

ARTICLE IX

ENVIRONMENT AND NATURAL RESOURCES

SECTION 2. RECLAMATION. (1) All lands disturbed by the taking of natural resources shall be reclaimed. The legislature shall provide effective requirements and standards for the reclamation of lands disturbed.

(2) The legislature shall provide for a fund, to be known as the resource indemnity trust of the state of Montana, to be funded by such taxes on the extraction of natural resources as the legislature may from time to time impose for that purpose.

(3) The principal of the resource indemnity trust shall forever remain inviolate in an amount of one hundred million dollars (\$100,000,000), guaranteed by the state against loss or diversion.

A few specific water quality problems that originated with historic mining at Zortman and Landusky are better now than they were before the Pegasus mines began operating according to the DEQ. Waste rock dump water discharges are now being captured and routed through one of the water treatment plants. The poor quality waters still draining from the leach pads are being captured and treated with some success. However, the scale of the disturbance from the Pegasus operations and the acid-producing rock at the mines have created reclamation and water treatment challenges that will continue for many years. Much effort, research, and funding has been applied to these mines in an effort to produce and implement an environmentally sound reclamation plan in the absence of a mine operator. That task may not be complete given the continuing challenges involving discharge permits, water quality violations, diversions of water, and other issues that have been raised in pending litigation. There is no disagreement that conditions in Swift Gulch on the north side of the Landusky mine pit merit additional research and attention. With land reclamation efforts nearing completion, emphasis may need to be focused on implementing the surface and ground water monitoring plan in an effort to determine how successful the reclamation efforts have been. There will be a time lag between the completions of reclamation, the establishment of vegetation, and any noticeable changes in water quantity and quality at the mine site. There may be a need for additional re-engineering and design. There may be a need for additional source isolation and reclamation. With the Pegasus bankruptcy proceedings now complete and with the imminent expenditure of the last of the reclamation bonds, any additional land reclamation funds must come from other sources. Meanwhile, water capture and treatment will be required at these mines for the indefinite future. Unless costs can be reduced, there are immediate and future needs for adequately funding these water treatment efforts.

With the exception of Swift Gulch, the DEQ believes that the surface and ground water resources in the area are being protected by the current and proposed mine reclamation and water treatment efforts. The purpose of the mine reclamation is spelled out in the SEIS and in the Record of Decision. Essentially, the reclamation of the mines has two primary components, both intended to address the protection of surface and ground water quality. The first is the physical reclamation of the mine pits, roads, waste rock dumps, and leach pads. This effort is designed to improve the long-term stability of mine excavation features, isolate and cover acid-producing

materials, provide for proper drainage, reduce infiltration by precipitation and runoff, reestablish vegetation, and improve aesthetics. The second effort is to capture and treat surface and shallow ground water and leach pad drainage until contaminants can be reduced to acceptable levels.

The mine operations, particularly the larger and deeper Landusky mine, exposed sulfide rock that produces acid rock drainage when it is exposed to air and water. This acid rock drainage, or ARD, in the presence of the exposed surfaces of mineralized rocks, can mobilize metals in the rock and contaminate surface and ground water. The reclamation plans focus on identifying the sources of acid-generating materials and isolating them from surface and ground water infiltration to control the source of contaminated water and reduce the amount that needs to be treated.

Before the bankruptcy and in partial fulfillment of the requirements of the Consent Decree, Pegasus was required to capture all surface and shallow ground water at each discharge and construct a water treatment plant at each mine. Buried capture systems collect water from beneath the leach pads and below the waste rock dumps before it flows offsite and routes it to either the water treatment plant at the Zortman mine or the one at Landusky. These plants use lime to treat the acidity and precipitate metals out of the water collected by the capture systems. Since 1999, these plants have captured and treated over a billion gallons of mine drainage.

The Zortman water treatment plant treats between 45 and 86 million gallons of water per year. The treated water from the Zortman plant meets the Consent Decree limits and would meet most of the draft MPDES limits most of the time. Treated water is returned to Ruby Gulch.

The Landusky water treatment plant treats between 195 and 274 million gallons of water per year. The treated water from the Landusky plant achieves the Consent Decree standards and would likely meet most draft MPDES limits. Treated water is discharged to Montana Gulch.

However, the lime precipitation water treatment plants are not effective in treating the cyanide, nitrate, and selenium from the leach pad process solution. An estimated 129 million gallons of residual cyanide process solution is stored above the leach pads within the leach pad circuits, with additional accumulations expected in the future from water infiltration. In 2001, the agencies built a bioreactor water treatment system on the Landusky mine site with remaining construction bonds from Pegasus' surety to treat the heap leach solutions that drain from the leach pads at the mine. Because the ore placed on the heap leach pads was treated with alkaline materials to enhance the gold recovery process, the heap leach solutions are not yet acidic, but they are generally too high in selenium, nitrates, and cyanide to meet stream discharge limits. The treated Landusky heap leach water from the bioreactor is discharged to a land application area on Gosline Flats below the town of Zortman, where it is sprinkler-irrigated. Prior to reclamation, approximately 80 million gallons of precipitation was collected in the Landusky leach pads and required treatment each year. DEQ is hopeful that land reclamation efforts will reduce this to 15-30 million gallons per year.

The leach pad water from the Zortman mine is also collected and piped to the land application area on Goslin Flats. Prior to reclamation of the leach pads at Zortman, the pads drained approximately 30 million gallons of water per year. DEQ believes that the reclamation and revegetation of the leach pads may eventually reduce this flow to about 5-10 million gallons per year. This may make other disposal options available instead of using the land application area.

The agencies, through competitive bidding and significant cooperation from Spectrum Engineering and its subcontractors and with the infusion of over \$5 million in federal funds from

the BLM, have been able to reduce costs and implement most of the reclamation projects in alternatives Z6 and L4. By June 2004, the BLM estimated that the \$22.5 million reclamation shortfall had been reduced to about \$1.53 million. Reclamation at Zortman is complete under the Z6 alternative with the exception of relocating the top portion of the Alder waster rock dump to the North Alabama pit and covering and revegetating both areas. Reclamation at Landusky is complete under the L4 alternative with the exception of partially backfilling portions of the pit with the 85-86 leach pad, which is currently being removed from the headwaters of Montana Gulch, and the completion of some ongoing contracts. As of August 2004, the DEQ and its contractors determined that there were sufficient funds available to complete the L4 reclamation alternative for Landusky by the end of 2005, but that the agencies were still \$1.423 million short in the amount of funds necessary to complete the Z6 alternative at the Zortman mine.

Reclamation

Through March 2004, the DEQ had spent approximately \$37,281,163 to reclaim the Zortman and Landusky mines including \$33,666,658 in bond settlement funds, \$2,017,905 in federal dollars, and \$1,596,600 in state funds. The agency's efforts at source control through mine reclamation appear to be nearing completion with the reclamation of the mines in accordance with the preferred alternatives Z6 and L4 despite the initial shortage of bond money.

Recently, the BLM was able to obtain an additional \$1.2 million through its abandoned mine program to complete the L4 alternative and remove and reclaim the Landusky 85-86 heap leach pad and use the material to help backfill and further isolate materials in the Landusky pit. This leaves the reclamation project short by the \$1.423 million for completion of the Z6 alternative at Zortman. The DEQ has submitted an application to the Department of Natural Resources and Conservation (DNRC) for a \$300,000 Reclamation and Development Grant (RDG) to help cover some of those costs. Grant applications are ranked by the DNRC, and the priority projects will be recommended to the 2005 Legislature for approval and funding in House Bill 7. The revenue is generated from interest on the Resource Indemnity Trust Fund.

One major reclamation problem exists. the BLM, DEQ, and the Tribes are concerned about the seeps on the north side of the Landusky mine pit that are degrading Swift Gulch. The contamination is obvious, but the cause is not certain. addressing this problem may be difficult and costly, given the dispersed nature of the seeps, the difficulty in identifying their source, and the uncertainties in trying to control ground water movement. reclamation efforts intended to control what was assumed to be the source of the water have not produced the desired results so far. The BLM is currently conducting a \$60,000 study of the problem in Swift Gulch. The DEQ has also applied to the DNRC for a \$300,000 RDG to investigate the hydrology of the area in an attempt to identify the source of the problem and craft a possible solution. Depending on the solution, additional reclamation funds or water treatment funds may be necessary in the future.

Water Treatment

The BLM's June 2004 Action Memorandum describes threats to the public health and welfare and the environment that could result if operation of the water capture and treatment systems is not continued at the mines. If the systems fail or cease operation, the BLM maintains that "the release of hazardous substances would increase greatly without the benefit of treatment, creating significant environmental damage. This includes the release of solutions containing metals such as arsenic, cadmium, copper, selenium, and zinc; plus cyanide complexes, nitrates,

and solutions having low PH (acidic) levels." The document warns that drinking water supplies or sensitive ecosystems could be contaminated and that human and animal populations could be exposed to the toxic effects of these substances.

The major problem and most critical financial need at the Zortman and Landusky mines is the fact that there are insufficient funds to maintain the water treatment systems. Pegasus provided two sources of funding for the operation and maintenance of the water treatment plants. Both are considered to be insufficient.

The first is the \$14,626,422 short-term (20year) water treatment bond that was intended to pay for the maintenance and operation of the Zortman and Landusky water treatment plants from June 30, 1997, until June 30, 2017. One-twentieth of this bond or \$731,321 is provided to DEQ by the surety each year. Since Pegasus operated the plants during 1997, the actual bond funds provided to DEQ will total \$13, 895,101. Actual costs to operate and maintain the water treatment plants are shown below.

Year	Cost	Bond	Shortage
1999	-\$1,200,000	\$731,321	(-\$468,700)
2000	\$843,387	\$731,321	(\$112,066)
2001	\$879,727	\$731,321	(\$148,406)
2002	\$905,899	\$731,321	(\$174,578)
2003	\$758,267	\$731,321	(\$26,936)
2004 (1/2 year)	\$424,143	\$365,660	(\$58,483)

The BLM has provided \$500,000 to cover the shortfall for the past few years, but those funds are nearly expended. An August 2004 memorandum of agreement (MOU) between the DEQ and the BLM that was prepared in conjunction with the BLM's June Action Memorandum lists the obligations of both parties to maintain the water capture and treatment facilities at the mines. One provision of the agreement states that the "BLM will provide supplemental funding to DEQ, to the extent allowed in BLM's budgeting process, in order to maintain operation of the water treatment plants after the annual surety payment has been expended." Either party may terminate the MOU following a 60-day notice. The additional BLM funds are subject to congressional funding of BLM's budget. Still, this is an encouraging indication of BLM's willingness to provide continuing financial assistance for short-term water treatment.

In the absence of any additional funding, the DEQ's contractor currently estimates that there will be a \$21.1 million shortage in what will be needed over the next 13 years to cover the costs of operating and maintaining the water treatment plants. This translates to a net present value of approximately \$7.45 million if the funds were made available by January 2005 and invested at interest. Meanwhile, the DEQ has applied to the DNRC for a third \$300,000 RDG to help cover the shortages of operating the water plants for approximately 3 years.

The DEQ's contractor projects that it will cost \$1.8 million to operate and maintain the water treatment plants in the year 2017 given current operating costs. The costs of operating the plants could increase or decrease over time, depending on the amount of water that requires treatment based on precipitation and the success of reclamation efforts and the inflationary costs

of operation, repair, and maintenance. Added to the cost of water treatment is the maintenance and operation of the bioreactor water treatment process, which was not anticipated in the Consent Decree and not bonded for by Pegasus.

Perhaps more important in terms of budget shortfalls is the bond that is available for long-term water treatment after June 30, 2017. Pegasus was required to establish a trust fund that would pay for long-term water treatment defined in the SEIS until the year 2080. The difficulty of predicting needs, technology, and financing that far into the future or beyond are described in detail in the SEIS. A bond package of zero coupon bonds was purchased by Pegasus and by the DEQ following the Pegasus bankruptcy to provide a long-term trust reserve estimated to be worth approximately \$14.8 million dollars short of what may be needed to pay for long-term water treatment if the funds were made available by January 2005 and invested at 6% interest. The SEIS also predicted that the trust reserve was \$11 million less than what was needed to be invested in 2001 in order to fund long-term water treatment after 2017.

A simple annuity calculation shows that a trust reserve valued in 2017 at \$14.8 million earning a 5% return would provide approximately \$800,000 for 43 years or until the year 2060. Of course the annual costs are not likely to remain at \$800,000 and there are no extra funds to pay for replacing the water treatment plants using whatever technology may be available or necessary at the time.

The 2003 Legislature in HB2 authorized the sale of hard-rock mining reclamation bonds, backed by metaliferrous mine tax revenue, up to the amount of \$2.5 million provided that Congress appropriates at least \$10 million during the current biennium for the purpose of providing a total of \$12.5 million to fund the long-term water treatment trust reserve for Zortman and Landusky. The federal Department of Interior and Related Agencies appropriations bill (S. 1391) for 2004 included a request for funds, but it was not accepted. In rejecting the request, the Committee on Appropriations stated that "the Committee understands a proposal is being prepared for FY 2005 to address the plan set forth in the Record of Decision for Reclamation. The Committee continues to believe protecting water quality in the region should be a top priority for the BLM budget request." There have been no federal appropriations to date.