

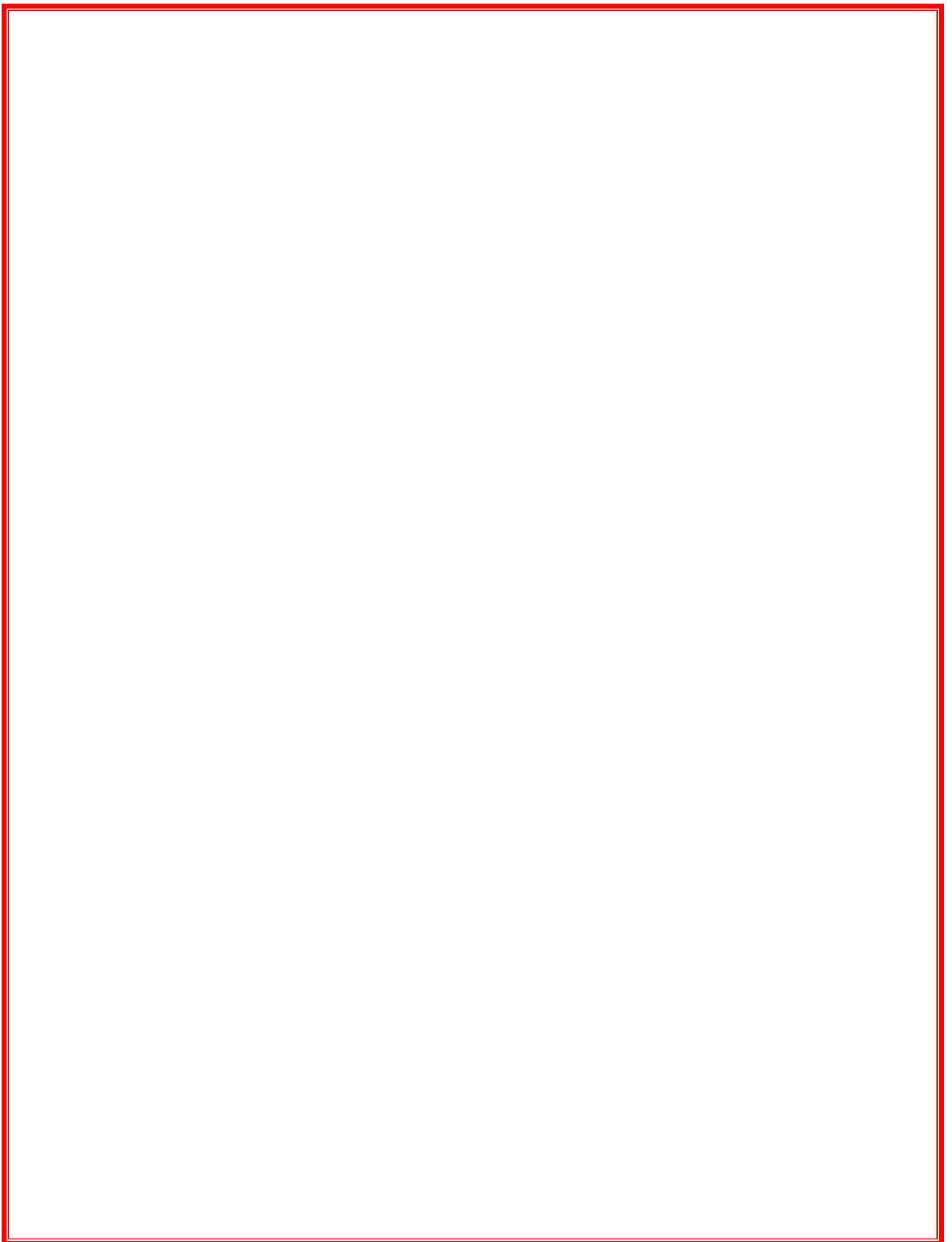
# **OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT**

## **Annual Evaluation Summary Report for the Mine Waste Cleanup Bureau's Abandoned Mine Lands Program For the State of**

# **MONTANA**

### **Evaluation Year 2004 (July 1, 2003 to June 30, 2004)**

Repository for the Bertha abandoned mine site



# **MONTANA ABANDONED MINE LANDS PROGRAM ANNUAL REPORT**

## **Part I. Introduction**

The Montana Abandoned Mine Land Reclamation (AMLR) program continues to administer an excellent reclamation program under the guidelines of the Surface Mining Control and Reclamation Act (SMCRA), the Federal Assistance Manual and associated regulations. The Casper Field Office (CFO) of the Office of Surface Mining (OSM) conducts oversight activities in regard to the Montana program, and the topics of the oversight report were selected in concert with the Montana Department of Environmental Quality (DEQ), Mine Waste Cleanup Bureau (MWCB). The Montana AMLR program was initiated in 1980 and for the next ten years the State concentrated on abating the hazards left by past coal mining practices. In 1990 the State certified that all known coal problems had been addressed and they were then authorized by OSM 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 requirement has been followed by the State. The evaluation methods used to produce this report are based on OSM Directive AML-22 and associated regulations. This report covers the period of July 1, 2003 thru June 30, 2004.

Both the design and construction portions of each AML project are completed by private contractors. The State has established a bid process to obtain the most qualified design and construction companies' at the most cost effective price. The design and specification work is accomplished during the winter months when most outside work is impractical, and the actual reclamation work starts as soon as weather and ground conditions will allow heavy equipment to be moved to the site. Many of the sites presently being reclaimed are in mountainous terrain and at high altitudes. This may drastically shorten the amount of time available for reclamation work because snow, ice and mud can make travel on remote mountain roads very dangerous. A part of the responsibility of each design contractor is to provide an inspector for the construction work. This inspector will be on site during working hours to ensure that the work is being completed according to the plans and specifications that have been approved by the MWCB.

Staff personnel of the MWCB are very knowledgeable and dedicated to the completion of the program goals. An excellent working relationship exists between the staff of the MWCB, the CFO staff, and the State and Federal agencies that must be contacted during

the course of preparing projects for reclamation. The MWCB personnel spend most of the construction season in the field coordinating and supervising the reclamation work, and preparing future projects for reclamation. Some construction 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. One AMLR Consolidated Grant was awarded to the State during this evaluation period and it was approved well within the government performance period of 60 days.

## **Part II. Noteworthy Accomplishments**

The most noteworthy accomplishment of this evaluation period for the MWCB was the reclamation of the Montana Silver Smelter Site, which is described in Part III below. The Section Manager for the MWCB, who was also the project officer on the project, received the Governor's Award for the outstanding reclamation of this project. The extremely toxic site is heavily utilized by the general public, and a national Lewis & Clark celebration is expected to draw over 150 thousand people to the area during the summer of 2005. The 2.1 million dollar project was finished in one year from the initial investigation. This required extraordinary coordination and cooperation from several local, State and Federal agencies. It was the first time in the history of the Montana AML program that a project of such magnitude was completed in such a short time period.

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

During last years visit to Montana reclamation projects several roads were closed because of forest fires, and the reclamation work was only allowed to continue until noon each day. All outside work being done by State personnel had to cease at noon and one person was required to remain on the job site until 2:00 in the afternoon to ensure that no fires were started from the job site. The fire season was not as severe during this visit but the reclamation work was under the same half day work restriction up until the week of the oversight visit. This had caused several of the projects to be behind schedule and the contractors were working extended hours to complete reclamation before the weather locked them out of the mountains.

Reclamation has been completed on the Gregory Mine and Mill site and several toxic spoil piles were placed in a secure repository. Some of these spoil piles extended several hundred yards down into the drainage areas below the mine site. This was causing some extensive pollution of the area water drainage system during periods of snow melt and heavy rain events. Three partially collapsed adits were also permanently closed and one open shaft was sealed. In addition, several flue ditches were filled and the mill stacks were removed from the site. A private mining corporation still owned a portion of the site and they coordinated their reclamation with the MWCB to complete the removal of hazards from the area. The only remaining reminder that a mine may have existed on the site is a partial rock foundation of a structure that was considered to be historic and was left intact.

The Bertha Mine was initially reclaimed in the mid 1980's and some remedial reclamation was required to take care of additional problems that had come to the surface. The primary problem was that some very badly contaminated water was beginning to leach to the surface in the repository and render the surface sterile. Drilling discovered that old car bodies and other debris had been buried just under the surface and all this contamination caused the vegetation to disappear. The lack of vegetation was a large contributing factor in erosion that was covering the repository. The junk was removed and the repository was covered with a thick layer of inert material, top soiled, and revegetated. A sediment pond was also constructed just below the repository to collect any drainage from the area so that testing could be easily conducted. Only the repository was disturbed during this project as the rest of the original reclamation is successful.

The Boaz Mine and Mill was another site that had massive amounts of toxic spoil dumped into the adjacent drainage during mining operations. This was one of the more productive gold and silver mines in its day and also produced smaller quantities of lead and zinc. The site was under construction at the time of the visit, and was completed by the end of the work season. Levels of arsenic, cadmium, copper, mercury, lead, zinc and cyanide that were three times the recognized safety level were detected in the spoil. Drainage from the mine runs through two small towns and then directly into the famous trout fishery of the Madison River. Hazardous mine openings and a significant amount of dangerous debris were also found on the site. The spoil and debris were moved to a secure repository and buried to prevent any leaching of toxic material to the surface or into the underground water aquifer. The foundation and some of the wall of the mill structure are still standing and are considered to be historic, so they were not disturbed during the reclamation. A subsequent visit found that vegetation was taking very well and no signs of erosion on the steep slopes were noted.



Toxic spoil in the drainage at the Boaz site.



Boaz drainage after reclamation.

Approximately one half mile away from the Boaz and 500 feet higher in elevation, is the Grubstake Mine. This mine was reclaimed concurrently with the Boaz Mine. This was

also a highly productive Montana gold and silver mine in its operating days and places the same contaminates into the same drainage system as the Boaz. Old contaminated tailings ponds, spoil and an open metal building that was used as a local teen party house were among the hazards of this site, but the worst hazard was an open vertical shaft approximately 600 feet deep with a wooden ladder leading down into it that was at least 25 years old. The open shaft was an attractive hazard and the ladder was an accident waiting to happen. Contaminated material was removed to a secure repository and the building was removed. The shaft was filled and an open mine entrance at the foot of the hill was closed. This project was also completed a few weeks after the visit to the site and was inspected again at a later date. Again, vegetation appeared to be good and no signs of erosion on the steep slopes was found.



Open entrance to the Grubstake Mine prior to reclamation.



Standing on the reclaimed Grubstake Mine site and looking down to the reclaimed tailings ponds.

The Big Ox Mine and Mill Site was another project that had been completed just prior to our visit. As is the case in most of the abandoned hard rock mines in Montana, toxic spoil was dumped into the adjacent drainage during the mining days, and polluted water was draining from the site. The spoil was removed to a secure on-site repository and topsoil had been spread on the site. The site was reseeded and a subsequent visit found that the vegetation was excellent. Many of the old mine buildings are still standing on the site and most are considered to be historic and were not disturbed during the reclamation, but natural weather conditions are taking a toll on them. The structures that lacked the integrity to be historic were removed along with a considerable amount of hazardous mine and structural debris. The site is adjacent to a road that can be traversed by two wheel drive vehicles and was not fenced off from the public, and therefore heavily utilized.



Big Ox site just after completion of the reclamation.



Big Ox in the first year of vegetation growth.

The Montana Silver Smelter Project was another one that was under construction during our oversight visit. This project was discovered pretty much by accident when local government officials were investigating possible land acquisitions to add to the River's Edge Trail System that fronts the Missouri River through Great Falls, Montana. The existence of the long abandoned smelting and mineral processing facility in Giant Springs State Park was thus brought to the attention of the abandoned mine reclamation program. Initial investigation into the site determined that Giant Springs State Park and Giant Springs State Fish Hatchery were built on mineral processing waste that contained extremely high levels of lead and arsenic. Testing discovered that some of the slag from the old smelter contained the highest lead content that has been found in any of the AML projects to date, and that 150,000 Park visitors a year were being potentially exposed to this contamination. The contaminated slag was also several feet deep in the yards around the residences of State Fisheries and State Parks personnel who live on the site to operate the fish hatchery and state park. The entire yards of the houses on the site had to be excavated down to the base of the foundations and replaced with clean soil. All of the families were moved out of their homes while the reclamation was under way so the structures could be completely sealed and dust proofed. The excavated areas of the yards were covered with heavy plastic sheeting to prevent any contaminants that may have been missed during the removal process from ever leaching back up into the yards. A subsequent visit to the site found that the yards had been refilled and top soiled, and grass and trees were planted. The only remaining remnant of the smelter operation is the base of two of the stacks that were cleaned up and fenced off to remain as an interpretative site. However, some of the original rock retaining walls still help keep the hillside from sloughing down on to the paved road that dissects the site. This was the first AML project in Montana where a request was made to the local power company to lower a major body of water for reclamation purposes. A section of the Missouri River impounded behind Rainbow Dam had to be lowered several feet to allow equipment to get to the slag that was in the river's edge. A 404 Permit from the Army Corp of Engineers was also required to lower the reservoir and excavate the banks of the Missouri River. Immediately adjacent to the project site is the historic Giant Spring that was first discovered by the Lewis & Clark expedition. This spring produces nearly 400 million gallons of water per day and feeds the fish hatchery and the Missouri River. The National Council of the Lewis & Clark Bicentennial will hold a National Signature Event at Giant Spring State Park from June 1 through July 4, 2005. Exposure to mineral processing wastes will not be a concern for celebration visitors and the 35 acres of Park land disturbed by the project have been completely restored.



Plastic sheeting covering the excavated yards of Fish & Game personnel at the Montana Silver Smelter site.



The same yards after replacement of soil and planting of grass and trees.



Smokestack bases that are fenced and signed as an interpretative site for the Montana Silver Smelter site.

We visited one site that is not scheduled to be reclaimed for a year or two, but is a major abandoned mine area. The Drumlummon Smelter Project was a consolidation of eight smaller mine sites within the Silver Creek drainage. The proposed project area is thirteen and one half miles long, and the estimated cost for reclamation is in excess of six million dollars. This cost will require the reclamation to be phased over a period of several years, and the most heavily contaminated of the extensive spoil areas will be cleaned up first. Several additional mine and mill sites were also operated in the Silver Creek drainage which eventually drains into the Missouri River. Final reclamation plans have not been completed for this project.

The Wickes Smelter Site is scheduled to be reclaimed in the near future, and the project is a key component of the ongoing reclamation of several abandoned mining sites in the Colorado Mining District in Jefferson County. The MWCB has entered into an agreement with the Bureau of Land Management to obtain property to construct a secure repository for the contaminated waste from the site. The Wickes Smelter now only consists of one complete stack and contaminated soil around the area that has caused the death of several cattle. Water standing near the stack from a heavy rainfall was ingested by the cattle and several died as a result. The stack area has heavily utilized unpaved roads on all sides causing nearby residents to have to breathe the contaminated dust. Children of the residents also are exposed to the contaminants on a daily basis as they play in their yards. This project is scheduled for reclamation in August and September of 2004.

The Washington Mine and Mill site is an abandoned gold mine and mill located approximately one mile west of the Wickes site on the steep slope of a mountain. Once again, spoil was dumped into the adjacent drainage and pollutes the water that passes through the site. The old mill structures were six levels deep down the hillside, and age has caused deterioration to the point where historical integrity is no longer present. The original plan was to reclaim the site and not disturb the historic structures, but the debris of the collapsed structures will now be removed from the site. The steep terrain will necessitate special measures to get heavy reclamation equipment to the site, and additional special measures to prevent erosion once the spoil is removed and revegetation is completed. This site is scheduled for reclamation during the 2005 construction season and will be revisited at that time.

#### **Part IV. Fiscal and Administrative Controls**

The CFO visited the Department of Environmental Quality offices in Helena, Montana and reviewed the financial information regarding the Title IV program. As a part of this review, a drawdown analysis was conducted for the open grants. The sample covered all grants that were active in EY2004 and found that there were no excess funds being retained by the State. Payroll records were also reviewed to ensure that personnel being paid from the current AML grant were individuals actually assigned to the MWCB and working in the program. No problems were noted in this area. The Department of Environmental Quality is current with their indirect cost rate through June 30, 2005.

The State was timely and accurate regarding their current grant application and they submitted cost reports for open grants on time. However, the cost report for one active grant lacked accurate reporting of some specific program income from the use of the helicopter purchased with grant funds. In 2002 the State agreed to report costs and apply program income derived from the use of the helicopter to the grant, to include income earned from all users. They also agreed to provide information regarding the number of hours the helicopter was used during the reporting period as well as identifying who the users were. Because this information was not forthcoming after our repeated requests, funding to support the helicopter use in the FY2004 AML grant was deleted. The State has been informed that once the required reports are received and approved the CFO will consider an amendment to the FY2004 grant to restore the deleted helicopter support funding.

Travel taken by the Mine Waste Cleanup Bureau personnel during the evaluation period was reviewed in relation to State travel policies and procedures. Individual travel vouchers confirmed that per diem, lodging and approval for travel were in order. The AML program continues to report property and the transfer of property in a timely manner. A new property inventory was taken during the evaluation period, meeting the Common rule requirements. An A-133 audit was also completed on the AML program for the two year period ending on June 30, 2003. There were two findings for the program and both of them have been resolved. A new audit is being scheduled that will cover the two year period ending on June 30, 2005.

## **Part V. Public Participation**

The Montana AML Plan requires that the public be afforded the opportunity to offer comments on abandoned mine reclamation projects. The MWCB considers the public an important component of the reclamation program, and conducts a public meeting in the community nearest each project. The meetings are well publicized and are held in the evenings or on weekends to allow maximum citizen participation. The overall plan for the project area, construction design, maps, overlays and aerial photographs are available and discussed at each public meeting. Individuals may submit comments in writing, or meet with the project managers at any time prior to completion of the comment period on a project. Project managers also meet with affected landowners to explain each project in detail, and keep them informed of the progress throughout the construction phase. Work plans are often altered to conform with comments received from landowners, contractors and the general public. Public meetings have been held in several communities in the Great Falls/Lewiston Coal Field to keep the citizens updated on the problems and progress of research to abate the acid mine drainage concerns from the area's abandoned coal mines.

## **Part VI. Acid Mine Drainage**

Acid Mine Drainage (AMD) is found throughout the State in both coal and non coal abandoned mines, but the heaviest concentrations are found in the Great Falls/Lewiston Coal Field area. With normal reclamation procedures, the MWCB is able to control or eliminate most of the AMD from the non coal mines. However, the 7000 to 9000 square miles of the Great Falls/Lewistown Coal Field continues to pose an unmanageable AMD problem with the funding level the State receives and the technology that is presently available regarding the treatment of AMD. The only method currently available to treat the widespread AMD problem found in this extensive abandoned coal field is to construct a large water treatment plant, or several smaller plants, at strategic locations. The polluted water could then be piped from throughout the area into the treatment facility or facilities. The cost of the treatment facilities and the pipeline necessary to handle the AMD could easily run as high as twenty times the annual AML allocation received by the State, and this does not include the cost of any of the routine operation and maintenance of the system once it is in use. The MWCB has completed a considerable amount of abandoned mine reclamation in this area of the State, and they are still attempting to control the AMD situation through conventional methods of reclamation. Some of these methods work for a short period of time but are not acceptable for long term use. The MWCB continues to monitor scientific advancement in the prevention and treatment of AMD in anticipation that a cost effective treatment method will be found.

## **Part VII. AMLIS Inventory Maintenance**

The MWCB considers maintenance of the inventory a high priority and it is accomplished in an excellent manner. The State has in place a system to ensure that any

new data entered into AMLIS is accurate. A sample of AMLIS information was reviewed for the EY and confirmed the system is operational and accurate. The staff of the MWCB spends the entire summer construction season in the field supervising the reclamation of abandoned mine sites, so information regarding completed sites is not compiled and entered into the AMLIS until weather conditions prohibit the continuation of outside work. However, new sites are entered into the system as soon as they are discovered, and funding status is adjusted as it changes. When the authorization to proceed with a reclamation project is sent to the State, it includes instructions to move funding from the unfunded column to the funded column in AMLIS and send verification of this change to the CFO.

## Chart # I Montana 2004

### Additional AML Projects That Are Construction Ready If Funding Were Available

PROJECT	COST	ECONOMIC IMPACT		ENVIRONMENTAL BENEFIT
		Income	Employment	
Toston Smelter	\$0.30 million	0.84 million	18	3 acres reclaimed
East Pacific Mine	\$1.20 million	3.5 million	92	12 acres reclaimed
Goldsil Millsite	\$1.5 million	4.4 million	204	20 acres reclaimed
Elkhorn Cr. Tailings	\$1.70 million	3.85 million	132	8 acres reclaimed
Emery Mine	\$0.50 million	1.25 million	39	18 acres reclaimed
Sunrise/January Mine	\$0.50 million	1.25 million	39	5 acres reclaimed
Frohner Mine	\$0.50 million	0.95 million	24	5 acres reclaimed
Snowshoe Mine	\$0.75 million	1.88 million	58	20 acres reclaimed
Garnet Gold Mine	\$0.25 million	0.63 million	19	5 acres reclaimed
Washington Mine	\$1.60 million	4 million	124	10 acres reclaimed
Champion Mine	\$0.46 million	1.15 million	35	5 acres reclaimed
Lily/Orphan Boy Mine	\$0.35 million	0.88 million	27	1 acre reclaimed
Forest Rose Mine	\$0.80 million	2 million	62	10 acres reclaimed
Bald Butte Mine	\$0.70 million	1.84 million	54	10 acres reclaimed
Great Republic Smelter	\$0.70 million	1.84 million	54	7 acres reclaimed
Montro Gold	\$.20 million	0.78 million	16	5 acres reclaimed
Gold Leaf/Priscilla	\$.70 million	1.84 million	54	5 acres reclaimed
Bluebird Mine	\$1.10 million	5.1 million	240	12 acres reclaimed
McLaren Tailings	\$4.68 million	8.0 million	280	17 acres reclaimed
Silver Creek	\$4.00 million	7.4 million	260	80 acres reclaimed

<b>TOTALS</b>	<b>\$22.49 million</b>	<b>53.38 million</b>	<b>1831</b>	<b>258 acres total</b>
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## Chart # II Montana 2004

### Acres and Hazards

HAZARD STATUS	6/30/2003 STATUS	FY 04 AMLIS ADDITIONS	RECLAIMED IN FY 2004	6/30/2004 STATUS
BE Bench	0.8	0	0	0.8
CS Clogged	32.5	1.2	1.2	32.5
CSL Clogged Stream Lands	184.6	2.1	2.1	184.6
DH Dangerous Highwalls	22460.0	0	0	22460.0
DI Dangerous Impoundments	3.0	0	0	3.0
DP Ind/Res Waste	75.8	13.9	0	89.7
DPE Dangerous Pile	448.5	3	0	451.5
DS Dangerous Slide	0.9	0	0	0.9
EF Equip/Facil	58.0	0	0	58.0
GHE Hazard	1.0	0	0	1.0
GO Gobs	147.2	2	0	149.2
H Highwalls	1170.0	0	0	1170.0
HEF Hazard Equip	911.0	22	4	929.0
HR Haul Road	0.5	0	0	0.5
HWB	9.0	0	0	9.0
IRW Indust/Resid	980.0	104.3	57.7	1026.6
MO Mine Opening	230.0	0	0	230.0
P Portal	1247.0	50	2	1295.0
PI Pits	34.1	0	0	34.1
PWAI Polluted Water	17.0	0	0	17.0
PEHC Polluted Water	12.0	0	0	12.0
S Subsidence	494.1	0	0	494.1
SA Spoil Area	874.7	0	0	874.7
SB Surface Burning	301.9	3	0	304.9
SP Slump	18.5	0	0	18.5
UMF Underground	68.8	0	0	68.8
VO Vertical Opening	663.0	44	2	705.0
WA Water Problems	2740.5	0	0	2740.5

## Chart # III Montana

### Completed Projects

PROJECT NAME	PROJECT COST	ECONOMIC IMPACT	ENVIRONMENTAL BENEFIT
Montana Silver Smelter	\$1,857,420	3.91 million	IRW
Klein Coal Mine Emergency	\$36,985	.18 million	VO
Republic No. 3 Coal Mine	\$505,422	.095 million	IRW
Big Ox Mill Site	\$150,296	.50 million	CS, CSL, IRW, P
Gregory Maintenance	\$15,837	.03 million	IRW
Grubstake Mine	\$479,952	1.20 million	IRW, P, VO, CS, CSL, HEF
Bertha Maintenance	\$675	.01 million	Other