

Iron King Mine and Humboldt Smelter [EPA](#) National Priorities List (NPL) Site

Boundaries:

The [Iron King Mine and Humboldt Smelter](#) are two separate facilities in the [Town of Dewey-Humboldt](#). The Iron King Mine area occupies approximately 153 acres west of Highway 69 includes properties along the Iron King Mine Road, and it is bordered by Chaparral Gulch to the north and Galena Gulch to the south. The Iron King Mine is comprised of the Iron King Mine proper area, the operations area and the former fertilizer plant. The Humboldt Smelter area occupies approximately 182 acres along Chaparral Gulch including property at the east end of Main Street in the Town of Dewey-Humboldt around the smelter stack. The investigation also includes soils in nearby residential areas, the waterways of Chaparral Gulch, Galena Gulch, the Agua Fria River and adjoining drainage channels and outfalls, shallow and deep groundwater.



Iron King Mine Tailings off Hwy. 69

Site Status Update:

The [U.S. Environmental Protection Agency](#) (EPA) and the Arizona Department of Environmental Quality (ADEQ) began a [remedial investigation](#) (RI) in the summer of 2008. Sampling has been completed for soils, sediment, groundwater, surface water and air. Technical documents completed to date include the Data Validation Report, Cultural Resource and Historical Buildings Survey, Biological Evaluation, and Riparian Evaluation/ Jurisdictional Determination of the Lower Chaparral Gulch. A Reuse Assessment has been started and is pending completion.



View of Humboldt Smelter

[North American Industries](#) is performing site characterization activities, including soil and groundwater sampling, on the former Iron King Mine and adjacent properties under the oversight of the ADEQ [Voluntary Remediation Program](#) (VRP). For more information on this project, please contact the ADEQ VRP Supervisor at (602) 771-4229 or (800) 234-5677.

Community Involvement Activities:

A [fact sheet](#) was distributed to residents and interested parties on the mailing list in October 2009 regarding the status update for the RI. A public meeting will be held when the RI Report is completed.

A 60-day public comment commenced when EPA proposed the site to be added to the [National Priorities List](#) (NPL) on March 19, 2008, and a [fact sheet](#) was sent to the community. A site kick-off meeting was held in Dewey-Humboldt on August 20, 2008. EPA interviewed community members and other site stakeholders the week of September 29, 2008. Information collected during the interviews will be used in the [community involvement plan](#) (CIP). The CIP identifies issues and concerns, describes ways that EPA will provide information to the community and receive community feedback, and outlines site timeframes and milestones.

Site History:

Late 1800s-1969: The [Humboldt Smelter](#) operated from the late 1800s until 1969. The original smelter burned down in 1904 and was rebuilt in 1906. Ore from the Iron King Mine may have been processed at the Humboldt Smelter during this time period.



**Humboldt Smelter and the Iron King Mine
at Humboldt, AZ**

The Iron King Mine operated from the late 1800s until the early 1960s and was a periodically active mine for gold, silver, copper, lead and zinc. The mine was expanded in 1936 to remove metals from underground. In 1938, a 140-ton mill was erected to crush ore and expanded to 225-ton capacity. In 1940, a cyanide processing plant was added to the site to treat the mill [tailings](#) and enhance precious metal recovery.

1974: Ironite Products Company (now North American Industries) purchased 85 acres of the former Iron King Mine comprised mainly of the tailings area and included an administrative building, a warehouse and process facilities. Ironite Products Company mixed mine tailings with sulfuric acid, urea and water to produce a fertilizer marketed as [Ironite](#).

2002: A Preliminary Assessment/Site Inspection (PA/SI) Report was completed for the Iron King Mine and tailings by the ADEQ [Site Assessment Unit](#). Surface and subsurface soil samples were collected at 21 locations including the large tailings pile, ponds, Ironite plant area, former assay laboratory, former mill site, former fertilizer plant and nearby school. The conclusions were that heavy metals, including [antimony](#), [arsenic](#), [cadmium](#), [lead](#) and [mercury](#) met observed release criteria and exceeded EPA and state benchmarks as documented sources of contamination and have been released to sediments in the Chaparral Gulch. Further study and evaluation was recommended.

Kuhles Capital acquired the Iron King Operations property including the laboratory and Glory Hole. Kuhles received a [solid waste permit](#) to operate a waste reduction and recycling facility at the former Glory Hole.

2003: Greenfields Enterprises purchased the Humboldt Smelter property. Previous tenants included an aluminum recycling facility, wooden shed manufacturer, sawmill and Humboldt Precast. No operations are currently active at the smelter property. Ironite Products Company entered into the ADEQ VRP as a result of the 2002 PA/SI which found that additional investigation of the site was needed.

2003- 2005: Aquatec operated a permitted septage treatment facility on the former fertilizer plant site, previously operated by Ironite Products Company and located within the boundary of the former Iron King Mine.

2004: A PA/SI Report was completed at the Humboldt Smelter and other areas by ADEQ. Samples were collected at the ore pile, evaporation pond, assay lab discharge pipe, large ash pile, gray ash, large tailings pile, retention basis, school yard and two private residences. Samples were analyzed for semi-[volatile organic compounds](#) (SVOCs), metals and cyanide. No SVOCs were detected, but elevated levels of arsenic and other metals were present.

2005: The [Superfund Technical Assessment and Response Team](#) (START) performed a removal assessment of 16 residential properties and one horse pasture along the Chaparral Gulch at the request of ADEQ. The assessment objective was to determine the level of arsenic and lead in soils due to erosion from tailings. There were 153 surface locations and 17 subsurface locations that were evaluated. Sample results were compared to the previously established background arsenic of 30.72 milligrams per kilogram (mg/kg) and lead background level of 20.05 mg/kg.

2006: North American Industries performed removal action of tailings impacted soil from four residential properties in the vicinity of the Ironite property and Chaparral Gulch under an [Administrative Settlement Agreement and Order on Consent](#) with the EPA effective in May. Work was started in July 2006 and completed in May 2007.

An Expanded Site Inspection Report was completed on October 31, 2006 for the Iron King Mine and Humboldt Smelter area by the ADEQ Site Assessment Unit. Samples were collected at 12 drinking water wells including the main and backup wells for the Humboldt Water System as well as 10 private domestic wells. Arsenic concentrations were found to be above the EPA [maximum contaminant level](#) of 10 micrograms per liter (µg/L) in a majority of the samples collected.

2008: [On September 3, 2008](#), the EPA listed the site on the [National Priorities List](#) (NPL). A community site kick-off meeting was held in Dewey-Humboldt on August 20, 2008 and the first round of sampling for the RI began.

2009: Additional sampling was conducted during April 2009.

Additional historic information regarding the Iron King Mine and Humboldt Smelter area can be accessed through the [EPA Web site](#).

Contaminants:

The current contaminants of concern at the Site include [arsenic](#), [lead](#), and other metals that may have contaminated soil, sediments, surface water and groundwater in concentrations significantly above background levels. The full extent of off-site soil contamination and possible groundwater contamination has not been fully assessed. Runoff from the mine tailings along the Chaparral Gulch may be entering the Agua Fria River. Air monitoring during the RI will assess possible airborne contaminants. Contaminants of concern may change as new data become available.

Public Health Impact:

The [Arizona Department of Health Services](#) began a [health consultation](#) in 2006 that was finalized in 2009. A health assessment is to follow shortly after completion of the RI/[feasibility study](#). Groundwater and soil were evaluated for exposure to arsenic and lead. Two wells were identified to pose a public health hazard due to high arsenic levels. These included one deep irrigation well and one shallow domestic well.

Site Hydrogeology:

Groundwater is encountered within the alluvium at depths between 30 and 50 feet below ground surface (bgs) under unconfined conditions and generally the flow follows the local topography. Shallow groundwater is thought to flow east from the mine and smelter towards the Aqua Fria River and along the Chaparral Gulch. Deep groundwater under confined conditions moves within the fracture system of the metamorphic [bedrock](#). Bedrock wells have been drilled to depths ranging from 200 to 1000 ft bgs. The regional groundwater flow direction is not fully understood and will be evaluated during the RI.

Contacts:

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.

**Call EPA's toll-free message line at (800) 231-3075.

Information Repository:

The local repository is at the [Dewey-Humboldt Town Library](#), 2735 N. Corral Street, Dewey-Humboldt, AZ 86329, (928) 632-5049.

Site files are also located at the ADEQ Main Office located at 1110 W. Washington Street, Phoenix. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment with 24-hour notice to review these documents. Once all documents requested have been collected, you will be contacted for a review Monday through Friday from 8:30 a.m. to 4:30 p.m. at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, AZ.

The complete official site file can be reviewed at the EPA Region IX, [Records Center](#), Mail Stop SFD-7C, 95 Hawthorne Street, Room 403, San Francisco, CA 94105, (415) 536-2000.