

Case Study: Midvale, Utah  
Effective Use of Institutional Controls for a Large Redevelopment Project

The 446-acre Midvale Slag Superfund site is located about 12 miles south of Salt Lake City in Midvale, Utah. Smelting occurred on and near the site from 1871 until 1958. These activities resulted in heavy metal and other contamination to the surface water, ground water and soil. EPA conducted extensive cleanup operations that included the consolidation and on-site capping of contaminated soils and other material, and also required institutional controls restricting land use.

The site represented a serious dilemma and an important opportunity for the City. Midvale is a rapidly growing bedroom community for Salt Lake City and much of Midvale's available land for expansion is contained within the site. Using funds provided by EPA, a reuse plan titled the *Bingham Junction Reuse Assessment and Master Plan* was prepared by the City of Midvale in conjunction with the community, landowners, and other stakeholders. This plan envisioned a sustainable community that included residential, commercial, and recreational uses. The City of Midvale subsequently enacted zoning changes to reflect the reuse plan.



*Luxury town house complex*

Among the primary barriers to implementing this reuse plan were the institutional controls prescribed by the Superfund cleanup that required the implementation of deed restrictions. Because the establishment of these institutional controls predated the reuse planning process, they were based on a now-obsolete industrial use scenario. In many areas of the site, the institutional controls would have prevented the reuse plan from being realized.

Recognizing the importance to the community of revitalizing the site, EPA and the Utah Department of Environmental Quality worked with the City of Midvale and the other stakeholders to establish institutional controls more specifically tailored to the intended reuse, but which continue to ensure that the site will remain protective of human health and the environment. Importantly, the City of Midvale created a full-time position to oversee the implementation and monitoring of the institutional controls. This includes serving as a liaison to the developers, owners, tenants, and general public to help communicate the institutional control requirements and to resolve any related issues that might arise. This position has been instrumental in addressing concerns that might otherwise have been a serious disincentive to redevelopment.

A great deal of redevelopment progress has occurred at the site. As of fall 2010, over 860 residential units have been built, an additional 350 were under construction, and major commercial and office facilities are operating or under construction. Efforts are also underway to restore the Jordan River and riparian areas that transect the site and to complete a linear park that links up with the Greater Salt Lake Area trail system. A light rail that will service this area is also planned.

A fact sheet describing the site and providing contact information is available at:

[www.epa.gov/superfund/programs/recycle/pdf/midvale.pdf](http://www.epa.gov/superfund/programs/recycle/pdf/midvale.pdf).

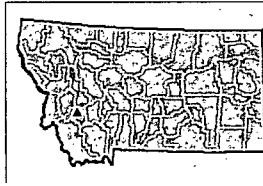




Region 8

Superfund Program

Anaconda Co. Smelter



**Site Type:** Final NPL  
**City:** Anaconda  
**County:** Deer Lodge  
**Street Address:** 3 miles east of Anaconda  
**ZIP Code:** 59711  
**EPA ID:** MTD093291656  
**SSID:** 0818  
**Site Aliases:** AMC Great Falls Refinery, Anaconda Copper & Zinc Refinery  
**Congressional District:** At Large

What's New?

Updated November 2011

The Record of Decision (ROD) for the Anaconda Regional Water, Waste & Soils Operable Unit was amended in September 2011. This amendment waived the arsenic drinking-water standard in certain ground and surface waters at the site and implemented a Domestic Well Monitoring and Replacement Program to ensure the protectiveness of water users. The amendment also modified the boundaries of areas of concern for waste management areas, soil, and ground and surface water at the site, based on data collected during the remedial design. For more information, see the ROD Amendment in the [Site Documents](#) section below.

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Site Description

The site is located at the southern end of the Deer Lodge Valley, at and near the location of the former Anaconda Minerals Company (AMC) ore processing facilities. In September 1983, the EPA placed the area surrounding the smelter on the Superfund National Priorities List (NPL). Consulting with the State of Montana and coordinating with ARCO, EPA began investigations into the extent of contamination. Since then, removals and cleanup actions have reduced human health risks at the site. ARCO merged with AMC in 1977 and is the potentially responsible party (PRP) at the site. ARCO's liability and EPA's costs are the subject of ongoing litigation.

The site covers an area of approximately 300 square miles. It has a temperate climate and includes a variety of terrain—from steep-slope uplands to level valley floors. There are also a variety of creeks and drainages. Major mining-related features at the site include two very large tailings ponds (the Anaconda Ponds and the Opportunity Ponds) and the former Anaconda smelter stack. At 585 feet tall, the stack is a local landmark and is the largest freestanding brick chimney in the world. There are also two communities (Anaconda and Opportunity) within the site footprint. US Interstate 90 and the Clark Fork River border the site. The Superfund site is divided into a number of Operable Units (OUs)—see [Cleanup Progress](#) for an explanation. Two of the OUs (Anaconda Regional Waste Water & Soil [ARWW&S] and the Old Works/East Anaconda Development Area) are further divided into smaller design units.

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Site Risk

The processing facilities at the site were developed to remove copper from ore mined in Butte from about 1884 through 1980. Milling and smelting produced wastes with high concentrations of arsenic, as well as copper, cadmium, lead and zinc. These contaminants pose potential risks to human health, to life in nearby streams, and to plants and animals in adjacent lands over some 300 square miles. In addition to the millions of cubic yards of tailings, furnace slag, flue dust, and square miles of soil contaminated by airborne wastes, millions of gallons of ground water have been polluted from wastes and soils. Arsenic is the primary contaminant of concern and drives the remediation.



585-foot-tall historic Anaconda Company smelter stack

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**National Priorities List (NPL) History**

	Proposed Date
	12/30/1982
	Final Date
	9/8/1983

Media Affected	Contaminants	Source of Contamination
soils, groundwater, surface water	arsenic, copper, cadmium, lead, zinc	copper milling and smelting (tailings, slag and areal emissions)

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## Cleanup Progress

### Ongoing Work

#### Old Works/East Anaconda Development Area Remedial Action

EPA selected a remedy in 1994 for this OU which has been divided into the following sub-areas:

1. Golf Course (construction completed in 1996, golf course opened to the public in 1997)
2. Red Sands (construction completed in 1998)
3. East Anaconda Yards and Aspen Hills (construction completed in 1998)
4. Mill Creek (construction completed in 1999)
5. Drag Strip (construction completed in 1999)
6. Industrial Area (initiated in 2003). Remedial action will include removal, cover, and/or revegetation of remaining waste and contaminated soils. Construction is underway and should be finished by 2012.

#### Community Soils Remedial Action

EPA selected a remedial action for addressing remaining residential yards and railroads/commercial properties in 1996. This OU has been divided into the following sub-areas:

1. Residential soils (ongoing)
2. Historic railroad beds and commercial and industrial areas (adjacent to railroad areas)
3. Interior/attic dust

EPA selected a final remedy. Remedial action was initiated in 2003 and is ongoing. To date Atlantic Richfield has sampled more than 1,500 yards, cleaned up about 300 in Anaconda and about 50 in the adjacent areas. Future residential areas will be monitored and cleaned up, if necessary, to ensure development is protective. EPA is currently re-evaluating the remedy and may propose changes to the remedy to address additional areas of contamination.

Remedial action within commercial areas adjacent to the railroad will include removal, cover and/or revegetation of waste and contaminated soils. Construction is underway and should be finished by 2011.

#### Anaconda Regional Water, Waste and Soils Remedial Action

This last OU addresses all remaining issues. EPA signed a Record of Decision (ROD) in 1998. This ROD was amended in 2011. The OU has been divided into 15 remedial design units (RDUs):

1. Stucky Ridge
2. Lost Creek
3. Smelter Hill Uplands
4. Anaconda Ponds (construction completed)
5. Railroad/Blue Lagoon
6. South Opportunity
7. North Opportunity
8. Opportunity Ponds
9. Fluvial Tailings
0. Warm Springs Creek
1. Cashman Concentrate (construction completed)
2. Slag
3. Old Works Groundwater
4. Smelter Hill Facility
5. Mt. Haggin Uplands

Remedial designs have been completed on all RDUs except number 3—Smelter Hill Uplands. Remedial action has been initiated on most RDUs. Nearly 10,000 acres have been remediated to date. Construction is expected to be completed over the next 10 years. Long-term monitoring and maintenance, as well as institutional controls, is required.

### Completed Work

#### Anaconda Smelter Demolition and Initial Stabilization Actions

From 1983–1986, EPA oversaw smelter demolition and initial stabilization efforts. In May 1986, EPA temporarily relocated families with small children. In 1987–1988, all Mill Creek residents were permanently relocated. The Mill Creek area was later cleaned up, graded and replanted in 1999.

#### Anaconda Yards Time-Critical Removal Action

From 1991–1992, under an emergency removal action, arsenic contaminated soils were cleaned up in three Anaconda neighborhoods: Teresa Ann Terrace, Elkhorn Apartments and Cedar Park Homes.

#### Arbiter Non-Time-Critical Removal Action

In 1994, approximately 275,000 cubic yards of waste material (including arsenic, cadmium, lead and zinc) from the Arbiter Plant were dug up, and moved to a repository on Smelter Hill.

#### Beryllium Non-Time-Critical Removal Action

In 1994, excavation and disposal of previously disposed wastes and contaminated materials from a former beryllium flake metal pilot plant and a beryllium oxide pilot plant was completed. The wastes were sent to the Smelter Hill repository.

#### Old Works Stabilization Removal Action

In 1992, EPA and ARCO began to address immediate concerns about contaminants released into Warm Springs Creek by stabilizing the Red Sands adjacent to the Creek, repairing breaks in the levees and installing fencing to limit access.

#### Flue Dust Remedial Action

In 1991, EPA decided to stabilize the Flue dust (containing copper, arsenic, and cadmium) with cement and lime, and then place treated materials in a repository. Treatment of over 500,000 cubic yards of flue dust was finished in December 1993.

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## Community Involvement

Community involvement plays an important role in the Superfund process. EPA uses a number of different tools and resources to promote effective, on-going, meaningful community involvement. The goals of the Superfund community involvement program are to:

- Keep communities affected by sites informed throughout the cleanup process.
- Provide opportunities for communities to comment and offer their input about site cleanup plans.
- Facilitate the resolution of community issues tied to a site.

In addition to outreach efforts (meetings, fact sheets, websites, etc.), EPA awarded a Technical Assistance Grant (TAG) to the Arrowhead Foundation in Anaconda. With these funds, the Arrowhead Foundation hires the Anaconda Environmental Education Institute (AEEI) to review EPA studies and cleanup work and provide a technical analysis. The Arrowhead Foundation board relays information to the larger community. The TAG group is focusing on economic redevelopment and site reuse. Arrowhead welcomes new members and is interested in hearing about the public's concerns with regard to the Superfund cleanup.

The State of Montana and ARCO have settled some of the continuing natural resource damage lawsuit issues, and an advisory group appointed by Montana's governor is educating the public and reviewing proposals for restoring resources.

See the [Site Documents](#) section below for the fact sheet and the annual updates.

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## Reuse

EPA places a high priority on land reuse as part of its Superfund response program mission. The agency tries to select cleanup options that encourage and support future use of a site. EPA uses two fundamental methods to facilitate reuse of Superfund sites:

- Exploring future uses before the cleanup remedy is implemented, an approach that gives the Agency the best chance of designing cleanup remedies to support the likely future use of a site.
- Working with landowners and communities to remove barriers not considered necessary for the protection of human health or the environment at those sites where remedies are already in place.

One option for reuse is the siting of clean and renewable energy projects on contaminated (or formerly contaminated) lands. As part of this effort, EPA is evaluating the potential for energy projects on these properties and working with landowners and communities to identify ways to remove barriers to such projects.

Smelter investigations and cleanups have been part of an economic rebirth in this former company town. All cleanups are focused on being protective, while still allowing (and fostering) redevelopment. This is accomplished, in large part, by the use of institutional controls (ICs) for development of land which has a remedy in place. These include a Development Permit System and Master Plan/Growth Policy for all of the properties within the Smelter Overlay Area. Clean-up construction activities in 2009 assisted redevelopment efforts by preparing many acres of land for reuse. Some are noted in the [2010 Annual Update](#).

Perhaps the greatest example of reuse and redevelopment is the construction of the Old Works Golf Course. This can be seen in the Old Works/East Anaconda Development Area. Like a Phoenix rising from the ashes, the course has been reborn on the site of Anaconda's historic century-old copper smelter. The first course ever built on a federal EPA Superfund site, it incorporates many historic relics in its design. Old Works is quickly building a reputation as one of the premiere, daily-fee golf experiences in the Northwest region. The golf course was designed by Jack Nicklaus, and a unique visual feature is the use of ground black smelter slag in place of sand in the sand traps. It was featured in EPA's Superfund 20th Anniversary Report.

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## Land Use Controls and Other Institutional Controls

Land use controls are the most common type of institutional control (IC). ICs are administrative or legal controls that help reduce the likelihood for human exposure to contamination. ICs can also help protect the integrity of the remedy. Examples of ICs are:

- Zoning ordinances
- Environmental covenants
- Deed notices
- Well-drilling restrictions
- Building permits
- Informational advisories

The remedy calls for a fully-funded Institutional Controls program at the local government level. Anaconda Deer Lodge County (ADLC) is currently working with EPA to develop this program. The program will include a Geographic Information System (GIS), a Development Permit System (DPS) and a Community Protective Measures Program (CPMP). The comprehensive ICs program will ensure monitoring, protection of clean-up actions, public outreach and education and other administrative and/or legal tools to ensure that public health is protected and redevelopment is conducted in a protective manner.

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## Five-Year Reviews

EPA or the lead agency conducts five-year reviews following the start of a Superfund cleanup when contamination is left on the site. These reviews are repeated every five years. We use these reviews to determine:

- How the remedy is working
- *If the remedy remains protective of human health and the environment*

The fourth five-year review was completed in September 2010 and is available in the [Site Documents](#) section below.

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## Site Documents

### Decision Documents

[Amendment to the 1998 Anaconda Regional Water, Waste & Soils Operable Unit \(OU4\) Record of Decision](#), September 2011 (PDF, 251 pp, 4.2MB)

[Proposed Plan for Modifications to the Remedy \(ROD Amendment for OU4\)](#), November 2009 (PDF, 8 pp, 1.5MB)

### [Decision Documents](#)

### Fact Sheets

[2011 Annual Site Update](#) (PDF, 4 pp, 7.8MB)

[2010 Annual Site Update](#) (PDF, 2 pp, 977K)

[2009 Anaconda Basics](#) (PDF, 2 pp, 4MB)

[2009 Update: Anaconda Smelter Contacts and Partners](#) (PDF, 2 pp, 60K)

[2008 Annual Site Update](#) (PDF, 2 pp, 363K)

[2007 Update: Focus on Opportunity Ponds](#) (PDF, 2 pp, 602K)

[2006 Annual Site Update](#) (PDF, 4 pp, 463K)

[2006 Dust Fact Sheet](#) (PDF, 2 pp, 728K)

[2005 Annual Site Update](#) (PDF, 4 pp, 656K)

### Press Releases

[EPA to Conduct Sampling](#), October 29, 2008 (PDF, 1 pg, 15K)

### Technical Documents

[Annual Update to the Five-Year Review](#), January 2011 (PDF, 2 pp, 40K)

[Fourth Five-Year Review Report \(text only\)](#), September 30, 2010 (PDF, 104 pp, 1.7MB)

– [Appendices A–C](#) (located on the FTP server)

– [Figures 3-1 through 9-7](#) (located on the FTP server)

You will need Adobe Acrobat Reader to view some of the files on this page. See EPA's [PDF page](#) to learn more.

- Photos (PDF, 7 pp, 858K)

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### View Documents at:

Arrowhead Foundation Library  
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U.S. Environmental Protection Agency  
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## Links

[Arrowhead Foundation | Anaconda Superfund TAG](#) [EXIT Disclaimer](#)

[Arrowhead Foundation's Possibilities Campaign](#) [EXIT Disclaimer](#)

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<http://www.epa.gov/region8/superfund/mt/anaconda/>