

# CHAPTER 1

## INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

### 1.1 INTRODUCTION

This EIS is the final supplement to the March 1996 Final Environmental Impact Statement (FEIS), *Zortman and Landusky Mines Reclamation Plan Modifications and Mine Life Extensions*. This Final Supplemental EIS (SEIS) incorporates by reference or summation much of the information presented in the 1996 FEIS. The SEIS has been written so the reader can follow the analysis without having to view both documents. However, some readers may wish to review the FEIS for additional detail or background information.

The SEIS has been prepared to analyze additional reclamation alternatives that may constitute a substantial change from those presented in the FEIS and from the reclamation plans initially approved in a June 1, 1998 Record of Decision issued by the Montana Department of Environmental Quality (DEQ) and the Bureau of Land Management (BLM). DEQ and BLM (also referred to in this document as "the agencies") are joint lead agencies responsible for preparation of the SEIS.

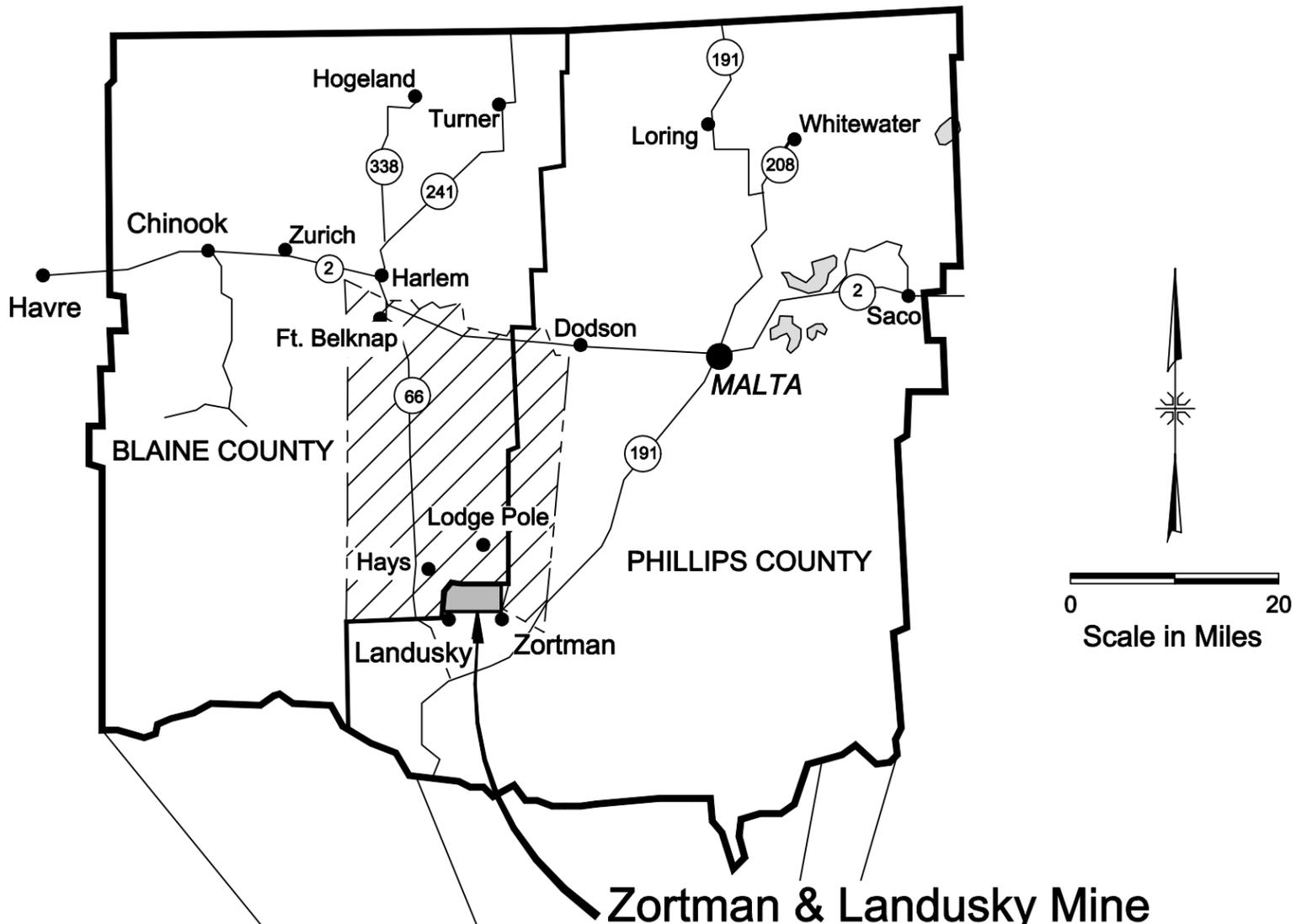
### 1.2 PROJECT LOCATION and HISTORY

From 1979 through 1998, Pegasus Gold Corporation and its wholly owned subsidiary operating company, Zortman Mining, Inc. (ZMI), operated the Zortman and Landusky Mines in the Little Rocky Mountains of northcentral Montana (Figure 1.2-1). While historic mining activity has occurred in the area since the mid-1880s, the advent of cyanide heap leach technology, combined with a sharp rise in gold prices, prompted the development of these large-scale, open pit mining operations beginning in the late 1970s. In 1979, a Draft EIS analyzing the mines was prepared by the Montana Department of State Lands<sup>1</sup> (DSL 1979a). The State's Final EIS documentation (responses to comments on the Draft EIS and adoption of the Draft as Final) was issued May 17, 1979 (DSL 1979b), and the operating permits for the Zortman and Landusky Mines were subsequently approved.

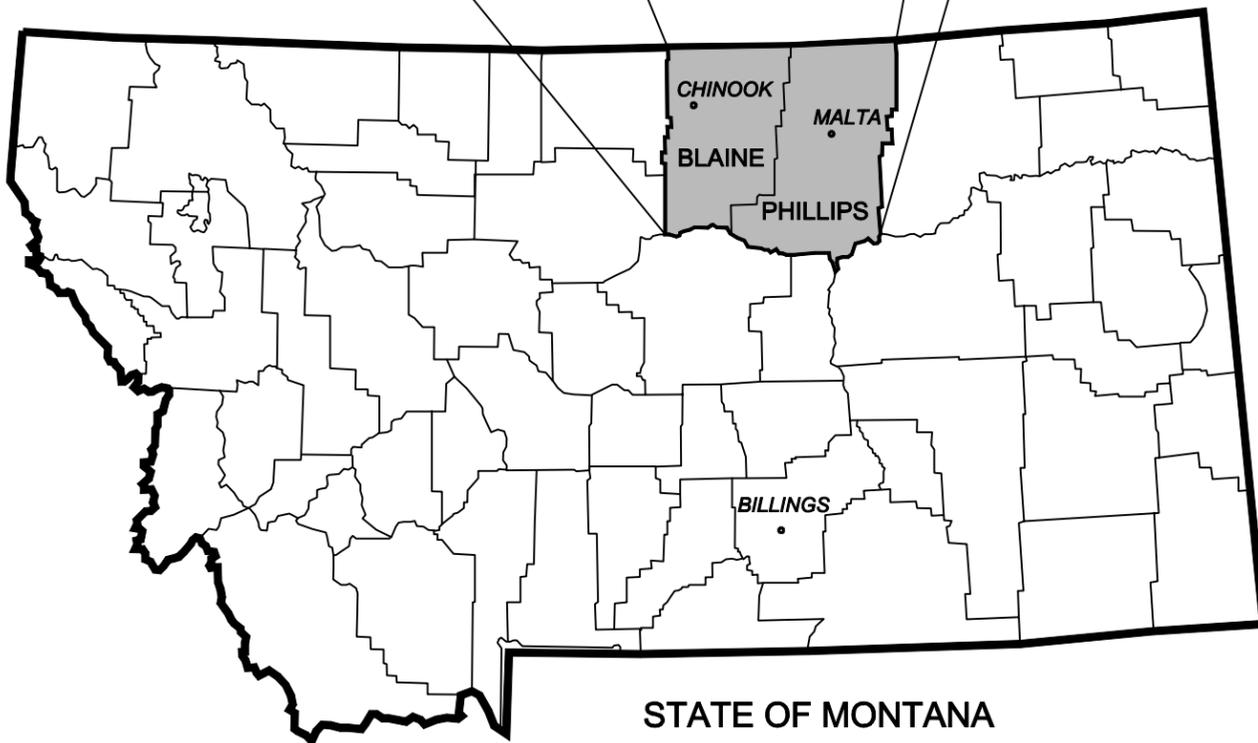
The Zortman Mine is located in Sections 7, 17, and 18, Township 25N, Range 25E, Montana Principal Meridian (MPM). The Landusky Mine is west of the Zortman Mine in Sections 14, 15, 22, and 23, Township 25N, Range 24E, MPM. Both mines are near the southern boundary of the Fort Belknap Indian Reservation in the southwest corner of Phillips County on a mixture of private land and public land managed by the BLM (Figure 1.2-2).

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<sup>1</sup>In a 1995 reorganization the Montana DEQ was created from portions of the Montana Department of State Lands and the Montana Department of Health and Environmental Sciences.



**Zortman & Landusky Mine  
Reclamation Project**



**GENERAL  
LOCATION MAP**

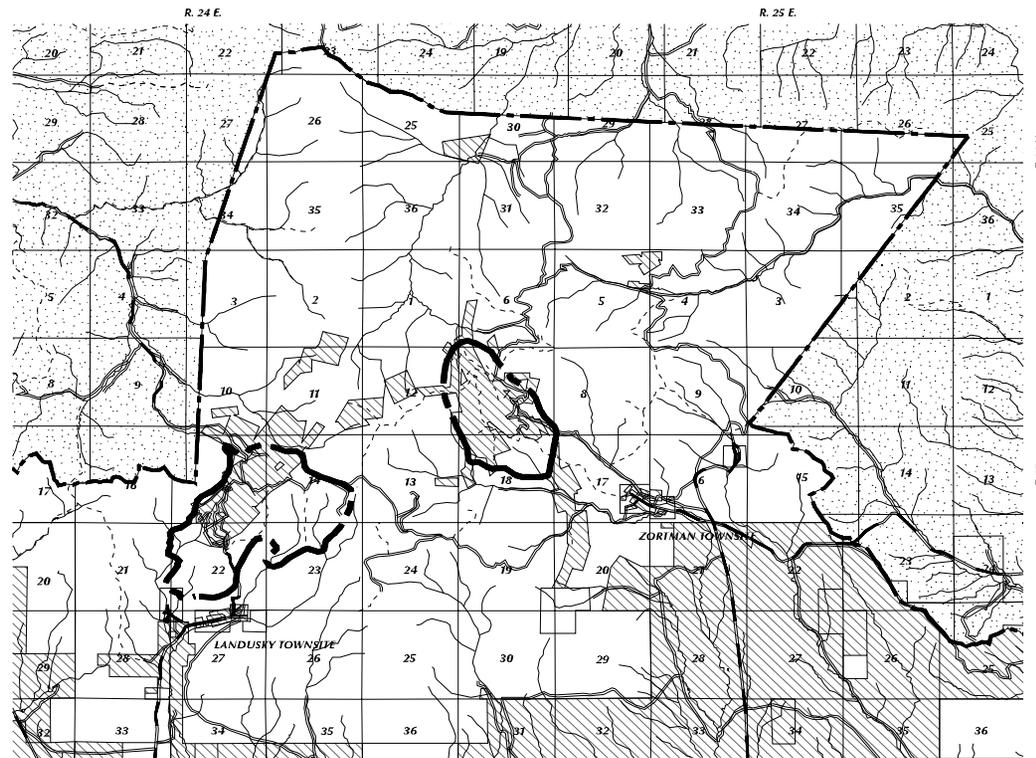
# ZORTMAN-LANDUSKY MINE AREA

Figure 1.2-2  
Detailed Location and Ownership Map

## LEGEND

-  FEDERAL SURFACE
-  PRIVATE SURFACE
-  FT. BELKNAP RESERVATION
-  AREA OF MINE DISTURBANCE

\* Mine disturbance includes mine pits, waste rock piles, leach pads and processing plants.  
Not included are access roads, powerlines, land application areas and areas of exploration activity.



The towns of Hays and Lodgepole are located in the southern portion of the Reservation, on the north edge of the Little Rocky Mountains. The town of Landusky is just southwest of the mountains, about one-half mile south of the Landusky Mine. The town of Zortman is about one mile south of the Zortman Mine, on the southeastern edge of the Little Rocky Mountains. Aerial photos of the Zortman and Landusky mining areas taken in 1977 show the amount of disturbance before the era of large-scale, modern mining which began in 1979 (FEIS Figures 1-2 and 1-3). FEIS Figure 1-4, taken in 1993, shows the mine disturbance as it generally looks today.

ZMI (or more precisely the bankruptcy trustee for ZMI) holds BLM Plan of Operations MTM-77778 and DEQ Operating Permit No. 00096 for conducting operations at the Zortman Mine. Eleven amendments to the operating plans were approved between 1979 and 1988, which allowed the disturbance area to increase from the original permitted 273 acres to the present 401 acres. A history of permit amendments for the Zortman Mine is shown in FEIS Table 1-1.

ZMI holds BLM Plan of Operations MTM-77779 and DEQ Operating Permit No. 00095 for conducting operations at the Landusky Mine. Ten amendments to the operating plans were approved between 1980 and 1991, which allowed the mine disturbance area to increase from the original permitted 256 acres to the present 814 acres. A history of permit amendments for the Landusky Mine is shown in FEIS Table 1-2.

### **1.2.1 Reclamation Plan Development History**

Preparation of this SEIS on reclamation at the Zortman and Landusky Mines is the culmination of a review process that began over nine years ago. In 1992, ZMI submitted plans for a major expansion at the Zortman Mine (see FEIS, pages 2-104 to 2-170). Review of water resources monitoring information, concurrent with review of the mine expansion plans, showed that acid rock drainage (ARD) was a widespread occurrence at both the Zortman Mine and at the nearby Landusky Mine. In late 1992, the agencies requested that ZMI propose corrective measures to their existing reclamation plans. In early 1993, the requests took the form of administrative orders issued under the authorities at §82-4-337(3), Montana Code Annotated (MCA) for DSL; and at 43 Code of Federal Regulations (CFR) §3809.1-7(c) for BLM (DSL 1993, BLM 1993).

ZMI responded with proposed modifications to the reclamation plans that were presented to the public in 1993. In response to public comment, and due to the technical complexity of the ARD issue when considered in combination with the mine expansion proposal, the agencies required that the reclamation plan modifications be analyzed in an EIS (DSL/BLM 1994). The EIS scoping period on the Zortman Mine expansion application was reopened and the scope of the EIS analysis was broadened to include both mine expansion and modified reclamation plans at both the Zortman and Landusky Mines.

Concurrent with the DSL and BLM efforts to have ZMI change its operating and reclamation plans, the Montana Department of Health and Environmental Sciences issued an enforcement order against ZMI for the discharges coming from the mines into waters of the State. In August 1993, a suit was

filed in District Court by the State of Montana against ZMI and Pegasus Gold, alleging violations of the Montana Water Quality Act. This was due in part to ARD at the mine sites. The Environmental Protection Agency (EPA) filed suit in Federal District Court in June 1995, alleging that discharges from the mine sites in seven drainages were in violation of the Federal Clean Water Act (Civil Action No. 95-95-BLG-JDS). The State of Montana then filed in Federal District Court and citizen suits were also filed in Federal District Court by Island Mountain Protectors and the Fort Belknap Indian Community Council (Fort Belknap) (Civil Action No. 95-96-BLG-JDS). Settlement discussions among the parties occurred during 1995 and early 1996 to resolve the complaints. A Consent Decree was lodged in Federal District Court on July 22, 1996. After a public comment period, the Consent Decree became effective on September 27, 1996.

The Consent Decree required ZMI to implement various compliance plans involving monitoring, capture, and treatment of impacted waters and to perform supplemental environmental projects of benefit to the Fort Belknap Indian Reservation. However, the Consent Decree did not address surface reclamation requirements for the mines, which are beyond the scope of the water quality acts.

After the completion of the FEIS and the signing of the water quality Consent Decree, the DEQ and BLM issued a Record of Decision (ROD) on October 25, 1996. This ROD decided two things: One, it approved additional mining operations at both mines; and two, it required implementation of specific reclamation measures to control acid drainage development, including incorporation into the reclamation plans of various water management requirements from the Consent Decree (FEIS Appendix A). The BLM approval of additional mining was appealed to the Interior Board of Land Appeals (IBLA) in late 1996 by Fort Belknap, Island Mountain Protectors, and the National Wildlife Federation. The DEQ approval of expanded mining was challenged in State District Court in January 1997 by Fort Belknap, the National Wildlife Federation and Montana Environmental Information Center.

In June 1997, the IBLA ordered the mine expansion approvals stayed while the appeal was under consideration. However, in January 1998, before a decision was issued on the merits of the appeal, Pegasus Gold Corporation and ZMI filed for bankruptcy protection. On March 10, 1998, the companies announced they were no longer going to proceed with the approved mine expansion plans and instead were going to reclaim and close the mines.

To recalculate the necessary reclamation bond in view of the pending bankruptcy proceedings and imminent mine closures, the agencies issued a second ROD on June 1, 1998. That decision rescinded the approved mine expansion and selected Alternative 3 from the FEIS for implementation. Alternative 3 did not provide for additional mining, but required reclamation of the existing disturbances using agency-developed mitigation. The agencies identified a shortfall of approximately \$8.5 million in the reclamation bond available at that time to implement Alternative 3. ZMI appealed this decision, citing that reclamation under Alternative 3 would be too expensive and contained requirements that were unnecessary. At the same time as the agencies signed the

June 1 ROD, the IBLA ruled on Fort Belknap's appeal of the mine expansion approvals.<sup>2</sup> The IBLA ruled in favor of Fort Belknap and stated that the FEIS contained too much uncertainty about groundwater conditions and, therefore, BLM could not have adequately considered potential impacts to water resources and, specifically, to protection of Tribal water resources.

BLM requested reconsideration of the IBLA decision, stating that data requirements for reclamation of an existing mine need not be as detailed as those necessary to approve the mine expansion. On November 20, 1998, the IBLA issued an order that set aside the BLM ROD of June 1, 1998, and directed that prior to selecting a final reclamation alternative, "...BLM must separately analyze, and consult with the Tribes about, potential effects on Tribal water resources and report on its actions in its decision." At present there is no approved BLM plan for final reclamation of the mines. There is an agreement with the surety companies underwriting ZMI's reclamation bonds to fund reclamation up to the limits of the surety amounts.

BLM and DEQ have been consulting with the Fort Belknap government since March 1999, as directed by the IBLA Order (see also Chapter 5). This consultation effort has utilized a technical working group composed of specialists from BLM, DEQ, EPA, and Fort Belknap to consider various reclamation options for the mines. The technical working group has identified five additional reclamation alternatives for the Zortman Mine and five additional reclamation alternatives for the Landusky Mine that should be considered for possible implementation because they are either more cost effective, more protective of the environment, or both, when compared to the reclamation plan initially approved by the June 1998 ROD. BLM and DEQ have determined that selection of one of these additional reclamation alternatives may constitute a substantial change in the 1998 agency-proposed action. Since a substantial change in the proposed action is one of the regulatory triggers listed in 40 CFR 1502.9(c) that requires preparation of a supplemental EIS, the agencies decided in March 2000 to proceed with preparation of a supplemental EIS (BLM 2000).

### **1.3 PURPOSE OF and NEED FOR ACTION**

The purpose of and need for action is to develop reclamation plans for the Zortman and Landusky Mines which address the acid-generating character of the mined material and pit areas, and which will successfully meet all applicable State and Federal requirements for mine reclamation necessary to protect human health and the environment with a reasonable assurance of long-term success. While past mining approvals simultaneously included plans for reclamation, the agencies determined in 1993 that those plans did not provide adequate consideration of the potential impacts from acid generating material and needed to be modified (DSL 1993, BLM 1993).

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<sup>2</sup>The agencies' June 1, 1998 ROD and the IBLA's decision of May 29, 1998 crossed in the mail. BLM had notified the IBLA of its intent to issue the ROD prior to June 1, but IBLA did not respond until after the ROD was signed.

The decisions to be made by DEQ and BLM are the manner and degree to which the ZMI trustee is required to modify the reclamation plans in the Operating Permits and Plans of Operations to achieve successful reclamation. It should be noted that while actual implementation of the reclamation would be carried out by the agencies using funds from the surety companies and, possibly, from other sources, the ZMI trustee legally holds the Operating Permits and Plans of Operations under which the reclamation is being conducted.

## **1.4 REGULATORY AUTHORITY, ROLES, and RESPONSIBILITIES**

DEQ and BLM are joint lead agencies responsible for preparation of the SEIS and for issuing a decision regarding final mine reclamation. Technical expertise has been provided by independent third-party consultants selected by, and working under the direction of DEQ and BLM, and by a technical working group composed of specialists from BLM, DEQ, EPA and Fort Belknap.

DEQ and BLM will use the technical analysis in the Final SEIS to prepare a ROD that considers how the reclamation alternatives satisfy the legal requirements for reclamation. It should be noted that a determination as to how a particular reclamation alternative may or may not meet a performance requirement varies with the resource being considered and the guiding authority. For example, when dealing with numeric requirements such as a water quality standard, a fairly straightforward analysis can predict whether an exceedance of the water quality standard is likely under a particular alternative. In other instances, determining whether reclamation performance criteria such as “comparable stability and utility” or “prevention of unnecessary or undue degradation” have been met would be subject to some amount of interpretation. The ROD will consider these factors and select reclamation plans that modify the Operating Permits and Plans of Operations as needed to achieve successful reclamation.

Information on the lead and participating agencies’ roles and responsibilities is presented below. A Memorandum of Understanding (MOU) between BLM, DEQ, EPA, and Fort Belknap was signed in November 2000. The MOU details the various agencies’ roles and responsibilities for preparation of the SEIS. Other agencies may have future roles and responsibilities should site conditions change over time or response actions under other authorities be triggered.

### **1.4.1 Montana Department of Environmental Quality**

#### **Montana Metal Mine Reclamation Act**

The purpose of the 1971 Montana Metal Mine Reclamation Act is to ensure that the usefulness, productivity and values of lands and waters disturbed by mining receive the greatest reasonable degree of protection and reclamation to a beneficial use (§82-4-302, MCA). This Act applies to all lands within the State of Montana, whether federal, state, or private. Under this Act, DEQ has the authority to (a) to issue an operating permit, (b) inspect facilities and operations for compliance with the permit and applicable laws, and (c) check the company's self-monitoring. Mine pit reclamation

is regulated by DEQ under §82-4-336 et seq., MCA, wherein DEQ is granted authority to require mine reclamation plans. Pit reclamation is considered in this SEIS in several places. Section 1.5.2 identifies pit reclamation as a significant mine reclamation issue. Partial backfill, complete backfill, and pit highwall reduction are considered in the various reclamation alternatives presented in Chapter 2.

Under §82-4-337(3), MCA, DEQ can require an operator to modify its operating permit when the previously adopted reclamation plan is impossible or impractical to implement, and when significant environmental problems are revealed by field inspection. This was the situation at the mines in 1992 that prompted the modification order issued by DEQ.

### **Montana Water Quality Act**

DEQ is responsible for administration of Title 75, Chapters 5 and 6, MCA, better known as the Montana Water Quality Act and the Public Water Supply Act, respectively. The Montana Water Quality Act (§75-5-402, MCA) provides the authority for DEQ to issue permits in Montana.

DEQ also has delegated authority from EPA to implement the National Pollutant Discharge Elimination System (NPDES) program in Montana under the Federal Clean Water Act pursuant to 40 CFR 123, and to implement the water quality standards pursuant to 40 CFR 131. Facilities which discharge to State waters must obtain a state discharge permit and comply with both State and Federal regulatory requirements as administered by DEQ. The Montana equivalent to the NPDES program is the MPDES (Montana Pollutant Discharge Elimination System) program. Final SEIS Appendix C contains the discharge permit requirements necessary for compliance with the Montana Water Quality Act.

### **1.4.2 Bureau of Land Management**

#### **Federal Land Policy and Management Act**

The United States mining laws authorize the development of locatable mineral resources on public lands that are open to operation under the Mining Law (30 USC §22). Section 302(b) of the Federal Land Policy and Management Act of 1976 (FLPMA) directs the Secretary of the Interior to, “by regulation, or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands.” (43 USC §1732(b)). In 1981 the BLM promulgated regulations under Title 43, Code of Federal Regulations, Part 3809, to implement the FLPMA requirements for mining activities on BLM-managed lands. These “3809” regulations detail the requirements for approving a Plan of Operations, or a significant modification to an already approved Plan of Operations, which is the action under consideration for the Zortman and Landusky Mines.

The prevention of *unnecessary or undue degradation* is the overall performance standard for mining and reclamation on BLM-managed lands. Unnecessary or undue degradation is not defined in FLPMA, but is defined in the BLM regulations at 43 CFR 3809.0-5(k) and briefly means:

(1) surface disturbance greater than what would normally result when activity is being accomplished by a prudent operator; (2) failure to take into consideration the effects of operations on other resources and land uses; (3) failure to initiate and complete reasonable mitigation measures, including reclamation; and (4) failure to comply with applicable environmental statutes and regulations. If it is determined that the action would not cause unnecessary or undue degradation, then BLM is required to approve a Plan of Operations for lands open to mineral entry. A determination as to the adequacy of a preferred reclamation plan in preventing unnecessary or undue degradation is made based upon the impacts identified during an environmental analysis.

In the existing situation, where the Zortman and Landusky Mines' operating companies are in bankruptcy, the BLM will issue to the bankruptcy trustee the approved modified reclamation plan that is needed to prevent unnecessary or undue degradation of the public lands (BLM cannot set reclamation requirements on private lands). BLM will oversee its implementation using the reclamation bonds and, if necessary, any other available funding.

On January 20, 2001, BLM promulgated new surface management regulations at 43 CFR subpart 3809. Under these new regulations, existing operations such as the Zortman and Landusky Mines are exempt from the new performance requirements and plan content requirements (§3809.400(a)). Other aspects of the new regulations do apply, but are generally not relevant since these mines have been through bankruptcy and are in the closure process.

### **National Environmental Policy Act**

Approval of modified reclamation plans is a federal action which must be analyzed under the National Environmental Policy Act (NEPA). While approval of the reclamation plan modifications by BLM is only applicable to BLM lands, NEPA requires that the environmental analysis address impacts of the BLM approval on both private and public lands.

### **Environmental Justice**

Executive Order 12898 on environmental justice requires that BLM, to the greatest extent practicable and permitted by law, identify and address disproportionately high adverse human health or environmental effects on minority and low income populations. Section 6-606 of the Order states that the Department of the Interior, which includes BLM, is responsible for coordinating government efforts to address environmental justice issues associated with Federally-recognized Indian Tribes.

### **Trust Responsibilities**

The BLM, like other agencies of the Federal Government, has a trust responsibility to protect Tribal trust resources and assets. In the case of reclamation at the Zortman and Landusky Mines, residents of the nearby Fort Belknap Indian Reservation have stated that the mines have impacted, and will continue to impact, Tribal trust resources. The affected resources often cited by Fort Belknap are the quality and quantity of the surface and ground water that originate in the mining areas and flow

onto the Reservation. Fort Belknap and BLM are presently involved in consultation discussions over reclamation measures that are necessary to protect trust resources. Some of the reclamation plans considered as alternatives in the SEIS were developed by Fort Belknap's technical specialists, in consultation with the agencies, to address Fort Belknap's concern with impacts to trust resources.

### **1.4.3 Participating/Coordinating Agencies**

#### **Environmental Protection Agency**

##### Clean Water Act

Montana DEQ will be issuing a MPDES permit under EPA-delegated authority pursuant to Section 402 of the Clean Water Act, which requires permits for point source discharges into navigable waters of the U.S. At the mine site, point sources include discharges from the current (or any new) treatment plants and all mine sources, i.e. toes of waste dumps, drains below leach pads, and surface discharge of groundwater discharge from the pits. EPA may review MPDES permits, comment, object and, if objections are not resolved, require their own permit. Two point sources discharge to streams above Tribal lands, including the Landusky pit groundwater discharge which surfaces into Swift Gulch, and the August #2 waste rock dump which discharges into King Creek. EPA's Indian policy recognizes a special government-to-government relationship with the Congressionally-recognized Fort Belknap government, and EPA is to assure that Tribal concerns and interests are considered whenever EPA actions are taken that may affect Indian Reservation environments.

##### EPA as a Party to the Consent Decree

EPA has a role under the Consent Decree entered in 1996 in U.S. and State of Montana v. Pegasus Gold Corporation and Zortman Mining, Inc., Civil Action No. 95-95-BLG-JDS, to comment on, approve or disapprove the proposed groundwater monitoring plan. It is expected that the groundwater monitoring plan would become the basis for establishing points of compliance under the MPDES permit for the mine discharges.

##### EPA NEPA Review

Under Section 309 of the Clean Air Act, EPA has the authority to comment on a lead agency's compliance with NEPA where EPA has jurisdiction by law or special expertise. EPA Region 8 was a cooperating agency with the joint lead agencies, BLM and Montana DEQ, for the previous EIS which considered modified reclamation plans and mine expansions. EPA is a participating agency for this SEIS. The Executive Order on environmental justice calls for Federal agencies to include social, economic and human health effects when considering impacts to low-income and minority communities, and for EPA to consider this in its review and comments on Environmental Impact Statements.

## **Fort Belknap Indian Community Council**

The Fort Belknap Indian Community Council (Fort Belknap) is the governing body of the Fort Belknap Indian Reservation, which is adjacent to the mines. While Fort Belknap does not have regulatory control over the mines, Fort Belknap is concerned with reclamation performance at the mine and the need to address impacts to Tribal trust resources. Fort Belknap has been participating in government-to-government consultation with the BLM, EPA and DEQ over development of reclamation plans for the mines. Fort Belknap has been assisted by hydrology and engineering consultants from the Center for Science in Public Participation. Some of the reclamation plans in the SEIS alternatives were primarily developed by Fort Belknap and their consultants.

## **Bureau of Indian Affairs**

The Bureau of Indian Affairs (BIA) is a commenting agency on the SEIS. A BIA office is located on the Fort Belknap Indian Reservation. Officials from BIA have occasionally participated in the technical working group meetings. Like BLM, the BIA has a trust responsibility to protect Tribal trust resources and assets.

## **1.5 ISSUES and CONCERNS**

Sections 1.5.1 and 1.5.2 describe the scoping process and the issues that have been identified for analysis in the SEIS. Section 1.5.3 describes the issues and concerns that are not addressed in the SEIS along with a brief rationale for their exclusion.

### **1.5.1 Scoping**

In accordance with Council on Environmental Quality (CEQ) regulations, the procedures for preparation of a supplemental EIS are the same as those followed to prepare the initial EIS, exclusive of scoping (40 CFR 1502.9(c)(4)). The reason for non-mandatory scoping on a supplement is that an agency determination to prepare a supplement involves a scoping-type process to identify significant new information or substantial changes in the proposed action (two of the triggers for preparing a supplement). By conducting this review and identifying what is triggering the need to prepare the supplement, the agency defines the issues to be analyzed. Conducting further scoping may be redundant and unnecessary.

BLM and DEQ conducted a review in early March 2000 to determine if a supplemental EIS was required. The review was based upon the assumption that one of the reclamation alternatives developed by the technical working group would be implemented. The review concluded that the alternatives developed by the technical working group (see Chapter 2) would likely constitute substantial changes from the reclamation proposed in the FEIS, and a supplemental EIS needed to be prepared. The review also identified issues which have been brought forward for consideration in the SEIS (BLM 2000).

In addition to the above evaluation, the agencies decided to conduct public scoping meetings to explain the reclamation alternatives developed by the technical working group, and to solicit additional suggestions on reclamation options or issues. Public scoping meetings were held in the communities of Lodgepole, Hays, and Landusky in mid-September 2000. Attendance numbered approximately 16, 19, and 16 people, respectively. Oral comments were taken and written comments were received through October.

As part of the scoping process, the agencies made a presentation to the Malta Chamber of Commerce on September 18 regarding the reclamation project, SEIS analysis, and the alternatives developed by the technical working group. Approximately 13 people attended this meeting.

### **1.5.2 Issues and Concerns Identified**

In most environmental impact analyses, it is the projected effects of an activity that create “issues.” In the case of reclaiming an existing disturbance, the issues already exist since the mining activity has already taken place. At the Zortman and Landusky Mines, the issues are created by the existing conditions and the projected effects of not reclaiming the sites or reclaiming them as initially proposed in 1998. Public and agency concerns with the existing conditions and potential impacts have therefore defined the reclamation issues. The following issues have been identified for analysis in the SEIS:

***Final Amounts of Mine Pit Backfill*** - There was a lot of discussion in the technical working group and during scoping about the appropriate amount of mine pit backfill. Both the benefits of mine pit backfill and the drawbacks have been raised as issues. Pit backfilling can be used to address surface drainage concerns, prevent exposure of acid generating highwalls, reduce visual impacts, and lessen the overall disturbance footprint. Some Fort Belknap members, and others, commented that only complete pit backfilling to the original topography would reclaim the impacts to traditional and cultural resources and restore water flow patterns. Other comments were that pit backfilling primarily for aesthetic purposes would consume reclamation resources which may be better spent elsewhere on the mine sites and would create additional impacts during its implementation, as well as increase the potential for groundwater contamination from the backfill.

***Relocation of Mine Waste Facilities*** - Connected with the pit backfill issue is the issue of impacts associated with the removal of mine waste facilities, such as waste rock dumps or spent ore from leach pads, and placing them as pit backfill. Removal of some of these waste facilities from problematic locations (such as near a drainage bottom) could eliminate a source of contamination. Relocation could be used to consolidate mine waste in a single location, thus reducing infrastructure costs for monitoring, capture, and treatment of impacted waters. Concern has also been identified about where relocated mine waste would be placed, and the increased environmental risk of moving mine waste from a watershed where capture of contaminated seepage had been implemented to another drainage that does not have significant water quality contamination, or where interception of contaminated groundwater would be more difficult.

***Drainage of the Mine Pits*** - Achieving free draining conditions of the mine pits was a priority reclamation objective in the 1996 EIS due to the potential adverse impacts associated with the infiltration of runoff through the mine pit floor or the creation of a pit lake. At the Landusky Mine, the 1996 EIS proposed to eliminate the potential for a pit lake by mining a notch at the south end of the pit complex to route surface drainage from the pit area to Montana Gulch. However, creating this drainage notch would expose additional sulfide minerals and increase the amount of highwall exposed at the site and would cost a significant portion of the reclamation bond. Creation of a pit lake at the Zortman Mine does not appear to be a significant issue due to the depth to groundwater. However, the pit configuration collects runoff which infiltrates the pit floor to the underlying sulfide minerals and reports to Ruby Gulch in a degraded condition.

***Reclamation Slope Regrading and Cover Design*** - Achieving a stable reclamation slope that will minimize infiltration and support revegetation is important to reclamation success. Impacts associated with performance of the reclamation covers are an issue. This includes impacts from infiltration of precipitation, slope erosion, failure of construction materials, and ability to support revegetation.

***Non-acid Generating Criteria*** - The impact of mine waste units such as spent ore heaps, waste dumps, or highwalls, depends upon their acid generating character and where they are placed. Establishment of criteria for potentially acid generating versus non-acid generating material is used to plan for water capture and treatment and to decide upon the appropriate reclamation cover. The criteria is also necessary to determine pretreatment requirements of the regraded surface prior to placement of soil and revegetation.

***Revegetation Measures*** - Completion of reclamation with the establishment of an appropriate plant cover is an important reclamation issue. A self-sustaining stand of revegetation is necessary to stabilize the reclaimed surface, limit infiltration of precipitation that may generate undesirable leachate, provide for wildlife habitat, and mitigate visual impacts.

***Water Management and Treatment*** - The sizing of water conveyance structures and pumpback facilities is important to protect water resources from the impacts of mine drainage. The location of the Zortman water treatment plant is an issue due to cost limitations under the existing water treatment bond. Relocation of the treatment plant may reduce costs and allow operations to be maintained within the existing bond amounts. Consideration of certain semi-passive water treatment systems may be appropriate in some drainages with low flow to further reduce costs and protect water quality.

***Protection of Water Quality (Groundwater and Surface Water)*** - Existing and historic mining operations have impacted water quality and aquatic habitat. The mines are presently discharging under interim effluent guidelines that may not be protective of the environment (i.e. they may not meet Montana water quality standards). Establishment of final effluent limits and points of compliance under an MPDES permit is an issue included in the analysis.

***Protection-Restoration of Water Quantity (Groundwater and Surface Water)*** - The issue is the amount of change in surface and groundwater flow patterns that have been created by the mines, especially to streams that flow to the north and enter the Fort Belknap Indian Reservation. Estimation of the original, pre-mining hydrologic balance, the disruption due to historic mining, and the disruption due to the more recent ZMI mining activity are issues for analysis. Development of reclamation measures to restore the hydrologic balance is a standard reclamation objective and is included in the analysis. A determination of whether past or present changes in the hydrologic balance violated individual or Tribal water rights is not included in the analysis (see Section 1.5.3).

***Land Application Disposal (LAD) of Heap Solution*** - Process solutions are currently managed through treatment and disposal at a land application area on Goslin Flats. Impacts from nitrate, sodium, and selenium in the applied water are presently the limiting factors for solution disposal. Development of the necessary pretreatment, application and monitoring program for land applied solutions is an issue.

***American Indian Traditional Use and Cultural Properties*** - Areas within the Little Rocky Mountains and specific sites near the Zortman and Landusky Mines are culturally and historically important to various North American Indian peoples. The existing mine disturbances have created impacts that affect the use of the mountains for traditional cultural practices. Development of reclamation measures that would make the mountains more conducive to traditional cultural practices has been identified as an issue.

***Employment and Economic Development*** - The Zortman and Landusky Mines employed a large number of workers during the years 1979 through 1996. This employment represented a significant percentage of the total workforce in the surrounding region. A concern to many people is the negative socioeconomic impact that mine closure has had upon mine workers and the area's economic base. This has created interest in the economic opportunities that might arise both from reclamation and from possible future mining. Specifically, both the short-term employment opportunities associated with the reclamation earthwork and the longer-term employment opportunities for site care and maintenance, as well as hiring preferences targeted towards Fort Belknap, are issues. A second concern raised was that the reclamation not preclude the potential for future mining and its associated economic benefits. Conversely, there is the desire by some commenters that the reclamation be extensive enough (i.e., involve large enough amounts of pit backfill) that future mining would be prevented from occurring. While reclamation is not determined by the need to either promote or inhibit potential future mining, the effect of reclamation on the mineral development potential is considered in the analysis.

### **1.5.3 Issues and Concerns Not Addressed**

Certain issues or concerns will not be addressed in the SEIS as they are not within the scope of the purpose and need for decisions regarding mine reclamation.

***Supplemental Funding Sources for Reclamation*** - It has been suggested that the SEIS should analyze potential sources of funding if the reclamation bond amounts are not adequate to implement the agencies' selected alternatives. While the relative cost and benefit of all the reclamation alternatives are disclosed in the SEIS, developing alternatives for *where* additional funding above the bond amounts could come from is beyond the scope of the analysis and the reclamation decisions before the agencies. If a reclamation alternative selected for implementation cannot be funded with the available reclamation bond, there are numerous options for additional funding that have varying degrees of feasibility depending upon the amount of money requested, time period in which it is needed, and the funding entity (grant, appropriation, agency budget, etc.). At present, the source of funds (if any) beyond those in the present reclamation bonds cannot be predicted with enough certainty that a funding scenario could even be developed for analysis. Nor would it have any utility in the impact analysis. The SEIS analysis needs to assume full implementation in order to evaluate the environmental consequences of each reclamation alternative. The funding source would not be a discriminating factor in the outcome of such an analysis.

***Effects of Mining on Water Rights*** - The question of the mines' impact on water rights has been raised by Fort Belknap and others. While changes in stream flows and water quantity are considered as part of mine reclamation, legal determinations as to the existence and validity of water rights and the effects of mining on such rights is beyond the scope of the environmental analysis. Since restoration of the hydrologic balance is one of the reclamation objectives, the analysis includes an evaluation of past changes in flow patterns. The results of this evaluation may be relevant to water rights proceedings at some time in the future. However, legal judgments regarding water rights are not part of the environmental analysis. Water rights determinations, impacts, and compensation would need to be settled under the applicable water rights laws and procedures.

***Reclamation of the Clay Pits and Exploration Roads*** - Some commenters inquired about reclamation of the clay pits and exploration roads. These facilities are not included in the mine operating permits or plans of operations, but were authorized under open cut contracts and notices filed with the State and BLM, respectively. They are held under separate reclamation bonds and have separate reclamation plans which are not going to be substantially changed from that described in their initial authorization. Therefore, the reclamation of the clay pits and exploration roads have been excluded as issues.

***Transfer of Lands to Fort Belknap*** - The Fort Belknap government is attempting to have some of the public lands in the Little Rocky Mountains transferred to the BIA to be held in trust for the benefit of Fort Belknap. The subject lands are generally referred to as the Grinnell lands, after the Grinnell Treaty where the Federal Government purchased these lands from the Reservation in 1895. These lands lie mostly to the north of the mining disturbance. Any land transfer would require a separate action, affects a broader area, and has its own distinct set of potential resource impacts that are independent of mine reclamation. This issue is not addressed in the SEIS.

***Closure of the Little Rocky Mountains to Future Mining*** - Some commenters requested that the area be closed indefinitely to future mining. The present long-term management plan for the Little

Rocky Mountains states that the area will be left open to operation of the Mining Law. If any mining activity was proposed in the future it would have to be reviewed and approved by BLM and DEQ. While the SEIS does consider the effect of the Zortman and Landusky Mines' reclamation on mineral development potential of the existing pits, analyzing the impact of any mining that may be proposed in the future is outside the scope of reviewing reclamation plans for the existing situation. In the future the BLM may or may not propose to withdraw the area from operation of the Mining Law. Even so, consideration of such a withdrawal is outside the immediate purpose of and need for action, which is to decide upon reclamation plans for the Zortman and Landusky Mines. Other processes such as an amendment of the Judith-Valley-Phillips Resource Management Plan would have to be conducted to consider such a long-term management change as withdrawing the Little Rocky Mountains from operation of the Mining Law. The management plan amendment process would take several years and is not dependent on any decisions related to mine reclamation.