loader.cfm?csModule=security/getfile&pageid=21346> See page 145 for a summary of factors, including Iron Mountain Mine.

Contaminants and Risks

Contaminated Media

- Surface Water
- Environmentally Sensitive Area

Surface water has been contaminated by the release of sulfuric acid, copper, zinc, and cadmium from the mine. People face a health risk if they accidentally ingest or come into direct contact with mine drainage. There is a potential for accumulation of contaminants in fish. The unplanned release of contaminants acutely toxic to aquatic life has contributed to the steady decline in fish populations and has contributed to the listing of the Winter Run Chinook Salmon as an endangered species.

Who is Involved

This site is being addressed through Federal and potentially responsible parties' actions.

Investigation and Cleanup Activities

This site is being addressed in six stages: emergency actions and five long-term remedial phases focusing on water management, and cleanup of major sources in Boulder Creek, the Old Mine/No. 8 Mine, area source AMD discharges and sediments.

Initial Actions

Emergency Actions: A lime neutralization process was installed at the site to treat acid mine discharge from the Richmond Portal prior to discharge to the reservoir. This system was operated by the EPA during the winter rainy season of 1988 until 1989. Rhone- Poulenc, Inc., a potentially responsible party, operated a similar system during the 1989 to 1990, 1990 to 1991, 1991 to 1992, 1992 to 1993, and 1993 to 1994 rainy seasons.

Cleanup Ongoing

Water Management: In late 1986, the EPA selected cleanup remedies addressing several parts of the Water Management area. Cleanup activities include: capping selected cracked and caved ground areas; diverting clean Upper Slickrock Creek water around waste rock and mine tailing piles; diverting Upper Spring Creek; diverting clean surface water in South Fork Spring Creek to Rock Creek; enlarging the Spring Creek debris dam; and performing hydrogeologic studies and field-scale pilot demonstrations to better define the feasibility of controlling acid mine drainage formation. The studies and pilot demonstrations were completed. In 1989, the EPA completed capping cracked and caved ground areas and the open pit mine on Iron Mountain. The EPA completed the diversion of Slick Rock Creek in early 1990. Rhone-Poulenc completed construction of the Upper Spring Creek diversion in early 1991. EPA has not constructed two of the actions, the South fork of Spring Creek Diversion and the enlargement of the Spring Creek Debris Dam. EPA has proposed an alternate treatment approach that eliminated the need for these water management actions. EPA determined that a "dam and treat" remedial approach was technically practicable for the Slickrock Creek area source AMD discharges and that significant reduction in IMM area sources of AMD discharges were preferable to the proposed South Fork of Spring Creek diversion or enlargement of the Spring Creek Debris Dam. In the 1997 ROD for the site EPA formally eliminated these two planned interim activities.

Cleanup Ongoing

Richmond Mine and Lawson Tunnel AMD Discharges: The EPA completed its study of the nature and extent of major point source contaminant sources in the Boulder Creek Watershed. In late 1992, the EPA selected an interim remedy to treat the acid mine drainage discharges from the Richmond Mine and Lawson Tunnel by constructing collection and conveyance systems, and a lime neutralization treatment plant. The treatment plant has been built and has been operating since 1994. Treatment will continue, until an alternate remedy could be developed to recover metals or control the discharges, to assure meeting all cleanup goals. Subsequently EPA designed the High Density Sludge (HDS) modifications to the treatment plant which was using an aerated simple mix process and constructed them in 1997. In 2000 the PRPs completed construction of the required emergency storage facilities and in 2002 the Brick Flat Pit dam was raised with provided an additional 30 years of storage capacity for treatment sludge. The modification to a HDS process has reduced the amount of treatment sludge created by a factor of over 50%.

Cleanup Ongoing

Old Mine/No. 8 Mine AMD Discharges: The EPA has studied the nature and extent of contamination that discharges from the mine seep that originates from the Old Mine and No. 8 Mine. In the fall of 1993, the EPA selected an interim cleanup remedy, which included collecting and treating the acid mine drainage discharges from these sources. A collection and conveyance system, and a treatment system have been built and have been in operation to treat these AMD discharges since 1994.

Cleanup Ongoing

Slickrock Creek Area Source AMD Discharges: The EPA completed its study of the nature and extent of the area source AMD discharges from the Slickrock Creek drainage at IMM. In September 1997, EPA selected a remedy that relies on the collection and treatment of the contaminated Slickrock Creek flows to establish significant additional control of the IMM AMD discharges. In September 2000 EPA completed the construction of a clean water diversion system, a five acre sedimentation basin, surface water controls, a small earthfill embankment dam, and a conveyance pipeline to assure the collection and treatment of the contaminated discharges at the existing treatment plant. Only minor modifications to the IMM treatment plant were required to implement this additional treatment effort.

Cleanup Ongoing

Spring Creek Arm of Keswick Reservoir Sediments: The EPA completed its study of the nature and extent of contamination associated with sediments downgradient of IMM that are located in the Spring Creek Arm of Keswick Reservoir. In September 2000 EPA selected a remedy that provides for dredging approximately 200,000 cubic yards of copper and zinc contaminated sediments from the Spring Creek Arm of Keswick Reservoir.

In August 2008 the EPA initiated construction of the first phase of this cleanup action by constructing access roadways and clearing the disposal cell area. EPA expects to complete the construction of the project infrastructure and perform the contaminated sediment dredging operations over the next three to four years. The remedy was implemented beginning in Fall 2008 and completed in October 2011. The first phase consisted of access road construction, clearing the borrow pit area and confined disposal facility (CDF) footprint. The second phase consisted of the removal of 152,000 cubic yards of sediment by hydraulic dredging, treatment of the sediment with lime, coagulant and polymer and placement in the CDF. The final phase consisted of CDF closure, removal of sediment from the Spring Creek Debris Dam outlet and stilling pool and implementation of long term O&M.

Site Studies

Boulder Creek Area Source AMD Discharges: The EPA continues to collect data to characterize the nature and extent of Boulder Creek area source AMD discharges. The EPA is continuing to study potential remedial approaches for the area source AMD discharges from the Boulder Creek drainage.

In 1989, the EPA ordered the potentially responsible parties to implement emergency response corrective measures to remove the metal contamination. In 1990, the EPA, under an Administrative Order, required the parties to implement the Upper Spring Creek diversion cleanup action. In 1991, the EPA ordered the potentially responsible parties to assume responsibility for operation and maintenance of the completed cleanup actions. In 1992, the EPA ordered the potentially responsible parties to construct the treatment system for the Boulder Creek Watershed. In 1993, the EPA ordered potentially responsible parties to implement the collection and treatment system for the acid mine drainage discharges at the Old Mine/No. 8 Mine

Cleanup Results to Date

The installation and operation of the full scale neutralization system, the capping of areas of the mine, and the construction and operation of the Slickrock Creek Retention Reservoir to collect contaminated runoff for treatment have significantly reduced the acid and metal contamination in surface water at the Iron Mountain Mine site. Cleanup activities are continuing and additional studies are taking place. The diversion of Upper Spring Creek has greatly increased the ability of the EPA and the Bureau of

Reclamation to manage the continuing release of contaminants from the site to minimize harm to the Sacramento River ecosystem until a final remedy can be selected and implemented.

Potentially Responsible Parties

Potentially responsible parties (PRPs) refers to companies that are potentially responsible for generating, transporting, or disposing of the hazardous waste found at the site.

PRPs for the Iron Mountain Mine site include: AventisCrop Sciences (formerly Rhone-Poulenc), Iron Mountain Mines, Inc., and the T. W. Arman Revocable Trust.

Documents and Reports

Administrative Records

[MATHESON REMOVAL](#)

[Sediment Studies Operable Unit](#)

[September 1997 Record of Decision \(part 1\)](#)

[September 1997 Record of Decision \(part 2\)](#)

[September 1997 Record of Decision \(part 3\)](#)

[September 1997 Record of Decision \(part 4\)](#)

[September 1997 Record of Decision \(part 5\)](#)

Fact Sheets

10/01/00[Proposed \\$862 Million Settlement to Pay for Iron Mountain Mine Cleanup](#)

08/01/03[EPA Conducts Five Year Review of Cleanup](#)

08/01/04[Opportunity for Public Comment on Proposed Plan to Clean up Contaminated Sediments](#)

03/01/05[IMM PROJECT UPDATE: REMOVAL OF PYRITE MINING WASTES FROM MATHESON SITE.](#)

02/29/08[U.S. EPA Conducting Five-Year Review of Site](#)

06/23/09[EPA Accelerating Cleanup Efforts at Iron Mountain Mine Site Supporting Local Economy with Recovery Act Funds](#)

09/15/09[EPA Will Be Dredging Sediments in Spring Creek Arm of Keswick Reservoir](#)

03/17/10[EPA Will Be Dredging Sediments in Spring Creek Arm of Keswick Reservoir](#)

Records of Decision

10/03/86[Record of Decision for Operating Unit 01](#)

09/30/92[Record of Decision for Boulder Creek Operable Unit \[7.2MB\]](#)

09/24/93[Record of Decision for Old and No. 8 Mines \[6.3MB\]](#)

09/30/97[Record of Decision for Slickrock Creek Area \[10.7MB\]](#)

09/30/04[Record of Decision \(ROD\) for Spring Creek Arm of Keswick Reservoir Operable Unit 5](#)

Technical Documents

09/30/93[First Five Year Review Report](#)

10/08/98[Second Five Year Review Report](#)

09/30/03[Third Five Year Review Report](#)

07/14/08[Fourth Five Year Review Report](#)

09/26/13[Fifth Five Year Review Report](#)

Community Involvement

Public Meetings:

Public Information Repositories

Additional Links

Contacts

EPA Site Manager

Lily Tavassoli
415-972-3146
Tavassoli.Lily@epamail.epa.gov
US EPA Region 9
Mail Code SFD
75 Hawthorne Street
San Francisco, CA 94105

EPA Community Involvement Coordinator

David Yogi
415-972-3350
1-800-231-3075
Yogi.David@epamail.epa.gov

The public information repositories for the site are at the following locations:

Redding Library
Shasta Public Libraries
1100 Parkview Avenue
Redding, CA 96001
530-245-7252

The most complete collection of documents is the official EPA site file, maintained at the following location:
Superfund Records Center

US EPA Region 9
Mail Code SFD
75 Hawthorne Street
San Francisco, CA 94105
EPA Public Information Center

415-947-8701
r9.info@epa.gov
State Contact

McKinley Lewis Jr.
916-255-3625
McKinley.Lewis@dtsc.ca.gov
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, 95826-3200
PRP Contact

Community Contact

Other Contacts

After Hours (Emergency Response)

US EPA
(800) 424-8802

Mail Stop SFD-7C
95 Hawthorne Street,
Room 403
San Francisco, CA
94105
(415) 820-4700

Enter main lobby of
75 Hawthorne street,
go to 4th floor of
South Wing Annex.

Last updated June 6, 2016