

# **OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT**

## **Annual Evaluation Summary Report for the Mine waste Cleanup Bureau s Abandoned Mine Lands Program for the State of MONTANA**

**Evaluation Year 2000  
(October 1, 1999 to September 30, 2000)**

**Collapsed structure on the abandoned Elkhorn Mine in West Central Montana  
(photo removed in web version)**

## **MONTANA ABANDONED MINE LANDS PROGRAM**

### **Part I. Introduction**

The Montana abandoned Mine Land Reclamation (AMLR) program continues to operate under the guidelines of the Surface Mining Control and Reclamation Act (SMCRA), a Programmatic Agreement between the State and the Casper Field Office (CFO) of the Office of Surface Mining (OSM), the Federal Assistance Manual and associated regulations. The CFO conducts oversight activities in regard to the Montana program, and the topics of this report were selected in a shared commitment process with the Department of Environmental Quality (DEQ), Mine Waste Cleanup Bureau (MWCB). The Montana AMLR program started in 1980 and for the next ten years the State concentrated on eliminating the hazards from past coal mining. In 1990 the State certified that all known coal problems had been addressed and they were then authorized to begin reclaiming the multitude of high priority non-coal hazards in their inventory. However, any abandoned coal hazards that are discovered must still be given priority funding over non-coal projects, and this has been accomplished. The evaluation methods used to produce this report are based on OSM Directive AML-22 and the Programmatic Agreement. This report covers the period of October 1, 1999 to September 30, 2000.

During this evaluation period the MWCB, an entity of the Montana Department of Environmental Quality (DEQ), has obligated 98 percent of the FY2000 allocation of funds awarded for the reclamation of abandoned mine lands. In addition, Chart #I lists projects that are ready for reclamation if additional funding were to become available. Both the design and construction portions of each project are accomplished by private contractors. A bid process is used to obtain the best qualified design and construction firms at the most cost effective price. Project construction starts as soon as weather conditions will allow heavy equipment to be moved to the sites and continues until the weather again makes outside work impractical. Part of the design contractors responsibility is to provide an inspector who will be on the site during working hours to ensure that the plans and specifications of the project design are followed. The MWCB staff is very knowledgeable and dedicated to the completion of the program goals. An excellent working relationship exists between the MWCB staff, their contractors, and the staff of the CFO. MWCB personnel spend most of the construction season in the field coordinating and supervising the reclamation work, and completing site preparation for future projects. Some reclamation work may continue into the winter months but the staff primarily spends this time of the year working with the design contractors to get projects ready for the upcoming construction season. During this evaluation period the mild winter weather allowed several projects to continue to completion that would normally have been phased into the 2001 construction season. If the AMLR program expires in 2004, as it is now scheduled, Montana will not be able to reclaim all the hazards presently listed in the Abandoned Mine Land Inventory System (AMLIS).

Chart #II shows the inventory status of the Montana AMLR program by AMLIS keyword. As can be seen in Chart #I there are over 16 million dollars worth of reclamation still necessary in the State, and other projects are continually in the process of being evaluated for the possibility of future reclamation.

One major issue has evolved during this evaluation period. In the early 1980's the Montana AMLR program was approved to purchase a helicopter with AMLR funding to be used in the inventory and reclamation of abandoned mine sites. The helicopter was deemed necessary because of the very rugged terrain and long distances to be traveled in the State. Maintenance funds for the aircraft have been included in the AMLR grant application each year since the purchase. During this reporting period the helicopter operating and maintenance costs were .39 percent of the combined annual AMLR grant. It appears that the helicopter is being used less and less by the MWCB, and more use is being observed in fire fighting activities and by other State entities. A review of the proper use of the aircraft and the cost effectiveness has been initiated, and information in this regard has been requested from the State. The results of the review will be fully reported in the 2001 evaluation report.

The following is a list of acronyms used in this report:

SMCRA	Surface Mining Control and Reclamation Act
AMLIS	Abandoned Mine Land Inventory System
AMLR	Abandoned Mine Land Reclamation
MWCB	Mine Waste Cleanup Bureau
OSM	Office of Surface Mining
CFO	Casper Field Office
AMD	Acid Mine Drainage
DEQ	Department of Environmental Quality
BLM	Bureau of Land Management
USFS	United States Forest Service
SHPO	State Historic Preservation Office

## **Part II. Noteworthy Accomplishments**

AMLR personnel of the MWCB utilized Microsoft FrontPage 2000 web publishing software to produce a fun, yet informative web site regarding the operation of the program. The site (<http://www.deq.state.mt.us/rem/mwc/index.ht>) contains a description of the Montana AMLR program, a reclamation guide book, a list of sites slated for future reclamation, interactive maps, mine site historical narratives, downloadable mine databases, and a photo section that contains before and after photos of mine sites. Montana personnel constructed the site utilizing existing file information and in-house expertise. Historic mine photos from the early mining days were obtained from the Montana Historical Society and were digitally scanned for web display. AMLR personnel then matched these by scanning in existing photos of the post-reclamation site, or utilized a digital camera to revisit the same mine sites and take modern photos from the same location where the historic photo was taken. These Then and Now photos demonstrate in simple visual terms the incredible changes these mine sites undergo due to reclamation and the

passage of time. Making this type of interactive web site available is a unique way of educating the general public, as well as the school children of the State, about the dangers of abandoned mines. It also educates the public as to the worth of the reclamation program and documents the historic legacy of mining in Montana. The web site has saved considerable staff time by providing a database to the public rather than staff personnel having to take the time to retrieve the data, make paper copies and mail them to individuals. The information is also instantly available to the general public. The MWCBC has received many positive comments on this web site and has recommended this type of program to other states.

### **Part III. On-Site Evaluation of Reclamation Projects**

Visits to abandoned mine sites for this evaluation period were primarily to mines that had been reclaimed and were in the process of being monitored for complete reclamation success. Five post construction sites were visited, along with one pre-construction site. In our travels to these sites we also passed through three sites that will be reclaimed in the near future. We had visited these three sites in the past so we did not stop and perform an in depth review of them. The Gregory Mine, Wickes Smelter and Corbin Mill Sites were all visited in 1999. The Wickes and Gregory Sites are scheduled for reclamation in 2001. The Corbin Mill Site had been scheduled for reclamation by the Environmental Protection Agency, but they decided it was too small for their program and it has now been placed back on the Montana inventory. Several other sites had been scheduled for visits during this trip, but the many forest fires that were burning in Montana made it unsafe to get to these sites.

Our first visit was to the Bertha Mine. This hardrock mine was reclaimed in the mid-1980's using coal mine reclamation technology. Funding for the initial reclamation was from the State Resource Indemnity Trust fund and no AMLR funding was used. Most of the site is still in good condition, and will not be disturbed again. However, some major erosion has opened up on an old drainage through the site that must be halted before the integrity of the entire site is lost. There is also some damage to the site from acid mine drainage (AMD) that must be repaired. This remedial work will be accomplished through the AMLR fund and is scheduled to start as early as the weather will allow in the 2001 construction season.

The Alta Mine Reclamation Site was the largest reclamation site visited in Montana during this evaluation period. Many of the Montana mines were on mountain sides above seasonal drainages. The quickest and most economical method of disposing of the spoil in the days of mine operation was to simply dump it down the hillside into the drainage. Heavy rain and snow melt events wash the toxic material down into the waterways causing pollution. This makes reclamation very difficult as the rugged and steep terrain is not conducive to the use of the heavy equipment necessary to remove the toxic spoil to a safe repository without a lot of pre-reclamation alteration of the site. The Alta was an underground mine consisting of about 24 surface acres, and approximately 154,000 cubic yards of spoil had to be removed from the drainage. Several portals and a deep vertical shaft were sealed, and a historic headframe was dismantled, each piece numbered, and the structure donated to the Bureau of Land Management to be erected in the historic Garnet Mining District in the western part of the State. A repository approximately eight acres in size was constructed on a ridge adjacent to the site and the spoil

was encapsulated in an impervious liner and buried to eliminate any leaching into the surface or underground water systems. The entire site was seeded with a native grass mixture, and the first season growth was very good despite an unseasonably dry summer. The State did an excellent job of reclamation on this very difficult project.



Portion of the toxic spoil area on the abandoned Alta Mine.



Placing the impervious liner in the repository for the Alta Mine toxic spoil.



Repository after the Alta Mine was reclaimed.

The Cumberland Mine, located in central Meagher County, was scheduled for the initiation of reclamation during the fall of 2000. The site is approximately 20 miles off the main road and only a one track dirt road allows access. Since this area was highly vulnerable because of all the forest fires, and access routes are severely limited, the reclamation plans were canceled until the construction season of 2001. In late August all State personnel were prohibited from engaging in any type of field work for about a two week period because of the extreme danger posed by forest fires. The Cumberland Mine was a silver and lead mine that has a creek running through the site, and once again the spoil was dumped into the drainage area. This creek is also the basic source of potable water for the people who live downstream from the site, and many wells have tested above acceptable levels for lead. The site consists of open trench pits, an underground flume that runs to the top of the hill where smokestacks used to stand, a 600 foot deep vertical shaft, spoil and hot spots where the soil has high concentrations of lead and arsenic residue.

The Douglas Creek Tailings Project is yet another abandoned mining operation where the tailings were dumped into the adjacent drainage during the period of mining. The tailings are from the Granite Mining and Mill Operation which was located in the old mining town of Granite. The Granite mines were the richest silver mines in North America when they were in operation, and they also produced large quantities of lead, zinc and gold. The largest deposit of tailings was approximately one mile below Granite, and just on the outskirts of the present town of Philipsburg. These tailings were removed from the drainage and placed in lined repositories that were constructed higher up on the sides of the creek. The drainage was improved to ensure that water at its highest level would not impact the repositories, and the lining prevents any of the toxic material from entering into the water system. Several trees had to be removed to complete the reclamation, and MWCB personnel have replanted several types of trees to reestablish the pre-mining landscape as closely as possible. The trees and the native grasses that were planted on the site were in excellent condition for the first growing season of their existence.

Reclamation was completed on the Brooklyn Mine in 1995, and it was a joint project with the USFS. This was another mine where the spoil was dumped over the hill side and into the drainage below. The sides of the drainage were too steep to be able to build repositories there, so they were constructed on more level areas on the hillside above the mine area. There are two repositories for this mine and both are lined to prevent any leaching into the water system. The vegetation was excellent on the repositories, and was surprisingly good on the steep slopes of the drainage where reclamation took place. Both repositories were fenced to keep cattle and elk off of them until the vegetation became well established. The MWCB plans to remove those fences during the next construction season. Water quality in the creek below the spoil area has improved to the point that a healthy fish population is now present, where none could live before.

The Grant/Kohrs Gravel Pit was reclaimed in 1993. This pit was on the back side of a ranch property that is listed on the National Register of Historic Places, and two children died in the collapse of a cave they had dug into one side of a similar pit in Kalispel, Montana while playing. The property is operated by the National Park Service and is open to the public. The gravel pit was just over a small hill from the buildings and was out of sight of personnel on duty. Access

was also easily available from a public road that ran by the pit, and this route to the pit was also hidden by the hill. Because of the constant public visitation, the deaths that occurred in a very similar pit, the easy access, and the difficulty in providing security to the area, this site was a priority for reclamation. Reclamation has been successful and vegetation has now been established to the point that it is impossible to identify the site as any kind of abandoned pit.

In total over 117 acres of land were reclaimed by the MWCB during this EY, and 12 types of mine related hazards to the general public were abated. Montana spends about one percent of its annual allocation on maintenance of projects that have been reclaimed, then have again developed problems. The majority of abandoned mines in Montana are located in terrain that makes reclamation very difficult. However, the dedication of MWCB personnel and their close working relationship with both design and construction contractors pays dividends in the excellent reclamation that is produced.

#### **IV. STATUS OF THE APPROVED RECLAMATION PLAN**

No amendments to the approved reclamation plan were processed during this EY and none are planned for the future. The State is in complete compliance with the plan.

#### **V. FISCAL AND ADMINISTRATIVE CONTROLS**

A U.S. Treasury agreement is in effect for the AML program and therefore no drawdown analysis is required. The CFO did verify that a current agreement is in place and operational. The State travel policies and procedures were reviewed for this report. Per diem, lodging expenses and mileage allowances were checked against sampled travel vouchers, and no problems were noted. A property inventory was completed during the summer of 1999 as required by the Common Rule. This inventory verified the accuracy of OSM-60 property reports that are submitted with each grant closeout. Only one source of program income has been identified in conjunction with the AMLR program. This income is from the sale of bid construction packages for each reclamation project, which are sold to potential bidders. The program income is being reported correctly. The CFO confirmed that the MWCB was timely in submitting grant reports for this evaluation period.

Montana recently completed an A-133 audit for the two year period ending June 30, 1999. Two findings were noted by the auditors. There were some inappropriate cash drawdowns completed, but drawdown issues are between the U.S. Treasury and the Montana DEQ, so this is not considered a part of the OSM oversight process. The auditors also found some inconsistent cost pools for annual leave. This was deemed to be the result of the previous reorganization in which two agencies were integrated into the DEQ and accruals were not handled in the same way. The State has responded to the findings and OSM will be involved in the resolutions. Plans are presently underway for the A-133 audit that will cover the two year period starting July 1, 1999.

#### **VI. NATIONAL HISTORIC PRESERVATION ACT**

The State is in complete compliance with the National Historic Preservation Act. Many of the



cultural resource programs initiated by the MWCB cultural resource specialist to obtain Section 106 clearances have been adopted by other State and Federal agencies. Cooperation with the BLM cultural resource staff and the Montana SHPO has been very good.

## **VII. CONSTRUCTION PROCEDURES**

The Montana AMLR program has developed procedures that have been proven to be conducive to achieving good reclamation at the most cost effective price. The design contractors used by the State are hired for a four year period in a competitive selection process. This is the last year for the 14 current design contractors on the active list, and new firms will be selected early in 2001 for the next four year period. Contractors retained to conduct the required cultural resource surveys prior to reclamation are hired in the same way. There are three of these contractors on the active list and they are in the early stages of their contract with the MWCB. The biggest advantage to having the same contractors working on projects for several years in a row is the continuity of work coupled with the knowledge obtained regarding all aspects of the AMLR program.

No major change orders were necessary in any of the reclamation projects undertaken during this evaluation year. Small change orders are required in most projects that are involved with spoil piles, tailings piles and other large earth moving activities to adjust original material volume estimates. It is difficult to estimate exact volumes before reclamation, but upon project completion more accurate figures are available. Pre-reclamation budget estimates by the design contractors are usually somewhat higher than the actual construction price. In today's economy in Montana, the competition for construction work is intense. The industry standards for heavy equipment use and the various types of construction work that are required to complete the reclamation, are the basis for pre-project estimates. However, during this evaluation period the construction contractors were willing to bid the jobs below industry standards allowing the MWCB to acquire excellent reclamation work in a very cost effective manner.

## **VIII. ACID MINE DRAINAGE**

AMD is found throughout the State in both coal and non-coal abandoned mines, but it is most prevalent in the Belt Coal Field area. The MWCB is able to control or eliminate most of the AMD from the non-coal mines, but the Belt area continues to pose an unmanageable problem with the funding level and technology that is presently available. The only way currently available to treat such wide spread AMD is to construct one large water treatment plant, or several smaller plants at strategic spots. Then the contaminated water would have to be piped from throughout the area into the treatment facility or facilities. The cost of the plants and pipelines necessary to handle the AMD could run as high as 20 times the annual allocation received by Montana, and this does not include any operation or maintenance of the system. The MWCB has completed a considerable amount of abandoned mine reclamation in the Belt area, and they continue to attempt to control the AMD situation through conventional methods of constructing wetlands and planting vegetation with high water uptake to reduce the amount of water that is able to flow through the contamination area. The MWCB continues to monitor scientific advancements in the prevention and treatment of AMD.



