

## **False Promises: Water Quality Predictions Gone Wrong Large Mines and Water Pollution**

Water quality impacts from hardrock mines are very difficult to predict. Despite modern technology, government and industry predictions are often wrong, and the long-term environmental and fiscal implications are often severe. Here are ten examples of modern mines where the government and industry predicted little or no impact to water quality, yet significant impacts occurred.

### **Beal Mountain Mine, Montana (gold)**

The Beal Mountain Mine located on the Beaverhead Deerlodge National Forest operated from 1989-1998. When the mine was permitted, the Environmental Analysis concluded that the operation of the mine would have no impacts to water quality, because “there will be no discharge of mine or process water to surface waters.”<sup>1</sup> The agencies were wrong. Although the mine ceased operating years ago, it has continued to pollute neighboring streams with cyanide, selenium and copper at levels that harm aquatic life.<sup>2</sup> Scientists have also determined that trout in water downstream of the mine are contaminated with harmful amounts of selenium caused by mining activities.<sup>3</sup> Warren McCullough, who is responsible for enforcing state mine permit laws for Montana DEQ, told the *Montana Standard* in July 2003 that the aftermath of the closed Beal Mountain Mine is “*not going to be something that we’re ever going to be able to walk away from.*” The State has determined that contaminated runoff from the mine will have to be treated in perpetuity.

### **Gilt Edge Mine, South Dakota (gold)**

The Gilt Edge mine is located near Deadwood, South Dakota at the headwaters of municipal water supplies for the northern Black Hills. The Gilt Edge mine operated from 1988 - 1996. When the mine was permitted, acid mine drainage was not considered to be



*Photo by Seattle Post Intelligencer*

an issue.<sup>4</sup> In late 1992, however, the mine began generating acid mine drainage. Acid drainage left area streams unable to support a viable fish population. In May, 1998 the Brohm Mining Company threatened to abruptly abandon costly water treatment at the Gilt Edge Mine after the parent company, Dakota Mining, declared bankruptcy. Within 72 hours, pollution would have overtopped holding ponds and entered local streams and drinking water. South

Dakota Governor Bill Janklow went to court, seeking to force the company to continue to treat the water to acceptable levels. Although the mine did have a reclamation bond, government officials estimated that the \$6 million bond would not even cover water treatment costs for one year. After touring the mine, Senator Tim Johnson stated:

"It is very troubling to me that we have foreign corporations come in, sometime with American subsidiaries that have no assets, then wind up going bankrupt, having left a mess behind that is almost irreparable (without a fix)." "The area will never, ever be quite the same as it was before." - Black Hills Pioneer, May 22, 2000

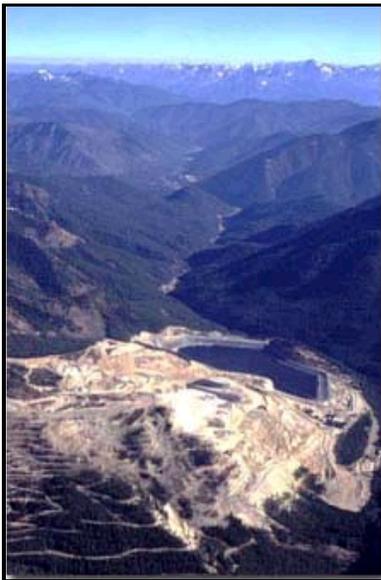
In February 2000, the Governor of South Dakota requested that the site be designated a Superfund site to provide emergency response, as well as long-term remedial cleanup.

### **Greens Creek, Alaska (gold, silver, lead, zinc)**

The Forest Service and the company stated in the 1980's that there would be no impact from metals leaching or acid mine drainage at the Greens Creek Mine.<sup>5</sup> Yet, lab and field tests at the mine in 2000 showed that the tailings and waste rock have "significant potential" to generate acid and are currently leaching heavy metals.<sup>6</sup> In February of 2003, the Alaska Department of Environmental Conservation clearly documented acid mine drainage at Greens Creek for the first time. Monitoring conducted by Greens Creek in 2001 and 2002 showed that sulfate and heavy metals leaching from waste rock piles into ground and surface waters was increasing.<sup>7</sup> Greens Creek has violated the Clean Water Act 391 times, by releasing illegal levels of copper, zinc, cyanide, and acids.<sup>8</sup> Acid mine drainage is a long term concern. It is possible that water at the mine site will need to be intercepted and treated for hundreds of years to remove acid and metals.

### **Grouse Creek, Idaho (gold)**

The Grouse Creek mine, located adjacent to the largest wilderness complex in the lower 48 states, was heralded as a "state-of-the-art" mine when it began operations in 1994.



*Photo by Lynne Stone, Boulder White Clouds Council*

Just three years later, the mine shut its doors -- producing no profits and leaving behind a legacy of long-term water pollution. In 1992, the Salmon Challis National Forest permitted the Grouse Creek mine, assuring the public that "the tailings impoundment is a zero discharge facility" and "no significant impacts on water quality are expected to occur from the proposed project."<sup>9</sup> Yet, soon after mining began, the tailings impoundment began to leak. From May 1994 to June, 1996, the EPA cited Hecla for 258 violations of its discharge permit. In 1997, Hecla suspended operations, citing low gold prices. Water pollution continued. For 210 straight days, from Oct. 24, 1998 to May 21, 1999, Hecla violated water quality standards. As a result of on-going violations, the Forest Service posted signs which warned, "Caution, do not drink this water."<sup>10</sup> In 2003, the Forest Service and EPA declared the mine site an "imminent and substantial endangerment," using federal Superfund authorities to press for "time critical action" to dewater the threatening tailings impoundment.<sup>11</sup> The mine is undergoing

remediation.

### **Rain Gold Mine, Nevada (gold)**

The Rain Gold Mine, near Elko, Nevada, has been combating a serious acid mine drainage problem since 1990, when surface water drainage from the mine's waste rock piles began generating acid, contaminating two miles of nearby Dixie Creek.<sup>12</sup> The drainage also contained elevated levels of mercury and arsenic. The owner, Newmont Mining, did not anticipate the acid mine drainage problem, because acid-base accounting tests on rock samples indicated that the mine's wastes were not likely to generate acidity.<sup>13</sup>

### **Red Dog Mine, Alaska, (zinc, lead)**

At the Red Dog Mine, neither the government nor the company anticipated that contaminated water from the pit would seep into neighboring Red Dog Creek, causing an extensive fish kill. In 1989 water in the streams below the mine, which was under construction, began to show dramatic increases in zinc. An orange-colored flow was seen entering the Middle Fork of Red Dog Creek near the mine, and continuing on as Red Dog Creek entered Ikalukrok Creek five miles further downstream. A Cominco representative "... maintained that the company had nothing to do with the zinc in the water."<sup>14</sup> In 1990, the seepage problem got worse. Zinc contamination levels, which were approximately ten times the state water quality standards in 1989, rose to as much as 200 times higher than the standard. Levels of other metals were also of concern in the stream. Dead fish from the Wulik River, approximately 25 miles downstream from the mine, were discovered by the public.<sup>15</sup> Zinc levels in Ikalukrok Creek, which empties into the Wulik River, exceeded 40 mg/l.<sup>16</sup> The State of Alaska was convinced that seepage from the mine into Red Dog Creek was causing this problem, and asked Cominco to divert Red Dog Creek around the mine to stop the seepage. Cominco refused this request, contending "... there is no clear connection between the mine and the seepage into Red Dog Creek."<sup>17</sup> This culminated in an Administrative Complaint and penalty from EPA on February 28, 1991.<sup>18</sup> Cominco spent \$11 million in 1991 to build a lined ditch to route Red Dog Creek around the mine, and to isolate the creek from seepage.

### **Summitville Mine, Colorado (gold)**

The Summitville mine, which is located at the headwaters of the Alamosa River, was permitted as a "zero-discharge" mine.<sup>19</sup> The company and governmental agencies did not predict or authorize discharges into rivers or streams. Due to poor mine design and other problems, the heap leach system overflowed in 1992, destroying all biological life in a 17-mile stretch of the Alamosa River.<sup>20</sup> The company filed for bankruptcy, leaving cleanup costs to the public. According to a recent newspaper article, the cost for cleaning up pollution at the Summitville gold mine will climb to \$235 million and take at least 100 years under a proposal

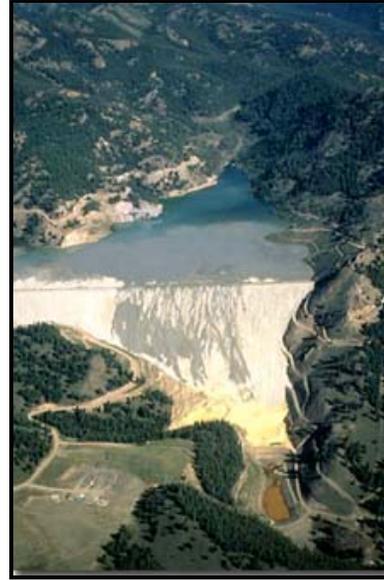


*Photo by the Environmental Protection Agency*

by Colorado and the federal Environmental Protection Agency<sup>21</sup> The new price tag reflects the \$75 million cost of long-term decontamination of a high altitude gold operation once hyped as an economic bonanza for an impoverished swath of southern Colorado.

### **Thompson Creek Mine, Idaho (molybdenum)**

Located between Stanley and Challis, this 2,500-acre molybdenum mine is Idaho's largest. The potential for acid mine drainage was not considered by the Forest Service when the mine was permitted.<sup>22</sup> Yet, acid mine drainage has developed in the tailings facility and there is significant concern over the water quality of the waste rock dumps and pit lake. The mine's \$19 million bond does not cover costs of water treatment plants, nor does it cover the cost of producing rock and soil needed for capping the tailings facility and waste rock dumps.<sup>23</sup>



*Photo by Lynne Stone, Boulder White Clouds Council*

### **Troy Mine, Montana (copper)**

The ASARCO Troy Mine located on the Kootenai National Forest operated from 1981 to 1993. The State and Forest Service are requiring the company to develop a new reclamation plan for the mine because “water quality impacts and potential long-term water treatment were not identified in the original Environmental Impact Statement (EIS) for the Troy Mine.”<sup>24</sup> Although the mine ceased operating ten years ago, water from the mine adit discharges high levels of copper – a pollutant of particular concern because trout are vulnerable to copper at very low concentrations. In addition, the mine's owners are being sued by citizens, who allege illegal discharges into nearby creeks and the dumping of industrial and metallurgical waste at the mine site.<sup>25</sup>

### **Zortman Landusky, Montana (gold)**

Federal and State agencies also predicted no adverse impacts to water quality at the Zortman-Landusky mine, located adjacent to the Fort Belknap Indian Reservation in north central Montana. Yet, the mine has contaminated ground and surface water with metals and acids from acid mine drainage. In 1993, the State and the EPA filed suit against the company charging that its waste discharges “present human health risks” and that “the acidity of the discharges would kill fish and aquatic life.” In 1998, the company abandoned the site and filed for bankruptcy, leaving the State with significant reclamation and water treatment costs.<sup>26</sup> In 2003, the Assiniboine and Gros Ventre Tribes at the Fort Belknap Reservation adjacent to the mine, filed suit for ongoing



*Photo by the Indian Law Resource Center*

water quality violations. Nearly every drainage in the Little Rocky Mountains has been contaminated with contaminated runoff from the mine. State and federal authorities have determined that acid runoff from the mine will have to be collected and treated in perpetuity. Since 1999, over a billion gallons of acid runoff have been intercepted.<sup>27</sup>

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## References

- <sup>1</sup>“Beal Mountain Reclamation Under Fire,” Montana Standard, July 14, 2002
- <sup>2</sup>Action Memorandum for Beal Mountain Mine Time Critical Removal. Beaverhead-Deerlodge National Forest, Silver Bow County, Montana, July 2003.
- <sup>3</sup>Aquatic Hazard Assessment for Selenium in the German Gulch subwatershed, Based on 2001 and 2002 Data. Prepared January 2003 by Tim LaMarr, Reviewed by Dennis Lemly.
- <sup>4</sup>[http://www.state.sd.us/denr/des/ground/superfund/SUPERFUNDPAGE.htm#Gilt\\_Edge\\_Mine](http://www.state.sd.us/denr/des/ground/superfund/SUPERFUNDPAGE.htm#Gilt_Edge_Mine)
- <sup>5</sup>Greens Creek Final Environmental Impact Statement, USDA/USFS, Jan 1983, p. 4-23 (“Because of the stable chemical nature of the tailings, it was estimated that no significant increase in levels of metal ions would occur.”)
- <sup>6</sup>Technical Review ARD/Metals Leaching and Freshwater Monitoring Plan Greens Creek Mine. Shepherd Miller, Inc. February 18, 2000.
- <sup>7</sup>Greens Creek Solid Waste Permit Annual Report, Alaska Department of Environmental Conservation, 2002.
- <sup>8</sup>High Stakes for the Fortress of the Bears on Admiralty Island National Monument: Greens Creek Mine Polluting a National Treasure. Southeast Alaska Conservation Council. 2003.
- <sup>9</sup>Record of Decision and Final Supplemental Environmental Impact Statement – Volume 1, Grouse Creek Project, USDA Forest Service Challis National Forest, May 1992
- <sup>10</sup>Associated Press, “Mine processing waste still entering Jordan Creek,” September 8, 1999; see also, “Idaho Fines Open-Pit Gold Mine \$210,000 for Polluting Local Creek,” Salt Lake Tribune, October 2, 1999
- <sup>11</sup>Forest Service and Environmental Protection Agency, “Removal Action Memorandum,” May 21, 2003
- <sup>12</sup>Golden Dreams, Poisoned Streams, Mineral Policy Center, 1997.
- <sup>13</sup>Ibid.
- <sup>14</sup>“Zinc levels in creek concern state officials,” Anchorage Daily News, October 7, 1989.
- <sup>15</sup>“Aquatic Biomonitoring at the Red Dog Mine, 2003,” Al Ott, ADNR Technical Report No. 04-02, April 2004, p. 102.
- <sup>16</sup>Ibid.
- <sup>17</sup>“Toxic metals foul stream near mine,” Anchorage Daily News, August 18, 1990.
- <sup>18</sup>United States Environmental Protection Agency Region 10, Administrative Complaint, Docket No. 1091-02-16-309(g), February 28, 1991.
- <sup>19</sup>Golden Dreams, Poisoned Streams, Mineral Policy Center, 1997. p. 137-138.
- <sup>20</sup>Ibid.
- <sup>21</sup>Summitville cost: \$235 million, Rocky Mountain News, June 28, 2001.
- <sup>22</sup>Thompson Creek Mine Final Supplemental Environmental Impact Statement, USDA Salmon and Challis National Forests, January 1999, Section 1.3, p.1-2.
- <sup>23</sup>Blanchard, Tom. “Hardrock and Phosphate Mining in Idaho: A report by the Idaho Conservation League and Boulder White Clouds Council.” March 2002.
- <sup>24</sup>Memo from the Environmental Management Bureau, Montana Department of Environmental Quality to Mark Simonich, MDEQ Director. Aug. 31, 2000.

<sup>25</sup> Cabinet Resource Group v. ASARCO, Inc., Sterling Mining Company, and Genesis, Inc., CV 02-209-M-DWM, (USDC, District of MT, Missoula Division).

<sup>26</sup> Final Supplemental EIS for the Zortman and Landusky mines, Phillips County, Montana, MDEQ and BLM, December 2001.

<sup>27</sup> Action Memorandum for Zortman and Landusky Mines Time Critical Removal. Malta Field Office, Bureau of Land Management, Phillips County, Montana June 2004.