Record of Decision
ROCK CREEK PROJECT

Visual Simulation of Tailings Paste Facility

Prepared By

U.S. Forest Service
Kootenai National Forest

June 2003

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Kootenai National Forest
1101 US Highway 2 West
Libby, MT 59923

June 27, 2003

2003 Record of Decision for the Rock Creek Project

Dear Reader:

This document is the Kootenai National Forest's (KNF) new 2003 Record of Decision (ROD) for the 2001 Final Environmental Impact Statement (FEIS) on Sterling Mining Company's Plan of Operations for the Rock Creek Project and the associated evaluation adit.

A joint ROD was issued by the KNF and the Montana Department of Environmental Quality (DEQ) in December 2001. However, as a result of the withdrawal of the United States Department of the Interior Fish and Wildlife Service's (FWS) Biological Opinion (BO) on the Rock Creek Project, the Kootenai subsequently withdrew their 2001 ROD because the Kootenai no longer had the documentation required by the Endangered Species Act (ESA) to make a decision. However, because DEQ's decision was and is independent of the FWS's BO, their 2001 decision remains in effect.

On May 9, 2003, the FWS issued a new BO; therefore, allowing the KNF to review applicable information to render a new ROD for the Rock Creek Project. This ROD of June 2003 summarizes my decision, rationale for the decision, and alternatives considered in reaching the decision. Additionally, this ROD documents the KNF's and DEQ's requirements that must be met by the project proponent (Sterling Mining Company) in order for mining permits and approvals to be granted at a future date.

My decision to select Alternative V, as modified in my decision, approves Sterling's Plan of Operation. My decision will result in ground disturbing activities encompassing approximately 140 acres of National Forest System (NFS) lands. Ground disturbing activities include road reconstruction/construction, mill, evaluation adit, and tailings facility construction, and if needed, ventilation adit construction.

This decision is the culmination of sixteen years of analysis, agency, Tribal and public participation. To date, approximately 6300 individuals, groups, organizations, Tribal entities, and agencies have provided comments and suggested resolution of project related concerns and issues. This input has allowed the KNF to develop a sound alternative for this proposal that allows the project to proceed, as required by law, while protecting the environment and addressing a majority of the publics' concerns and issues.

We wish to thank the participating agencies, Tribal Governments, and the public for their comments, input and reviews. If you have any questions, please contact the project coordinator, John McKay, Kootenai National Forest Supervisors Office at (406) 293-6211.

Sincerely,

Bob Castaneda

Bob Castaneda
Forest Supervisor
Kootenai National Forest

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LIST OF ACRONYMS AND ABBREVIATION

ac	acre		
AG	acid generating	IDEQ	Idaho Department of Environmental Quality
AIFRA	American Indian Religious Freedom Act	IDT	Interdisciplinary Team
ANILCA	Alaska National Interest Lands and Conservation Act	INFS	Inland Native Fish Strategy
		KNF	Kootenai National Forest
ARD	acid rock drainage	kV	kilovolt
ARM	Administrative Rules of Montana	LRMP	Land and Resource Management Plan (Forest Plan)
ASARCO	ASARCO Incorporated	MA	management area
BA	Biological Assessment	MCA	Montana Codes Annotated
BLM	US Bureau of Land Management	MEPA	Montana Environmental Policy Act
BMP	best management practices	mi	mile
BO	Biological Opinion	ML	metal leaching
CFR	Code of Federal Regulations	MMRA	Montana Metal Mine Reclamation Act
CMW	Cabinet Mountain Wilderness		
COE	US Army Corps of Engineers	MPDES	Montana Pollution Discharge Elimination System
cy	cubic yards		
dBA	decibels, A scale	NAG	non-acid generating
DEQ	Montana Department of Environmental Quality	NEPA	National Environmental Policy Act
DPS	distinct population segment	NFS	National Forest System
DSL	Montana Department of State Lands	non- ML	non-metal leaching
		PAG	potentially acid generating
E. O.	Presidential executive order	ROD	Record of Decision
EIS	environmental impact statement	ROW	right-of-way
EPA	Environmental Protection Agency	RPA	reasonable and prudent alternative
et seq.	and the following	RPM	reasonable and prudent measures
FDR	Forest Development Road		
FWS	United States Fish and Wildlife Service	Sterling	Sterling Mining Company
		TMDL	total daily maximum load
HB	House Bill	USC	United States Code
hwy	highway	USFS	United States Forest Service

RECORD OF DECISION
ROCK CREEK PROJECT

I. INTRODUCTION

This document is the Kootenai National Forest's (KNF) 2003 Record of Decision (ROD) for the Final Environmental Impact Statement (FEIS) on Sterling Mining Company's Plan of Operations for the Rock Creek Project and the associated evaluation adit. A joint ROD issued by the Kootenai National Forest and the Montana Department of Environmental Quality (DEQ) has previously been issued (Record of Decisions, Rock Creek Project, Montana Department of Environmental Quality and the U.S. Forest Service Kootenai National Forest, December 2001; hereinafter referenced as the 2001 ROD). However, as a result of the withdrawal of the United States Department of the Interior Fish and Wildlife Service's (FWS) Biological Opinion (BO) on the Rock Creek project, the Kootenai subsequently withdrew their decision for the project because the Kootenai no longer had the documentation required by the Endangered Species Act (ESA) to make a decision.

A new BO was issued by FWS on May 9, 2003; therefore, allowing the KNF to review applicable information to render a new ROD for the proposed plan. The 2001 ROD issued by DEQ and the KNF remains in effect for DEQ. Specifically, DEQ's decision was and is independent of the FWS's biological opinion and therefore was not withdrawn.

This ROD of June 2003 states my decision and rationale for the decision, and all alternatives considered in reaching the decision. It also includes a discussion of preferences among alternatives based on relevant factors, and how those factors were balanced by the agencies in reaching the decision. This ROD also documents KNF's requirements and DEQ's requirements (as listed in the 2001 ROD) that must be met by the project proponent (Sterling Mining Company) in order for mining permits to be issued by DEQ and approvals to proceed by KNF, to be granted at a future date.

In the early stages of the planning process, the KNF and DEQ determined that the project might significantly affect the quality of the human environment. As a result, these two agencies, as state and federal lead agencies, along with the U. S. Army Corps of Engineers (COE) as a cooperating agency, prepared an EIS pursuant to the National Environmental Policy Act of 1969 (NEPA) and the Montana Environmental Policy Act of 1971 (MEPA). A draft EIS was released in October 1995 and a supplemental draft EIS was released in January 1998. The supplemental EIS included a new alternative (Alternative V), additional baseline data for wildlife and threatened and endangered species, a revised Biological Assessment (BA) that included bull trout, a revised draft Montana Pollutant Discharge Elimination System (MPDES) permit, and a revised 404 showing. The FEIS was released on September 14, 2001 and the Notice of Availability (NOI) for the FEIS was published in the Federal Register on September 21, 2001.

The FEIS merges information and analyses from the draft EIS and the supplemental EIS. The FEIS includes responses to comments on the draft and supplemental EISs and incorporates changes based on those responses. The FEIS describes the proposed action and a number of alternatives to the proposed action. All action alternatives meet the purpose and need for the project. The purpose is to construct, operate, and reclaim all facilities necessary to mine, remove, and transport economically mineable minerals from the Rock Creek deposit. These metals are used for a variety of purposes, ranging from industrial and medical purposes to personal items such as jewelry. It also describes the potentially affected environment and discloses the potential environmental consequences of implementing the proposed action or alternatives to the proposed action. The FEIS is on file and available at the KNF Supervisor's offices in Libby, Montana, the Cabinet Ranger District office in Trout Creek, Montana, and

DEQ and COE offices in Helena, Montana, as well as numerous local libraries in the vicinity of the proposed project. The FEIS is located on the following web-sites: DEQ web page at *http://www.deq.state.mt.us/eis.htm.* KNF web-site: *http://www.fs.fed.us/r1/kootenai*.

The FEIS was prepared pursuant to the rules and regulations of the NEPA (40 CFR 1500-1508) and MEPA (ARM 17.4.601 through 17.4.725), the National Forest Management Act (36 CFR 219), Forest Service locatable mineral regulations (36 CFR 228, Subpart A), the 1897 Organic Administration Act (30 Stat. 11), the 1970 Mining and Mineral Policy Act (P.L. 91-631), the Montana Metal Mine Reclamation Act, (82-4-301 *et seq.,* MCA), the Montana Water Quality Act (75-5-101 *et seq.*, MCA), the Montana Clean Air Act (75-2-101 *et seq.*, MCA), and other applicable state and federal statutes.

My decision is made pursuant to the rules and regulations of 36 CFR 228 Subpart A and meets the requirements of the above mentioned state and federal laws as well as address the requirements of the 1872 Mining Law, (17 Stat. 91, the 1980 Alaska National Interest Lands and Conservation Act (94 Stat. 2457), the Wilderness Act of 1964, and the 1955 Multiple Use Mining Act (69 Stat. 368, as amended).

DEQ decisions (2001 ROD) were made pursuant to the rules and regulations of the Montana Metal Mine Reclamation Act (82-4-301 *et seq.,* MCA) for the exploration license and hard rock permit applications, the Montana Water Quality Act (75-5-101 *et seq.*, MCA) regarding the MPDES permit application, and the Montana Clean Air Act (75-2-101 *et seq.*, MCA) for the air quality permit application. More detailed information on DEQ's decision rational and compliance with these and other State related regulations can be found in the 2001 ROD.

The proposed action will affect both privately owned and National Forest System (NFS) lands within the Rock Creek drainage. Sterling owns 99 patented lode mining claims (1,686 acres within the Cabinet Mountain Wilderness (CMW) and 123 acres outside but adjacent to the CMW (Figure 2 page 6). Sterling has a patent only to the mineral estate within the CMW with the federal government retaining the surface estate. For the 123 acres of patented land outside the wilderness, Sterling owns the entire surface and mineral estate. Sterling also controls 189 unpatented lode mining claims and/or mill sites as of June 2001 and owns 754 acres of private land within the proposed project area. Unpatented mining claims are lands where title still rests in the United States, but the claimants may hold a real property interest. Forest Service decision authorities apply only to NFS lands and do not extend to private lands within or adjacent to the National Forest. The DEQ's authority applies to state, federal, and private lands inclusively.

II. PROJECT BACKGROUND

On May 6, 1987, ASARCO Incorporated (ASARCO), the original applicant, submitted to DEQ, formerly Montana Department of State Lands (DSL)[2], a Plan of Operations pursuant to a Hard Rock Operating Permit. The KNF received the same Plan of Operations and a request for approval for that plan on May 8, 1987. This multi-volume document was intended to meet the requirements of 36 CFR 228.4 for the USFS and 82-4-337(1)(d)(iii) and 75-1-201(1)(b), MCA, for DEQ. The permit application contains environmental baseline information and operation and reclamation plans. Descriptions of proposed mining and milling methods, engineering designs, surface facilities, waste disposal practices, erosion and pollution control systems, reclamation methods, and environmental monitoring procedures are included. The application was initially deemed complete by KNF and DSL on November 17, 1989. In July 1992,

[2]The Reclamation Division of the Department of State Lands was merged with portions of the Department of Natural Resources and Conservation and portions of the Department of Health and Environmental Services on July 1, 1995, to create the Department of Environmental Quality (DEQ).

ASARCO submitted an application to KNF and DSL for the development of an evaluation adit[3] for sampling the orebody and for exhaust ventilation during mining. DEQ determined the exploration license application to be complete on July 26, 1993. KNF determined the Plan of Operations for the evaluation adit to be a connected action and therefore included it in the Plan of Operations for the mine. DEQ determined that the Plan of Operations for the evaluation adit is a connected action for analysis purposes and made separate decisions for the exploration adit and the mine permit applications (2001 ROD).

Sterling Mining Company acquired ASARCO's Rock Creek property and unpatented mining claims on October 14, 1999. The hard rock permit application/plan of operations and the exploration application for the evaluation adit as well as the MPDES and air quality permit applications, and the application to the COE for a 404(b)(1) permit and KNF proposed Plan of Operations were then transferred to Sterling.

Sterling proposes to construct, operate, and reclaim all facilities including the evaluation adit, necessary to mine, remove, and transport economically mineable minerals from the Rock Creek deposit. The Rock Creek Mine will consist of an underground copper/silver mine and mill/concentrator complex in northwestern Montana with a mine life of approximately 30 to 37 years. The project is in Sanders County, Montana (Figure 1 page 5) and will encompass 1,560 acres of which 749 acres are private and 811 acres are National Forest lands. The combined potential area of disturbance will be 482 acres of which 140 acres will be on National Forest lands. The proposal and agency alternatives to the proposal include land within Sections 25 and 35 of T27N and R32W (the evaluation adit), and Sections 3, 10, 15, 21, 22, 27, 28, 32, and 33 T26N and R32W. The associated rail loadout facility has been analyzed to occur in Section 19 or 29, T26N and R32W. The Rock Creek ore deposit is located beneath and adjacent to the CMW in the Kaniksu National Forest. The mill and other facilities would also be primarily located within the Kaniksu National Forest in Sanders County. The Kootenai National Forest (KNF) administers the Kaniksu National Forest (within Montana).

In December 2000, the KNF received a final BO from the FWS stating the proposal could jeopardize grizzly bear, and adversely affect bull trout, which are listed under the Endangered Species Act. The FWS stipulated reasonable and prudent measures to minimize project effect and avoid jeopardizing the grizzly bear. The KNF and DEQ incorporated FWS's findings and requirements into the FEIS. The FEIS was issued in September 2001.

Various interest groups filed an appeal of the KNF's ROD. A suit was also filed against the FWS over the adequacy of the 2000 BO. FWS withdrew its BO in March 2002 to settle the litigation. Since the KNF's ROD was predicated on having a viable BO, the KNF's portion of the 2001 ROD was also withdrawn. The Montana DEQ's decisions in the 2001-ROD was unaffected the KNF's withdrawn ROD and the status of the BO. DEQ's approval and issuance of State permits remain current and are as described in its portion of the 2001-ROD document.

For the purposes of this ROD the term agencies refers to KNF and DEQ unless otherwise stated.

III. KNF DECISION SUMMARY

I the Kootenai National Forest Supervisor have decided to approve Sterling's Plan of Operations consistent with Alternative V of the FEIS, and as modified by this ROD. My decision is based on the review of the FEIS, project file information, review of public concerns received on this project and on

[3]The purpose of the evaluation adit is to evaluate the ore zones and structures, to obtain rock mechanics data, and to obtain a bulk ore sample for additional metallurgical testing.

how well the selected alternative meets the stated purpose and need, protects resources and addresses the publics concerns and is consistent with applicable State and Federal laws, plans and polices. Alternative V, as modified by this ROD, is the most environmentally preferred action alternative. It incorporates into the Plan of Operations modifications, mitigation, and monitoring plans that will avoid, reduce, minimize, or mitigate adverse environmental impacts, including those that are either significant or potentially significant, to a greater extent than any of the other action alternatives. Please see Attachment 1 to this ROD, which specifies the modifications or mitigation that can be required by each agency hereby required as part of this ROD.

Alternative V (see Figure 2 page 6) is fully described in Chapter 2 of the FEIS. This alternative is a modified version of the proposed plan of operations (Alternative II) and includes portions of Alternatives III and IV as described in the draft and supplemental EISs, and includes additional alternative specific agency-developed mitigation and monitoring plans. Additionally, I am incorporating changes, adding more detail to some mitigation or adding some new mitigation developed through consultation with other agencies and public comment since the FEIS was released.

The approved Plan of Operations consistent with Alternative V will be implemented in two phases. The first phase is the evaluation adit construction, development, and data collection. The second phase will be mine construction, operation and reclamation. The ROD approves a Plan of Operations consistent with Alternative V presented in Chapter 2 of the FEIS and as modified by the ROD of each agency.

Figure 1: Location Map

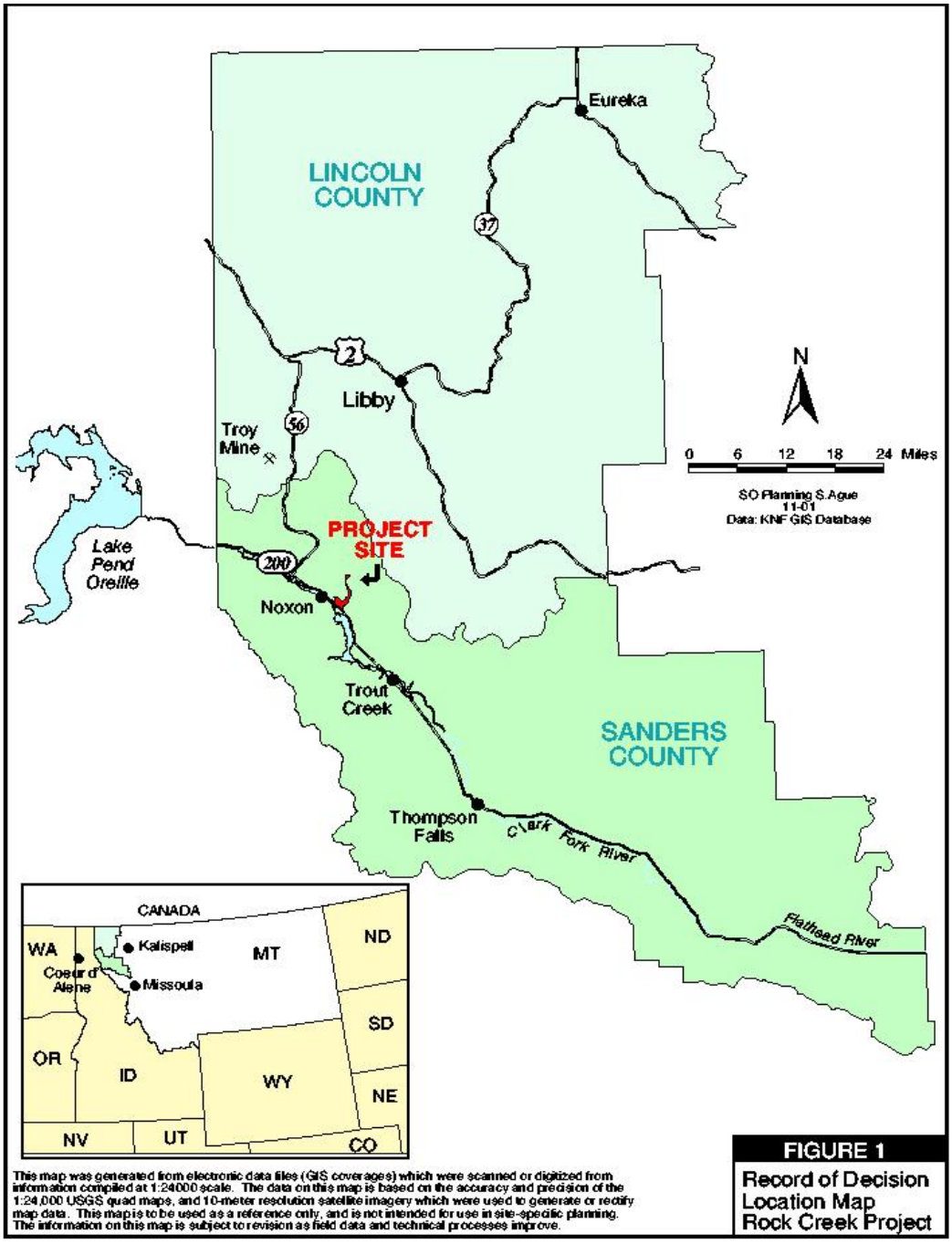
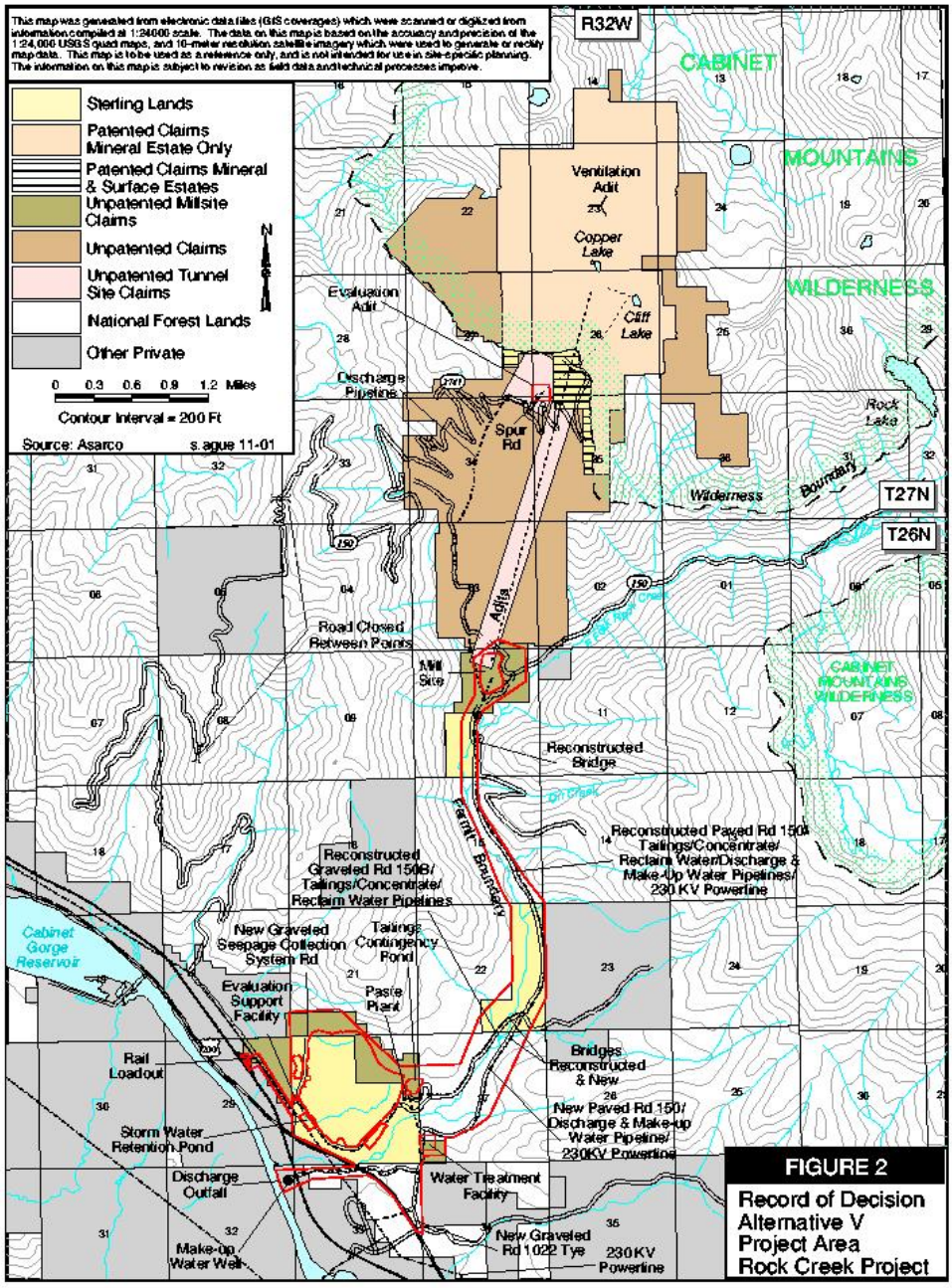


Figure 2: Alternative V Project Area Map



Under the first phase, as defined by the Plan of Operations, Sterling will construct an evaluation adit above the West Fork of Rock Creek off of FDR No. 2741 near the CMW to better understand the orebody and to gather additional data on ground water quality and flow, geochemical data, and rock mechanics data (Figure 2). Support facilities will be constructed in the vicinity of the proposed tailings paste facility to locate it away from Rock Creek. These facilities will include a temporary wastewater treatment facility to handle water from the evaluation adit prior to discharge to the Clark Fork River.

The following items need to be submitted by the company and approved by the agencies prior to the implementation of the first phase of the project (evaluation adit).

- Modify and/or update the Plan of Operations/exploration license application for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the reclamation portion of the Plan of Operations for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the monitoring portion of the Plan of Operations for the evaluation adit as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD; and
- Submit the reclamation performance bond for the evaluation adit.

In addition, Sterling must implement the following items related to the evaluation adit prior to the KNF authorizing them to proceed:

- The reasonable and prudent measures, terms, conditions and conservation measures and mitigation relative to the evaluation adit as required by the Biological Opinion (2003), the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

The second phase, as defined by the Plan of Operations and in Sterling's Application for Hard Rock Operating Permit, as modified by Alternative V and this ROD, will result in the construction and operation of an underground copper/silver mine and a flotation mill. At the end of the second phase the project will have surface disturbance on a total of 482 acres of which 140 will be on National Forest lands. Less than 2 percent of the permit area where the railroad loadout facility and part of the pipeline to the Clark Fork River will be located is privately owned by entities other than Sterling. The second phase includes relocation of the lower portion of Forest Development Road No. 150, (FDR No. 150); the installation of double walled pipelines with leak detection sensors for the tailings slurry concentrate, and water lines, and construction of a 230 kV power line, a tailings paste plant and storage facility, a wastewater treatment facility and an enclosed rail loadout facility (FEIS, pages 2-100, 2-118 through 2-133).

At the end of operations all remaining surface area disturbances and facilities will be reclaimed. Water treatment of mine water and tailings seepage will continue as long as necessary until each water source meets appropriate water quality standards or limits without treatment. Bonding will cover water treatment in perpetuity. The mine adits will either be plugged and sealed once the mine water meets ground water or surface water standards and allowed to fill up the mine workings or sealed primarily against unauthorized access and allowed to drain or be pumped down to the river in perpetuity. In the second case, the drainage will be either pumped from within the mine or captured near its source and treated, if necessary, and discharged to the Clark Fork River in perpetuity. The final decision on closure plans will depend upon what the hydrogeologic and hydrologic data indicates is most appropriate and the most appropriate technologies available for mine closure issues indicated by the data analysis. Sterling will have to provide detailed closure plans for the first closure option and preliminary plans for the second as well as reclamation plans for all wastewater treatment structures.

I have concluded that there is more than enough information in the project record to support approving this entire project (both the first and second phases) as outlined in this ROD. I fully expect, based on the analyses referenced in the FEIS, that additional information generated in the future from the evaluation adit will further support the FEIS analysis of effects. However, I realize there will be more information generated from the first phase activities. I want to minimize and manage the potential risk from this project as much as possible. Therefore, Sterling cannot implement the second phase of the project (facility construction, mine development, and mine operation) until the agencies review and confirm that the following items have been submitted and are acceptable. The agencies will then inform Sterling in writing that operations may proceed.

- A modified and/or updated Plan of Operations/hard rock permit application for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated reclamation portion of the Plan of Operations for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated monitoring portion of the Plan of Operations for the mine as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD;
- Submittal of the reclamation performance bond for mine construction and mine development;
- The agencies have conducted a technical panel review of pertinent data as outlined in the FEIS and ROD and Sterling has completed any additional studies the agencies deem necessary. This could include review and analysis of applicable evaluation adit data to determine if that information is consistent with the conclusions reached in the FEIS in regards to ground water flow and quality, geochemistry, and rock mechanics.
- Final facility design plans and mitigation to be implemented during mine construction if not submitted earlier.

In addition, Sterling must implement the following items related to the mine development and construction prior to the KNF authorizing Sterling to proceed:

- The reasonable and prudent measures, terms, conditions, conservation measures and mitigation relative to the construction and development phases of the project as established by the Biological Opinion (2003), the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

The agencies have determined the information collected to date is adequate and do not expect any new circumstances or different results from future monitoring data. If the agencies' review of the evaluation adit information leads them to determine there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, the agencies will conduct an appropriate level of supplemental analysis before Sterling will be allowed to proceed with constructing the mine, mill, and all other associated facilities.

One or more technical panels will review all final designs, and monitoring and mitigation plans, and data collected during evaluation adit construction. These panels will advise the agency decision makers and will consist of agency staff and other interested local, state (including Idaho), and federal (including EPA) agencies, and tribal governments. It is the responsibility of the two lead agencies (KNF and DEQ) to form the panels and administer its products. This does not obligate these outside agencies and governments to participate but ensures that they have the opportunity to provide input. All final designs and monitoring and sampling methods will use the most appropriate technologies (not necessarily the latest state-of-the-

art procedures) for development and implementation. Final approval on the advice of the panels will reside with the deciding officials of KNF and DEQ.

IV. SCOPE OF PROJECT

Sterling proposes to construct, operate, and reclaim all facilities necessary to mine, remove, and transport economically "mineable" minerals from the Rock Creek deposit. The Rock Creek Project consists of developing a proposed underground copper/silver mine and mill/concentrator complex in northwestern Montana with a mine life of approximately 31 to 37 years. The project has been proposed and will be operated by Sterling in Sanders County, Montana (Figure 2 page 6). The Rock Creek ore deposit is located beneath and adjacent to the Cabinet Mountains Wilderness (CMW) in the Kaniksu National Forest (FEIS, pages 3-16 ~19). The Kaniksu National Forest (within Montana) is administered by the Kootenai National Forest (KNF). The mill and other facilities would also be located within the Kaniksu National Forest in Sanders County. Access to the proposed project site would be via Montana Highway 200, then approximately 6 miles north on Rock Creek Road (Forest Development Road No. 150).

The project, as proposed by Sterling, is to be conducted in two phases: (1) the construction and development of the evaluation adit and (2) the development of the mine and construction of the mill facilities (FEIS, page 2-17). The evaluation adit would be driven for sampling the orebody and for air ventilation during mining. The mineralized zone under the CMW would be accessed through twin adits driven from outside the wilderness area. A fourth adit may be constructed for ventilation intake with a portal in the CMW if needed (FEIS, page 2-101). The underground mining operation would use a room-and-pillar mining method where pillars of ore are left in place to support the rock above the room (see Chapter 2 of the FEIS, Mine Plan). The milling process would use a conventional froth flotation process, producing a copper/silver-based concentrate that would be shipped to a smelter by rail. The ground rock material left after the copper and silver minerals are extracted is called "tailings;" tailings would be deposited in a tailings impoundment behind an embankment.

V. PURPOSE AND NEED OF THE DECISION

The purpose of my decision is to act on Sterling's request for approval to operate a mine, mill and auxiliary facilities on National Forest Lands (FEIS, pages 2-17 through 2-66). Sterling's request for approval of its proposed plan of operation is based on the following laws and actions and Forest Plan direction:

> ***The 1872 Mining Law*** gives U.S. citizens the right to explore, locate mining claims, make discoveries, patent claims, and develop mines on National Forests open to mineral entry.
>
> ***The 1897 Organic Act*** authorized the Forest Service to regulate mineral operations on National Forests and to develop mineral regulations at 36 CFR 228 Subpart A.
>
> ***The 1955 Multiple Use Mining Act*** affirmed that unpatented mining claims may be used for prospecting, mining or processing, and uses reasonably incident thereto.
>
> ***The 1964 Wilderness Act*** allowed mineral exploration and development under the 1872 Law to occur in wilderness to the same extent as prior to the 1964 Act until December 31, 1983, when the 1964 Act withdrew the CMW from mineral entry, subject to valid existing rights. This withdrawal meant the Forest Service had to confirm that valid rights existed before approving

activities after 1983. To establish valid rights, claimants must show a discovery of a valuable mineral deposit existed on each claim before the withdrawal date, and they must maintain that discovery. In 1985, the Forest Service concluded that ASARCO had established valid existing rights to the Rock Creek deposit.

The 1980 Alaska National Interest Lands Conservation Act *(ANILCA)* directed the Forest Service to provide access to non-federally owned land (which includes patented claims and private mineral estate) within the boundaries of National Forest System lands to provide landowners reasonable use and enjoyment of their property.

1987 Kootenai Forest Plan management direction is to encourage responsible development of mineral resources in a manner that recognizes National and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation (Forest Plan, page II-2, No. 11). The objective of the Forest Plan for mining activities is to encourage under the appropriate laws and regulations and according to the direction established by the plan (Forest Plan, page II-8, Locatables).

Forest Service authorities and decisions apply only to NFS lands and do not extend to private lands within or adjacent to the National Forest. The DEQ's authority applies to state, federal, and private lands inclusively.

On January 1, 1984, the CMW was withdrawn from mineral entry under provisions of the Wilderness Act, subject to valid existing rights. The Wilderness Act requires the Forest Service to ensure that valid rights exist prior to approving mineral activities inside a congressionally designated wilderness area. To establish valid existing rights, mining claimants must show they have made a discovery of a valuable mineral deposit on the claim(s) prior to the withdrawal date, and have maintained that discovery. In 1985, the KNF determined that ASARCO had established valid existing rights to the deposit. In 1989, the Bureau of Land Management (BLM) responded to ASARCO's patent application by issuing patents to 99 lode mining claims (1,686 acres within the CMW and 123 acres outside but adjacent to the CMW). ASARCO received a patent only to the minerals within the wilderness with the federal government retaining the surface rights. For those claims outside the wilderness, ASARCO received fee title (surface and mineral rights) (Sterling Mining Co. 2000). These patented mining claims contain the ore reserves Sterling has proposed to mine.

Sterling also controls 189 unpatented lode mining and mill site claims and/or tunnel site claims and owns 754 acres of fee land within the proposed project area (FEIS, page 2-20). Unpatented mining claims are lands where primary title still rests in the United States, but the claimants may hold a real property interest that could entitle them to such things as: to sell or transfer by deed or use of surface resources.

A majority of the proposed Rock Creek Project facilities and most of the ore deposit are on or under lands administered by KNF. The Organic Administration Act authorizes the Secretary of Agriculture to regulate occupancy and use of NFS lands for the protection and management of forest resources. Regulations for mining and reclamation activities on NFS lands are contained in 36 CFR Part 228, Subpart A (36 CFR 228A). These regulations require submittal and approval of a proposed plan of operations for mining related activities that could result in significant disturbance to surface resources. Forest Service Part 228, Subpart A, regulations apply to operations conducted under the U.S. mining laws as they affect surface resources on National Forest System lands under the jurisdiction of the Secretary of Agriculture. Operations are defined as all functions, work, and activities in conjunction with prospecting, exploration, development, mining or processing of mineral resources and all uses reasonably incident thereto, including roads and other means of access on lands subject to the regulations in this part,

regardless of whether said operations take place on or off mining claims [36 CFR 228.3(a)]. Regulations for special uses on NFS lands are contained in 36 CFR 251.

The need for my decision is to act on Sterling's legal right to develop the Rock Creek Mine. Sterling has determined that the Rock Creek deposit is a valuable mineral deposit containing copper and silver. The 1872 Mining Law gives Sterling the right to mine this deposit and remove the copper and silver subject to regulatory laws. Sterling's purpose is to make a profit from the mining and milling of copper and silver from the Rock Creek deposit. These metals are used for a variety of purposes, ranging from industrial and medical purposes to personal items, such as jewelry. This need meets the Forest Service's Minerals Program Policy as expressed in the Mining and Minerals Policy Act of 1970:

> "foster and encourage private enterprise in the development of economically sound and stable industries, and in the orderly and economic development of domestic resources to help assure satisfaction of industrial, security, and environmental needs."

VI. PUBLIC, AGENCY AND AMERICAN INDIAN PARTICIPATION

Public participation has and continues to play an important role in making decisions regarding this project. There were four stages of public participation that led to this Record of Decision. The first stage was the initial scoping that was conducted to identify issues and develop key mitigation and monitoring measures. The second stage consisted of receiving and responding to public comment received during the official public comment period on the draft and supplemental EISs. The third stage consisted of reviewing comments and input received from the public, other agencies and tribal representatives. The fourth stage was a period for review of public, agency and tribal input after release of the FEIS.

Opportunity for public involvement began when scoping was initiated on Sterling's proposal. A second scoping period was held for the evaluation adit when it was incorporated into the project. Additional scoping was conducted for road closure issues in the alternative development.

Table 1 (page 12) lists the public meetings, notices, and news releases that invited comment or provided information updates on the EIS process. Meetings and hearings were held to provide information and receive comment on the draft EIS, supplemental EIS, and the draft MPDES permit. Notification of comment periods, open houses, hearings, and meetings were published or broadcast in numerous papers and television/radio stations between Missoula, Spokane, and Kalispell. Notices of Availability and copies of the draft and supplement were mailed to interested individuals and organizations. Notices of Availability were published in the Federal Register. The FEIS, pages 1-24-26, 2-1 through 2-4 and Volume III and IV, Response to Public Comments provides additional information concerning public, tribal and agency involvement.

In addition to holding public meetings, the agencies hosted field trips for the interdisciplinary team (IDT) and meetings to discuss and resolve issues and concerns for alternative development and FEIS completion. These meetings, which were open to the public included American Indian representatives, environmental groups and agencies with oversight responsibilities. Individual meetings for information exchange were held with each American Indian tribe that had traditional land use or Treaty Rights that could be impacted as a result of implementing the project. Table 2 lists the KNF's meetings with American Indian representatives.

Approximately 6,300 commentors responded to the draft EIS and/or draft MPDES permit and to the supplemental EIS. The public's comments and the agencies' responses were grouped into 16 similar

categories: geology, soils and reclamation, hydrology, biodiversity (vegetation, wildlife, noxious weeds), threatened and endangered species, aquatics/fisheries, Forest Plan, NEPA/MEPA, transportation, recreation, scenic resources, cultural resources (including American Indian rights), air quality/climate, sound, socioeconomic, and miscellaneous topics. The responses to these 16 categories of comments are included in Volumes III and IV of the FEIS.

Public participation does not end with the permitting of this mine. The public has the right to review permit files and monitoring reports at any time. If a person or organization believes there is an unreported violation or potential for environmental harm, that person has the right to file a complaint with the agencies and expect it to be investigated.

The following table provides a summary of public meetings, notices and announcements. Additional information is documented in the project record.

Table 1. Public Meetings, Notices, Announcements on the Proposed Rock Creek Project

Date	Meetings, Notices and Announcements
May 26, 1987	Public information meeting held on ASARCO's application in Noxon, Montana
January 12, 1988	Notice of Intent of the Proposed Action and preparation of an EIS published in the Federal Register
January 27, 1988	Public scoping meeting on ASARCO's application at Noxon, Montana
March 22, 1990	Public meeting on ASARCO's petition to amend ambient water quality at Noxon, Montana
May 27, 1993	Revised Notice of Intents of the Proposed Action and inclusion of the evaluation adit in the preparation of an EIS published in the Federal Register
June 16, 1993	Public scoping meeting in Noxon, Montana
June 28, 1993	Public scoping meeting in Sandpoint, Idaho
October 6, 1995	Notice of Availability of Draft EIS published in Federal Register
October 5, 1995 to December 5, 1995	Public comment period on draft EIS
November 14, 1995	Open house and public hearing on draft EIS in Noxon, Montana
November 15, 1995	Open house and public hearing on draft EIS in Sandpoint, Idaho
February 20, 1996 to April 22, 1996	Public comment period on draft MPDES permit and water-quality related portions of draft EIS
April 8, 1996	Public meeting on draft MPDES permit in Noxon, Montana
April 9, 1996	Public hearing on draft MPDES permit in Noxon, Montana
April 10, 1996	Public meeting on draft MPDES permit in Sandpoint, Idaho
April 11, 1996	Public hearing on draft MPDES permit in Sandpoint, Idaho
April 22, 1997	Public town meeting in Sandpoint, Idaho, to discuss new alternatives in supplemental EIS
April 23, 1997	Public town meeting in Noxon, Montana, to discuss new alternatives in supplemental EIS

Date	Meetings, Notices and Announcements
August 15, 1997	Notice of Intent to Prepare Supplement to the Draft EIS published in Federal Register
January 9, 1998	Notice of Availability of Draft Supplemental EIS published in Federal Register
January 9, 1998 to March 11, 1998	Public comment period on supplemental draft EIS and revised MPDES permit
February 10, 1998	Open house and public hearing on supplemental draft EIS and revised MPDES permit in Missoula, Montana
February 11, 1998	Open house and public hearing on supplemental draft EIS and revised MPDES permit in Sandpoint, Idaho
February 12, 1998	Open house and public hearing on supplemental draft EIS and revised MPDES permit in Noxon, Montana
March 13, 1998	Notice of Availability to Extend the Comment Period to April 10 published in the Federal Register
September 11-28, 1998	Public input solicited on possible changes in proposed road closures, public comment period provided
November 10, 1999	Sterling Mining Company hosts Noxon public meeting
April 1, 2000	Public input solicited on what version and preferred delivery method for final EIS
September 1, 2001	Sanders County Commissioners Briefing
September 21, 2001	Notice of Availability of Final EIS published in Federal Register
December 27, 2001	Legal Ads Published for Record of Decisions
March 27, 2002	Withdrawal of Biological Opinion by US Fish and Wildlife Service (FWS)
March 29, 2002	Record of Decision withdrawn by Kootenai National Forest
May 7, 2003	Biological Opinion signed by FWS

The following table displays a summary of primary "communiqué" between the Kootenai National Forest and various tribal entities. "Communiqué" includes meetings, conference calls, phone calls and letters. Specifically, four tribes were consulted prior to and throughout the planning process for this project. Additionally, the Kootenai National Forest/Confederated Salish and Kootenai Tribal Liaison (Loraine Caye) has been involved. Please see the FEIS on pages 3-145, 4-226-4-280, Table 2 (page 14) of this ROD and the discussion on KNF compliance with the various laws associated with Tribal responsibility on page 72 of this ROD.

Table 2: Tribal Involvement Summary

Name of Tribe	Date of Communiqué
Confederated Salish & Kootenai Tribes	12-12-88
Confederated Salish & Kootenai Tribes	12-12-88
Kootenai Tribe of Idaho	12-14-90
Confederated Salish & Kootenai Tribes	6-24-94
Confederated Salish & Kootenai Tribes	7-7-94
Confederated Salish & Kootenai Tribes	12-1-95
Coeur d'Alene Tribe	1-4-96
Coeur d'Alene Tribe	3-1-96
Kalispel Tribe	3-13-96
Kootenai Tribe of Idaho	4-16-96
Coeur d'Alene Tribe	2-4-96
Kootenai Tribe of Idaho	5-29-96
Confederated Salish & Kootenai Tribes	6-7-96
Coeur d'Alene Tribe	7-12-96
Coeur d'Alene Tribe	5-9-97
Confederated Salish & Kootenai Tribes	2-10-98
Confederated Salish & Kootenai Tribes	2-13-98
Kootenai Tribe of Idaho	2-20-98
Confederated Salish & Kootenai Tribes	6-3-98
Confederated Salish & Kootenai Tribes	9-21-98
Confederated Salish & Kootenai Tribes	10-98
Confederated Salish & Kootenai Tribes	10-1-98
Confederated Salish & Kootenai Tribes	10-6-98
Kootenai Tribe of Idaho	1-24-00
Kootenai Tribe of Idaho	10-17-00
Kootenai Tribe of Idaho	1-8-01
Kalispel Tribe	1-26-01
Coeur d'Alene Tribe	1-26-01
Kootenai Tribe of Idaho	1-26-01
Kootenai Tribe of Idaho	1-29-01
Confederated Salish & Kootenai Tribes	1-29-01
Kootenai Tribe of Idaho	1-30-01
Kootenai Tribe of Idaho	2-1-01
Confederated Salish & Kootenai Tribes	2-8-01

Name of Tribe	Date of Communiqué
Kootenai Tribe of Idaho	3-8-01
Kalispel Tribe	3-13-01
Kootenai Tribe of Idaho	3-13-01
Coeur d'Alene Tribe	3-13-01
Confederated Salish & Kootenai Tribes	3-13-01
Kootenai Tribe of Idaho	3-28-01
Kootenai Tribe of Idaho	5-10-01
Confederated Salish & Kootenai Tribes	5-10-01
Coeur d'Alene Tribe	5-10-01
Kalispel Tribe	5-10-01
Kootenai Tribe of Idaho	6-6-01
Coeur d'Alene Tribe	6-7-01
Confederated Salish & Kootenai Tribes	6-7-01
Kalispel Tribe	6-7-01
Kootenai Tribe of Idaho	6-7-01
Confederated Salish & Kootenai Tribes	6-8-01
Confederated Salish & Kootenai Tribes	6-13-01
Confederated Salish & Kootenai Tribes	7-3-01
Kootenai Tribe of Idaho	7-3-01
Coeur d'Alene Tribe	9-18-01
Confederated Salish & Kootenai Tribes	9-18-01
Kootenai Tribe of Idaho	9-18-01
Kalispel Tribe	9-18-01
Coeur d'Alene Tribe	12-12-01
Confederated Salish & Kootenai Tribes	12-12-01
Kootenai Tribe of Idaho	12-12-01
Kalispel Tribe	12-12-01
Coeur d'Alene Tribe	1-11-02
Confederated Salish & Kootenai Tribes	1-11-02
Kootenai Tribe of Idaho	1-11-02
Kalispel Tribe	1-11-02
Coeur d'Alene Tribe	5-21-03
Confederated Salish & Kootenai Tribes	5-21-03
Kootenai Tribe of Idaho	5-21-03
Kalispel Tribe	5-21-03

Other Federal Agencies Having Permit or Review Authority – Responsibility and Involvement Summary

U.S. Fish and Wildlife (FWS)

FWS has responsibilities under the Fish and Wildlife Coordination Act (1934), Endangered Species Act (1973), and Bald Eagle Protection Act (1940). Responsibilities under the Fish and Wildlife Coordination Act require federal agencies issuing permits (i.e. Corps of Engineers ' 404 Permit) to consult with the FWS to prevent the loss of or damage to fish and wildlife resources where waters of any stream or other body of water are proposed...to be impounded, diverted...or otherwise controlled or modified. The Forest Service must prepare a biological assessment to comply with the Endangered Species Act. A biological assessment evaluates potential effects on threatened and endangered species that may be present in the project area. If the Forest Service determines that the project will require formal consultation because of adverse affects to listed species, the FWS will render a Biological Opinion (BO). That opinion will state whether, in the view of FWS, the action is likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or modification of critical habitat. If FWS determines that the preferred alternative would jeopardize the continued existence of a species, it must offer a reasonable and prudent alternative that would, if implemented, preclude jeopardy. The FWS has 135 days from initiation of formal consultation to render a BO. Formal consultation for both biological assessments developed for bull trout and terrestrial species relative to the proposed action was initiated on July 31, 1998 with the KNF (see Appendix B, FEIS). The FWS issued a BO on December 2000 and it is included in Appendix E of the FEIS. This BO was withdrawn for further consideration in March of 2002. The FWS issued a new BO for this project on May 9, 2003 (FWS, 2003).

Through the Section 7 Consultation process of the Endangered Species Act, the KNF assisted in the development of the mitigation for the Threatened and Endangered Mitigation Plan (Attachment 4) and reasonable and prudent measures, term, conditions and conservation measures as outlined in the BO.

U.S. Army Corps of Engineers (COE)

Tailings disposal and other mine facility construction activities affecting wetlands would constitute the disposal of dredged or fill materials into wetlands and non-wetland waters of the U.S. and would require a "404 permit" under Section 404 of the federal Clean Water Act. COE is the permitting authority for the discharge of dredged or fill material into the wetlands and non-wetland waters of the U.S. (see FEIS Chapter 3, Wetlands and Non-Wetland Waters of the U.S.). ASARCO submitted a 404 permit application (see the Agencies original evaluation in Appendix C in the draft EIS) to COE (ASARCO, Incorporated 1993) for its proposed project and has submitted an updated application and wetland mitigation plan for the Agencies' preferred alternative identified in the supplemental and FEIS. The updated 404(b)(1) evaluation is found in Appendix F of the FEIS.

COE and EPA have developed guidelines to evaluate impacts from dredged or fill disposal activities on wetlands and non-wetland waters of the U.S. (33 CFR Part 320 and 40 CFR Part 230) and to determine compliance with Section 404 of the Clean Water Act. The guidelines require analysis of "practicable" alternatives that would not require disposal of dredged or fill material in wetlands and non-wetland waters of the U.S., or that would result in less environmental damage. Under the guidelines, the term "practicable" means "available or capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The practicable alternative analysis is provided in Section 2.1.1 of the Section 404(b)(1) Showing (Appendix F of the FEIS). COE representatives attended the IDT meetings and supplied comment on the draft, supplement and FEIS. KNF also worked independently with COE in the development of the Wetland Mitigation Plan (FEIS,

Appendix L). COE supplied comments to the draft, supplement and FEIS (FEIS, Response to Comments, COE).

U.S. Environmental Protection Agency (EPA)

EPA has oversight responsibility for federal Clean Water Act programs delegated to and administered by DEQ. EPA may also intervene to resolve interstate disputes where discharges of pollutants in an upstream state may affect water quality in a downstream state. EPA also reviews 404 dredge and fill permit applications and provides comments to COE. EPA has veto authority under the Federal Clean Water Act for decisions made by COE on 404 permit applications. EPA also has responsibilities under NEPA and the Federal Clean Air Act to cooperate in the preparation of EISs and to review draft EISs and federal actions potentially affecting the quality of the environment. EPA advises the lead agencies on the preparation of an EIS. EPA also evaluates the adequacy of information in the EIS, the overall environmental impact of the proposed action, and various alternatives. EPA's comment letters are contained in Volume 3 of the FEIS. EPA rated the draft EIS as EO-2 meaning Environmental Objections - Insufficient Information (EPA 1995) and the supplemental EIS as EC-2 meaning Environmental Concerns - Insufficient Information (EPA 1998).

EPA representatives attended the IDT meetings and supplied verbal and written comments to the draft, supplement and FEIS. A more complete record of involvement with the EPA on this project can be obtained in the Response to Comment Section of the FEIS under US EPA. And in KNF's project file for this project.

Other State and Local Agencies Having Permit or Review Authority

Montana Department Fish, Wildlife and Parks (MDFWP)

As the lead agency for management of fisheries resources in Montana, MDFWP also administers the use, enjoyment, and scientific study of fish. MDFWP's approval and designation of a licensed collector as field supervisor would be required for monitoring, mitigation, and transplanting of fish within the project area. MDFWP includes the management of wildlife and the administration of State parks. MDFWP supplied comments on the draft, supplement EIS (FEIS Response to Comments, MDFWP) MDFWP representatives also attended IDT meeting conducted for the development of the EIS.

Green Mountain Conservation District

Any mining disturbance occurring within the normal high water level of streams would require the approval of the Green Mountain Conservation District. This approval would constitute a "310 permit" under the Natural Streambed and Land Preservation Act (75-7-101 et seq., MCA). Reconstruction of road drainage structures, habitat improvements, new stream crossings, and creek diversions are examples of activities needing a 310 permit. Prior to granting approval, the District would consult with KNF and MDFWP. MDFWP would make a determination if a 3A waiver from DEQ would be required in conjunction with the 310 permit.

Montana Department of Natural Resources and Conservation (DNRC) formerly DSL

DNRC administers the Montana Water Use Act (85-2-101 et seq., MCA). A water rights permit is required by the Montana Water Use Act for any surface water diversion over 35 gallons per minute (gpm) or a ground water withdrawal exceeding 100 gpm. Because Sterling proposes to pump water from the Clark Fork alluvium, a water rights permit would be required.

State Historic Preservation Office (SHPO)

Compliance with federal cultural resource protection laws is required because portions of the proposed project occur on NFS lands. Actions that are permitted, approved, or initiated by the Forest Service and that may affect cultural resources must comply with provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and as implemented by federal guidelines 36 CFR 800. Section 106 of the NHPA requires a federal agency to take into account the effects of the agency's undertaking on properties listed on, or eligible for listing on, the National Register of Historic Places (NRHP).

Before any federal undertaking begins, cultural resources eligible for listing on the NRHP must be identified and documented. Cultural resources recorded in the project area are evaluated in consultation with State Historic Preservation Office (SHPO) or the Federal Advisory Council on Historic Preservation (ACHP). Agreements reached between the Forest Service and the consulting parties on eligibility constitute a consensus, allowing the compliance process to proceed. If sites do not meet the criteria of eligibility for the NRHP, no further consideration of cultural resources is necessary and the project may proceed.

If a site meets any of these criteria, the Forest Service is required to determine the effect of the proposed action on the site. Once consulting parties agree on mitigation measures for eligible properties affected and the conditions or stipulations have been met, the project may proceed. During mine construction and operation, the Agencies would oversee compliance with historic preservation and monitoring plans.

Eight historic sites were documented during the cultural resources investigations. All of these properties were determined to be ineligible for listing on the National Register of Historic Places by consensus of the KNF and Montana State Historic Preservation Office.

I have determined that KNF has met the obligation of SHPO.

Montana Department of Transportation (MDT)

MDT must review requests for an approach road (60-2-201, MCA). This code lists the criteria required to ensure a reasonably safe approach road for connection with the state highway system. The MDT was consulted during the development of the draft and Supplement to the Draft EIS.

Hard Rock Mining Impact Board/Sanders County

In 1981, the Montana legislature enacted the Hard Rock Mining Impact Act (90-6-301 et seq., MCA) to assist local governments in handling financial impacts caused by large-scale mineral development projects. The legislature recognized that 1) new mineral development projects may result in the need for local governments to provide additional services and facilities causing a fiscal burden for local taxpayers, before mine-related revenues become available, and 2) some local government units may lack jurisdiction to tax a new development. Therefore, the Hard Rock Mining Impact Board (part of the Montana Department of Commerce) oversees an established process for identifying and mitigating fiscal impacts to local governments. The Impact Plan process is described in 90-6-307, MCA. The Board also acts as "referee" in disputes between local governments and project developers.

A public hearing on the impact plan was held on September 22, 1997, in Sanders County where fiscal impacts are forecasted to be the most costly. Sanders County is the lead local governing body responsible for reviewing and commenting on the applicant's Hard Rock Mining Impact Plan for the Rock Creek Project. However, Lincoln County also reviewed and commented on the plan. An impact plan (ASARCO Incorporated 1997a) has been agreed to by the local governments.

The operating permit issued by DEQ is not valid until an impact mitigation plan has been approved by the Hard Rock Mining Impact Board. Sterling's impact mitigation plan identifies possible increased public sector costs associated with major mineral development actions. It also contains commitments to prepay taxes and make grants according to a specified time schedule and to accommodate identified capital and net operating costs to local government units that result from project development.

Sanders County Weed Board

The weed board administers the County Noxious Weed Control Act (7-22-2101 through 2153, MCA) for any land-disturbing activities within their jurisdiction. Sterling would be required to submit a weed management plan to Sanders County Weed Board for review and approval.

Avista Corporation

Avista owns lands on which Sterling proposes to construct a discharge water line and makeup water well for the proposed Rock Creek Project. These lands are located within the Federal Energy Regulator Commission (FERC) project boundary for the Cabinet Gorge Hydroelectric Development. Sterling would need to obtain permission from Avista for an easement for these facilities. The standard land use article in Avista's FERC license for the Clark Fork Project requires that all necessary federal and state water quality certification or permits have been obtained at or prior to approval (FERC 2000). When Sterling requests access across project lands for the purpose of installing any outfall or discharge facility for the proposed Rock Creek Project, Avista would provide timely notice of this request to the parties to the Clark Fork Settlement Agreement and to FERC. Following consultation with interested parties, Avista would make a decision regarding the proposed easement.

VII. ISSUES CONSIDERED AND ADDRESSED

The agencies used issues identified from the public, agency, and Tribal representatives to develop and evaluate the effects of the alternatives. Eight issues, defined as indicators of potentially significant effects, emerged from the scoping process and Agencies' discussions. Issues generated internally and externally, focused on effects on quantity and quality of surface and ground water, tailings impoundment/paste facility stability, effects to Threatened and Endangered Species (primarily bull trout and grizzly bear), and visual impacts of the tailings storage facility. The effects have the potential to be adverse or beneficial, to be severe or long lasting, to affect a large area, or to occur frequently when a resource's quantity, quality, fragility, or uniqueness are considered. The description of each sub-issue is provided below and does not represent a conclusion about the effects of the project.

After each group of sub-issues is a brief description of how the issue was addressed by Alternative V. Detail on the environmental consequences of implementing Alternative V on resources related to these issues can be found in Chapter 4 of the FEIS.

A. ISSUES CONSIDERED IN FEIS

Issue 1: Effects on quantity and quality of Montana and Idaho surface and ground water resources

Issue 1 was divided into several sub-issues to cover the range of concerns identified during scoping and the various EIS reviews. These include the following items:

a. Discharges and activities associated with the Rock Creek Project may change the ambient (existing) surface water quality of Rock Creek, the Clark Fork River, and Lake Pend Oreille, and ground water quality.
b. Seepage from the tailings impoundment/paste facility may alter ambient ground and surface water quality.
c. The proposed water withdrawals and diversions may affect existing water users.
d. Seepage into underground mine workings may affect water levels in wilderness lakes, wetlands and flow rates of springs.
e. Subsidence of mine workings may affect wilderness lakes, wetlands, and streams.
f. Water from the underground mine reservoir could potentially migrate from the reservoir through fractured faults and joints and may alter down-gradient ambient ground and surface water quality.

Under the preferred alternative, Alternative V, the aspects of Issue 1 are addressed through numerous modifications, mitigation, and monitoring plans to reduce, minimize, avoid, or mitigate impacts to the quality and quantity of ground waters and potentially affected surface waters in Montana and surface waters in Idaho. The Water Resource Monitoring Plan (revised Appendix K, Attachment 2) establishes the criteria for monitoring of these resources and the MPDES permit (Appendix D in the FEIS) addresses the impacts and establishes the limits associated with discharges to surface waters and to ground water beneath the tailings paste facility. The requirement of a tailings paste facility reduces the amount of seepage into ground water and reduces the potential for tailings to reach surface waters from a catastrophic failure of the facility. Impacts to wilderness lakes, springs, and seeps are minimized with underground buffer zones, rock mechanics monitoring, and monitoring of water quantity and quality in the mine and on the surface. The FEIS fully discloses the potential impacts and these issues concerning water quality and quantity (FEIS, pages 4-58, 4-63 -112).

I have determined based on the review of the project file record, FEIS and MPDES permit that issues a through f above have been adequately addressed through the implementation of Alternative V and as modified by this ROD.

Issue 2: Effects on fish and wildlife and their habitats and current and proposed threatened and endangered species

Issue 2 was divided into several sub-issues to cover the range of concerns identified during scoping and the various EIS reviews. These include the following items:

a. The proposed mining activities and mining support activities may adversely affect grizzly bear (threatened species) because of direct habitat loss, displacement, disruption of travel routes, and increased mortality.
b. The proposed mining activity and mining support activities may adversely affect big game because of habitat loss or degradation, displacement, disruption of travel routes, and increased mortality risk.
c. The proposed mining activities and mining support activities may affect neotropical migrant birds from habitat change, loss, or degradation and displacement and/or replacement of species using the area.
d. The proposed mining activities and mining support activities may adversely affect mountain goats because of habitat loss or degradation, displacement, disruption of travel routes, and increased mortality risk.
e. Disturbance from the proposed mining activities may affect other threatened and endangered or proposed species (bald eagle, lynx, and gray wolf are currently listed as threatened species) currently using the area. Threatened and endangered species may be subject to adverse habitat modification as well as to an increased mortality risk.

f. The proposed mining and support activities may adversely affect sensitive animal species (harlequin duck, fisher, wolverine, Coeur d'Alene salamander, northern bog lemming, Townsend's big-eared bat, black-backed woodpecker, flammulated owl, northern goshawk, peregrine falcon, northern leopard frog, and boreal toad) and Forest Service management indicator species (mountain goat, elk, white-tailed deer, and pileated woodpeckers) due to habitat loss or degradation, displacement, disruption of travel routes, and increased mortality.
g. The proposed mining and support activities may affect threatened or sensitive fish species (bull trout and westslope cutthroat, respectively) and/or those proposed for listing as threatened. The effects on these species could include habitat loss or degradation and increased mortality risk.

Impacts to fish and wildlife and their habitats and current and proposed threatened and endangered species under Alternative V are identified in the appropriate subsections of Environmental Consequences Chapter 4 FEIS (Aquatics/Fisheries, Biodiversity, Threatened and Endangered Species) and in the project record. Through the development of the FEIS, a Biological Assessment was completed by KNF. A Biological Opinion was issued by the U. S. Fish and Wildlife Service that outlined a reasonable and prudent alternative, terms and conditions to reduce, minimize, avoid, or mitigate impacts to threatened and endangered species and their habitat. The Wildlife Monitoring Plan (revised Appendix K in Attachment 2) outlines the criteria for the monitoring of neotropical birds, mountain goats and sensitive animal species including monitoring of road closures. The Threatened and Endangered Species Monitoring Plan (revised Appendix K in this ROD) outlines the elements connected to the mitigation as listed in the Biological Assessment of the FEIS. The Aquatic/Fisheries Monitoring Plan outlines the criteria for the monitoring of fish, periphyton, and macroinvertebrates, and includes a requirement for additional preconstruction baseline studies. A sediment source reduction plan to reduce sediment by 400 tons/year will offset construction-related sediment increases and may result in a slight improvement in the amount of deposited sediment in Rock Creek. Busing of employees from the wastewater treatment plant to the mill and the piping of ore concentrate to the rail loadout facility reduces traffic levels from what would have occurred under the proposed alternative. This reduction in traffic minimizes impacts to wildlife including game species and harlequin ducks.

I have determined through the review of the FEIS, BA, and BO that this issue is addressed by requiring the implementation of mitigation identified above, in this ROD, FEIS, and BO.

Issue 3: Stability of the tailings impoundment/paste facility

There was only one item identified for Issue 3.

Failure of the tailings impoundment/paste facility may have substantial adverse effects on water quality, public safety, aesthetic quality, downstream facilities, aquatic life, and long-term reclamation success among others. A comprehensive Quality Control/Quality Assurance program should be part of any proposed design. Probability of failures can be measured by documenting foundation strength parameters, tailings properties, and seismic response. Phreatic surface location and associated seepage analyses will also be used in the technical review of the impoundment design.

The requirement of a tailings paste facility under Alternative V reduces the potential for failure under all modes of failure compared to a standard tailings impoundment (see Appendix G or Chapter 4 in the FEIS for more details). The removal of water from the tailings results in a relatively dry material that would not flow very far should a portion of the facility collapse. This analysis is addressed in the Failure Modes Effects Analysis summarized in Appendix P of the FEIS. The Tailings Paste Facility and Tailings Slurry Line Construction and Operation Monitoring Plan, along with the technical panel review of the final design of the paste facility, will assist in minimizing, reducing, and avoiding possible impacts due to potential failure of the paste facility.

I have determined through the review of the Supplemental to the Draft EIS, FEIS and the Failure Modes Effects Analysis that this issue has been adequately addressed.

Issue 4: Impacts to socioeconomics of surrounding communities

There was only one item identified for Issue 4.

The proposed project may affect local employment, local income, the size and location of the area population, schools, fire, public safety and other public services, local tax revenues, and public expenses.

Implementation of Alternative V is expected to increase the populations in Lincoln and Sanders Counties in Montana and, to a minor extent, eastern Bonner County in Idaho. The approved Hard Rock Impact Plan addresses how the company will help local government units in Montana deal with the financial impacts caused by increases in population. This will occur in the form of pre-paid taxes and grants to the governments. Provisions are included in the plan to alter the amount of the payments should impacts be greater than anticipated (FEIS, page 4-233) and (KNF, Rock Creek Project File, Hard Rock Impact Plan).

I have determined through the review of the FEIS, pages 4-194 ~ 4-237 and the implementation of the Hard Rock Impact Plan that Issue 4 is adequately addressed.

Issue 5: Effects on old growth ecosystems

There was one item identified for Issue 5.

The proposed project may impact old growth stands.

The analysis in the FEIS (FEIS, pages 4-163, 4-173), as well as information in the project record, concluded there would be less than 1 acre of old growth habitat impacted. The reduction of traffic along FDR No. 150B would increase the effectiveness of the old growth parcel along lower Rock Creek compared with Alternatives II through IV. Closure of a short spur road accounts for an additional acre of effective old growth.

I have determined the effects to old growth as it relates to this project has been adequately addressed in the FEIS.

Issue 6: Effects on wetlands and non-wetland waters of the U.S.

There was only one item identified for Issue 6.

The proposed project may destroy or affect wetlands and non-wetland waters of the U.S.

The analysis in the FEIS concluded that Alternative V would directly affect a total of 5.6 acres of wetlands and non-wetland waters of the U.S. and indirectly affect 1 acre. Under the Wetland Mitigation Plan contained in Appendix L of the FEIS more than 10 acres of wetland will be created. Up to 18.9 acres of suitable sites have been identified. Recent monitoring of wetland demonstration plots indicates that there is a high probability of establishing functional wetlands at similar sites which currently exist in the project vicinity, provided similar topography with respect to the existing water table is utilized (FEIS, page 4-119). Detailed mitigation plans and specifications will, however, have to be submitted by Sterling Mining Co. and reviewed and approved by the COE. No discharge or fill may take place which directly

or indirectly impacts aquatic resources until such a plan has been reviewed and approved by the COE and a 404 permit issued by the COE.

I have determined that the FEIS at pages 3-63 ~ 66, 4-114 ~ 119 and the Wetlands Mitigation Plan, (FEIS, Appendix L) adequately address this issue.

Issue 7: Effects on public access and traffic safety

Issue 7 was divided into two sub-issues to cover the range of concerns identified during scoping and the various EIS reviews. These include the following items:

a. The proposed project could adversely impact public recreational access and use patterns such as hunting, berry picking, camping, sightseeing, and hiking.
b. Public safety is a primary concern on proposed KNF roads and Montana Highway 200.

Traffic safety under Alternative V was improved over what would have happened under the proposed alternative by relocating the intersection of FDR No. 150 and Montana Highway 200, pumping ore concentrate to the rail loadout facility, and busing employees to the mine. Recreational access into the Rock Creek drainage would be improved due to road improvements, but the areas occupied by mine facilities would not be open for public access. Change in road closures required for grizzly bear mitigation will allow continued access to the CMW via Chicago Peak Road. There may be some changes in recreational use patterns due to increased populations in the area and due to road closures for grizzly bear mitigation (FEIS, Figure 3, FEIS, page 4-248 ~ 4-252).

I have determined through the review of the FEIS pages 4-241 ~ 4-255, and the required mitigation as outlined in Alternative V, adequately addressed Issue 7.

Issue 8: Effects on aesthetic quality, including noise, scenic, and wilderness experiences

Issue 8 was divided out into several sub-issues to cover the range of concerns identified during scoping and the various EIS reviews. These include the following items:

a. The proposed mining and support activities may create noise that exceeds ambient levels.
b. The proposed project may change the existing scenic quality and visual character of the Clark Fork Valley and Rock Creek drainage.
c. The portal of an air intake ventilation adit is proposed in the wilderness. Wilderness users might notice sights, sounds, and smells from the proposed project that could affect their wilderness experience.

Natural background noise levels reaching the CMW are measured at 35 dBA. Noise levels as a result of the mine, reaching the CMW are generally not expected to exceed normal ambient wilderness levels of 35 dBA, except in the area of the air-intake ventilation adit. Mitigation for forest screening, buffer zones, and the reduction in traffic will reduce the noise levels within the Rock Creek drainage (FEIS page 4-286). Relocation of the air intake ventilation adit and mitigation to reduce sound associated with the fans in that adit will minimize the potential for impacts to wilderness users. This impact is based on a decibel level of 45 dBA at 50 feet from the opening. Additional mitigation will be required to minimize the level of equipment noise. Mine facilities will present an industrial aspect to the Rock Creek drainage. Mitigation to minimize the impacts on scenic resources include paint colors on facilities and structures, maintaining or planting forested buffer zones between the facilities and roads, concurrent reclamation of the tailings paste facility, and final reclamation of the outer slopes of the mill site and road corridor soon after construction. Changes to the reclamation and revegetation plans will improve the potential for

successful revegetation of native species and reduce the amount of time needed for establishing the vegetation (FEIS page 4-57).

I have determined through the review of the FEIS pages 4- 255 ~ 260, 4-280 ~ 286, 4-286 ~ 296, and the required mitigation as outlined in Alternative V adequately addressed Issue 7.

B. CHANGES IN FEIS RELATIVE TO ISSUES

Comments and concerns with potential environmental effects related to the above issues resulted in the following changes from the draft and supplemental EISs to the FEIS.

Chapter 2. A new alternative, Alternative V, was included in the supplemental and FEIS to address residual water quality concerns. It also includes additional changes to the MPDES permit, air quality permit, and 404 (b)(1) dredge and fill permit. Additional, reasonably foreseeable activities were included for cumulative impacts analyses. New alternatives were considered and then dismissed, and additional rationale for dismissing some alternatives was provided. The text and table comparing the impacts between the five alternatives was updated and revised based on changes made in analyses in Chapter 4 and new mitigation included in various alternatives in Chapter 2.

Chapter 3. Additional baseline data was collected for plant species of special concern, some wildlife species (harlequin ducks, fisher, lynx, wolverine, bull trout, grizzly bear), sediment, water flow in the Clark Fork River, socioeconomic conditions of Bonner, Sanders, and Lincoln counties, ore and waste rock geochemistry, and surface and ground water quality. The status of Bull trout and lynx was changed from sensitive to a threatened species, therefore additional consultation with the FWS was needed.

Chapter 4. Analyses were modified based on new data identified in Chapter 3, and the new alternative was analyzed. Some new mitigation were developed and incorporated into an alternative in Chapter 2. Cumulative impact analyses were expanded based on newly identified and/or described reasonably foreseeable activities in Chapter 2. The Socioeconomic section was revised to address concerns related to accuracy of analysis. A section on regulatory restrictions has been included. The Hydrology section incorporated effluent limits from the MPDES permit, and the data and calculations used in preparing tables and analysis were reviewed and revised. Additional information on nutrient and metals loading to the Clark Fork River and ground water flow in the vicinity of the mine were also included. The analysis on acid rock drainage was expanded, and analysis of impacts to ground water in the orebody, wilderness lakes, and springs and seeps were added. Additional information regarding impacts to American Indian traditional use was incorporated into the Cultural Resources section.

FEIS Appendices. The biological evaluation on bull trout was revised and reissued as a biological assessment and included in Appendix B of the FEIS, with the revised biological assessment for terrestrial plant and animal species as a result in changes of ESA status. The preliminary determination on the associated air quality permit in Appendix C was modified based on changes to the preferred alternative. The MPDES permit and statement of basis in Appendix D were revised to match the preferred alternative and then further revised to address concerns about low flow, nutrients, fisheries, and State of Idaho water quality concerns. The BO was added as Appendix E. This appendix is replaced by the new BO issued May 9, 2003.
The Preliminary Section 404(b)(1) Showing and the wetlands mitigation plan for Alternative V (Appendices F and L, respectively) were updated and revised to identify sufficient mitigation sites for a 1.5:1 replacement ratio and to include contingency plans for potential impacts to

wetlands in the CMW. Information on hydrofracturing and hydrogeology of the orebody was added to Appendix G. A description and analysis of KNF best management practices (BMP) requirements is contained in Appendix H. The conceptual monitoring plans for agency alternatives in Appendix K have been described in more detail and some additional plans have been described in Attachment 2 of this ROD. This revised Appendix K is unchanged from the 2001 ROD. A discussion and summary of sediment modeling in the Rock Creek drainage is included in Appendix N. New KNF management area descriptions for mine operation and power line corridors are included in Appendix O. A summary of the failure modes and effects analysis done on failure of the paste facility and acid rock drainage by Klohn-Crippen Inc. was included in the Appendix P of the FEIS.

C. CHANGES SUGGESTED BY EPA, OTHER AGENCIES, AND THE PUBLIC, AND AGENCIES' RESPONSE AFTER COMPLETION OF FEIS

The following paragraphs discuss how the agencies addressed concerns expressed by the public, tribes, and other agencies. These concerns were expressed during briefings conducted by the FS and DEQ to discuss and describe elements of the FEIS and the pending decision making process.

1. One concern was that the agencies should specifically identify which agencies and specialists should be involved in the technical panels. When the agencies obtain additional information from the completion of Phase 1 of the proposed operation, the agencies will consult further with experts in the fields of metal leaching and acid rock drainage. The agencies have determined that it is not practical to specify those experts by name in the ROD because individual experts or group's availability will change over time. The agencies require that the most appropriate technologies (not necessarily the latest state-of-the-art procedures) be implemented to evaluate and monitor these issues. Because EPA has shown an interest in being on the technical review panels for these issues, the agencies will seek EPA's input on these technologies and procedures. Idaho DEQ (IDEQ) is responsible for water quality in the state of Idaho, and will also be invited to participate in any technical panels that are reviewing plans or facility designs that would influence surface water quality.

2. Another concern was that the agencies should require in the ROD that Sterling add cement to the tailings paste, and then determine, through the analysis of data from the evaluation adit, whether to modify that decision. The agencies have determined that requiring the addition of cement at the onset of tailings paste deposition is a prudent environmentally protective course of action. The FEIS demonstrates that adding cement would raise the pH of the tailings seepage and could mobilize more metals than the neutral pH waters that would occur under the preferred alternative. The agencies have determined it is more prudent to first consider the analysis of geochemical data from the Evaluation Adit Data Evaluation Plan before requiring a particular additive (cement) that may be detrimental to the ground water quality beneath the tailings paste facility.

   The FEIS and other analyses in the project record (including the report by Maxim Technologies), demonstrate that the Troy tailings facility is an analog for the proposed Rock Creek facility. The data at the Troy tailings impoundment currently indicates that there are no violations of ground water quality standards or deleterious leachate. The FEIS Alternative V allows for the addition of cement or other binders and additives if the agencies find it necessary to mitigate or minimize impacts to surface and ground waters. This ROD incorporates this requirement. There will be an additional 2 to 3 ½ years during mine adit construction/mine development, which allows ample time for further geochemical confirmation testing and evaluation of waste rock and tailings and for determining what additive, if any, is appropriate. The FEIS concludes it is not necessary at this time. In addition to the analysis in the FEIS, the KNF hired a third party contactor to conduct

additional geochemical analysis on tailings material from Rock Creek ore (Maxim 2003). The conclusion of the study supports the FEIS affects analysis for the Rock Creek paste tailing material. The agencies will reevaluate the additive issue after phase one. As part of the Evaluation Adit Evaluation Plan, Sterling must include analysis of both lab and bulk samples of the ore (and resultant tailings) extracted during the adit's construction. This must be done prior to determining whether cement or some other additive may be needed to reduce the potential of acid rock drainage (ARD) or metals migration in the paste facility. The agencies will be advised through this process by the technical advisory panel (FEIS page 4-34).

3. EPA referenced other guidelines for waste rock characterization that may be applicable in the geochemical analysis and monitoring of waste rock and tailings. The agencies have based waste rock characterization requirements on the "Mine Rock Guidelines for the Design and Control of Drainage Water Quality" by Steffen, Robertson, and Kirsten, Inc. (1992). Under these guidelines, the waste rock material will be classified as non-acid generating (NAG), potentially acid generating (PAG), acid generating (AG), non-metal leaching (non-ML), or metal leaching (ML). These categories will be redefined based on changes in the most appropriate analytical technologies developed over the life of the mine. The agencies will also consider applicable information as suggested by EPA. Consistent with EPA staff advice, the agencies have not given any numerical parameters to these classifications. In addition to the analysis in the FEIS, KNF hired an independent contactor to conducted additional geochemical analysis on waste rock material from the Rock Creek project area (Maxim 2003). The conclusion of the study supports the FEIS analysis.

4. EPA also recommended specific testing protocols to be used. The agencies have determined that the procedures to be used will be the most appropriate methods applicable at the time testing is initiated. The procedures will be contained in the final monitoring plans to be reviewed and approved by a technical panel.

5. EPA suggested more explanation on why additional geochemical testing was not done on the 121 drill cores from the Rock Creek deposit. The agencies discussed this issue with EPA and determined that the mitigation outlined in Alternative V, would minimize the potential risk if impacts discovered by additional geochemical testing would be a problem (FEIS, Project files letters to EPA March 9, 1999, May 25, 2000, April 3, 2001 December 12, 2001, IDT meeting notes, October, 1999,).

    a. The hydrostatic head for the ground water impounded in the mine workings will be maintained at a sufficiently low level to prevent or minimize leakage or transport of ground water to the surface, or the system must be lined, sealed, or grouted to prevent leakage or transport of ground water to the surface.
    b. The water storage areas would be maintained in perpetuity or until such time that the agencies determine that another means of protection of surface waters from contamination by underground mine water is more appropriate.
    c. As an added safety measure, the Acid Rock Drainage and Metals Leaching Plan in the revised Appendix K in Attachment 2 will require on-going static and kinetic testing of lithologic units throughout project life and testing of metal mobility of waste and ore rock and paste tailing material.

6. EPA encouraged the agencies to continue to evaluate the potential for catastrophic failure due to lateral hydrofracturing. The agencies determined that the report titled " *Rock Creek EIS: Technical Report Hydrology and Chemistry of Wilderness Lakes and Evaluation of Impacts from Underground Mining, Cabinet Mountains Wilderness, Montana"* (Gurrieri, 2001) adequately

addressed this issued and the recommendation of that report were incorporated into the FEIS (FEIS Appendix G, page G-24). In addition to rock mechanics monitoring, the agencies will require Sterling to continue monitoring of the potential for lateral hydrofracturing if the mine were to be plugged at some point in the future, as well as during mine operations when water is stored in the underground workings. This monitoring requirement was already included in the water resources monitoring plan in general terms in the FEIS, but will be made more specific in the revised Appendix K Attachment 2 of this ROD. This ROD hereby requires:

a. Installation of underground monitoring wells in the areas proposed for water storage during mine operation and any shut down periods (Attachment 1, item 56).
b. The hydrostatic head for the impounded underground water will be maintained at a sufficiently low level of hydrostatic head to prevent or minimize leakage or transport of underground water to the surface, or the system must be lined, sealed, or grouted to prevent leakage or transport of underground water to the surface (Attachment 1, item 57).
c. The water storage areas would be maintained in perpetuity or until such time that the agencies determine that another means of protection of surface waters from contamination by underground mine water is more appropriate (Attachment 1, item 57).

7. Concern was expressed that the mine should not be plugged and allowed to fill up with water after final closure of the mine. The agencies' analyses have indicated that treatment may be needed for an unknown period of time after mine closure to ensure mine waters reach surface water quality standards for discharge to the Clark Fork River and to reach ground water standards without treatment. Water may need to be discharged to the river in perpetuity if a means to plug the mine to avoid or minimize impacts to surface waters in or outside the wilderness cannot otherwise be developed. The FEIS discusses closure options, but does not specify the means of mine adit closure for Alternative V because of these issues (FEIS, page 4-106). Until data is obtained from the evaluation adit and refined during mine operation, the agencies have determined that the initial mine closure plan will be to pump and treat the mine water in perpetuity until hydrogeologic and hydrologic data allowed other options to be investigated. Therefore, Sterling will be required to post a bond for perpetual water treatment for the mine operation. The evaluation adit bond will cover one year of treatment after closure and an additional 5 years of monitoring after adit closure. This is due to the smaller underground opening, lower amount of mine water generated, and the fact that the evaluation adit does not intercept any of the buffer zones or approach the ore outcrop zones. Once the mine operation commences the evaluation adit closure and bonding are incorporated into the mine closure and the more strict closure and bonding requirements would be in affect.

8. EPA suggested that a 1000-foot buffer zones to remain a permanent requirement. If the mine were to be allowed to fill with water to the point of discharging through the service adits, there would be a maximum of 300 feet of static head between the adit and the lowest point of the orebody in the North Basin (FEIS, Figure 3-6, and 3-7). The technical hydrogeology report for the FEIS used a static head of 245 meters (approximately 800 feet) to calculate a vertical buffer of 137 meters (450 feet) of rock between the workings and the ground surface (Gurrieri, 2001). The agencies have determined this is sufficient protection to prevent hydrofracturing from that level of post closure mine water storage and most likely from a greater amount of storage, although it may not prevent leakage to the surface through non-hydrofractured pathways. To monitor this leakage, as stated above, I will require the installation of underground monitoring wells for water storage areas. The hydrostatic head in these areas will need to be maintained or the system lined, sealed, or grouted to prevent or minimize leakage to the surface.

The agencies are requiring that Sterling maintain the 1000-foot buffer zones. There is a possibility that Sterling could propose to mine these zones in the future, but the agencies would authorize that only if the Sterling can demonstrate mining could occur in compliance with laws and regulations. Therefore, the agencies cannot call them permanent from a disclosure standpoint. The company would have to propose a revision to amend the plan of operations to mine into those zones, which would trigger an appropriate level of public MEPA/NEPA analysis to review the proposal and pertinent data to ensure compliance with applicable regulations and laws. It would also result in a new decision by the agencies on whether to approve the amendment. This analysis and decision would involve public review, comment, and appeal rights.

9. EPA suggested the agencies address the segregation of water within the mine; therefore, the agencies have required Sterling to develop a plan for water segregation in the mine workings for the second phase of the project, after Sterling constructs the evaluation adit and can predict the location of inflows and the quality of the water in different areas of the mine. This plan will be revised as needed as new data is obtained throughout mine operation. This ROD requires that all mine water be treated prior to discharge to the Clark Fork River until such time as it can meet limits without treatment as determined by law, and through DEQ. Being able to segregate the better quality water and discharge it without treatment is a benefit because there would be less water to treat. Sterling has already proposed doing this in its water management plan. The mine water must meet discharge limits specified in the MPDES permit regardless of how segregation was achieved.

10. EPA was concerned how the agencies will determine compliance with water quality standards after mine closure. If the agencies decide at a later date to require plugging the mine adits at mine closure, any change to the initial closure plan would require additional MEPA/NEPA analysis and this detail would be disclosed as part of that process. The Water Resources Water Monitoring Plan in the revised Appendix K in Attachment 2 to this ROD indicates that streams, springs, and seeps that could potentially be affected by leakage of mine waters stored in the mine workings during and after mine closure will be monitored annually at a frequency that evaluates high and low flows, as well as seasonal trends. Monitoring of vegetation at the springs and seeps will also occur on an annual basis. Monitoring may be reduced or increased, depending monitoring results, as outlined in the revised Appendix K (Attachment 2). Long-term monitoring of surface and ground waters, springs, and seeps is appropriate and is required by this ROD.

    Assuming full mine development occurs, the agencies will require monitoring of the resources that could potentially be affected by leakage of mine waters for at least 20 years (as EPA suggested) after the water in the mine meets ground water standards, even though this water may still have to be treated for discharge to the river. Monitoring of water in the evaluation adit should the mine not be constructed will continue for at least 5 years as the water body would be considerably smaller and the adit would not approach the ore outcrop zone where hydrofracturing is a concern. Continuation of monitoring would be evaluated on an annual basis by the responsible agencies in consultation with EPA, and other interested local, state (including Idaho), and federal agencies and tribal governments.

11. EPA suggested that the monitoring wells be constructed so that they can also be used as pump-back wells. The agencies will request that the monitoring wells at the paste facility be constructed so that they can serve the purpose of both ground water monitoring and pump-back wells, if necessary. Replacement costs for water treatment and related facilities are included in the bond calculations, just as they were included in the FEIS. All sampling of ground water will be done according to a defined protocol, such as that used by EPA or the state. Sterling will also

be required to submit all lab, field-testing and monitoring results to the agencies upon completion of the tests, regardless of the frequency of formal reporting dates. The public will be allowed to review any data and reports submitted by the company. The agencies are considering developing a web page that will let the public know when such reports have been received.

12. EPA suggested DEQ use a specific formula to calculate aquatic life criteria for metals. DEQ cannot require the use of formulas for calculating limits that have not been approved by law. Once a formula is adopted into the regulation pertaining to the federal Clean Water Act and then into Montana regulations implementing the Montana Water Quality Act, that formula could then be used when the permit was up for a 5-year review cycle or was being reviewed for other changes such as changes to the plan of operations or total maximum daily load (TMDL) development.

13. EPA suggested monitoring reports be prepared more frequently than on an annual basis. The agencies have decided that rather than increase the frequency of the water quality monitoring reports, Sterling will be required to submit raw laboratory data as soon as it is completed for all water resources monitoring required by Water Resources Monitoring Plan from the approved plans of operation. The MPDES permit already requires reporting on a monthly basis for all permitted discharges. The monitoring frequency of other reports has been reviewed and initial frequencies added to monitoring plan requirements in the revised Appendix K (Attachment 2) and to the reporting requirements in Monitoring Report Plan (Attachment 3).

14. There was a concern by the public that timelines to finalize closure (during periods of operator incurred shut-downs) that reclamation of disturbed sites will not be appropriately managed. The agencies addressed this issue by requiring the following mitigation. This mitigation is authorized through 36 CFR 228 regulations and is identified in Table of Approved Stipulations, item 64 f (Attachment 1). This ROD hereby requires:

    a. If, after 5 years from initiating construction on the evaluation adit and the remaining portion of the project has not proceeded for reasons other than litigation, the KNF will consult with the operator, DEQ, FWP, EPA, FWS, Tribal representative, and other interested agencies on interim or final reclamation plans to be implemented as outlined in Alternative V and this ROD. Timeframes for implementation will also be identified.
    b. If, after 5 years of any cessation of mine development or operation, for reasons other than litigation, KNF will consult with the operator, Montana and Idaho DEQ, FWP, EPA, FWS, Tribal representatives and other interested agencies on interim or final reclamation plans to be implemented as outlined in Alternative V and this ROD, and the timeframes for implementation.

D. INCORPORATION OF THE BIOLOGICAL OPINION DATED MAY 9, 2003

The following discussion discloses the incorporation of the most recent BO signed by the FWS on May 9, 2003. The information below also discloses conservation measures already incorporated into the existing FEIS. It is important to recognize that measures incorporated into the FEIS are applicable to this decision. During the consultation process with FWS, the KNF incorporated conservation measures into the FEIS. The conservation measures were designed to reduce adverse effects to fish, wildlife, and water and air quality, reduce noise associated with the project, and improve human safety.

A grizzly bear mitigation plan was developed and incorporated into the FEIS (FEIS, Appendix A) and into the original BO of December 2000. The mitigation plan was designed to reduce mortality risk to

grizzly bears by minimizing human/bear confrontations through implementation of the following measures:

- Avoid the use of salt when sanding during winter plowing operations on road FDR - 150;
- Avoid the use of preferred vegetative forage like clover (*Trifolium spp*.) to reclaim disturbed sites from construction facilities and roads;
- Use bear-resistant containers for human food/waste;
- Remove the remains of road-killed carcasses along roads;
- Sterling Mining Company would fund, for the life of the mine, a grizzly bear management specialist position under the Montana Fish, Wildlife, and Parks to educate people about bear behavior and how to reduce the potential for grizzly bear conflicts;
- Sterling Mining Company would fund, for the life of the mine, a Montana Fish, Wildlife, and Parks law enforcement position (in addition to the grizzly bear specialist position) to conduct law enforcement investigations of human-induced bear mortality and to deter illegal behavior;
- Sterling Mining Company would develop a transportation plan to minimize vehicular traffic associated with the mine;
- Sterling Mining Company would enact restrictions against feeding wildlife;
- Sterling Mining Company would prevent employees from carrying firearms on the permit area to minimize illegal or accidental mortality;
- Forest would manage motorized access in the affected bear management units (BMUs) to offset increases in access densities associated with the Rock Creek Mine;
- Forest would implement a mandatory food storage order in BMUs 4, 5, and 6;
- Sterling Mining Company would fund bear-resistant garbage containers for Forest sites in the Cabinet Mountains where garbage containers are provided; and
- Sterling Mining Company would fund the needed measures to make the Sanders County garbage transfer station near the mine entrance grizzly bear-resistant.

Following are habitat protection and enhancement measures that are part of the FEIS and this decision

- Sterling Mining Company would fund the fee title acquisition of or conservation easement on a total of 2,350 acres of grizzly bear habitat in part prior to the construction and in part, prior to operation of the project;
- Sterling Mining Company would fund habitat enhancement measures on 484 acres in the affected BMUs;
- Sterling Mining Company would fund the fee title acquisition of or conservation easement on 100 acres to specifically to improve grizzly bear habitat security and maintain or improve habitat connectivity between the northern and southern portions of the Cabinet Mountains;
- Forest would manage motorized access in the affected BMUs to offset increases in access densities associated with the Rock Creek Mine; and
- Sterling Mining Company would fund a grizzly bear monitoring and research effort in the southern Cabinet Mountains during the life of the mine.

This mitigation plan was reviewed in December 2002 by KNF and rewritten to more clearly define the mitigation measures. This clarification is contained in Attachment 4 of this ROD This clarified plan entitled, " Clarification of Terrestrial Threatened and Endangered Species Mitigation Plan" December 30, 2002, was used, in part, to help develop the 2003 BO for the FWS.

The FWS completed a new BO for the Rock Creek Project on May 9, 2003. The BO documented their findings and concluded, after reviewing the current status of the grizzly bear, Canada lynx and Columbia

Basin DPS of bull trout, the environmental baseline for the action area, the effects of the proposed Rock Creek Mine (Alternative V), and the cumulative effects, that:

a. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the grizzly bear in the Cabinet Yaak Ecosystem. No critical habitat has been designated for the species, therefore, none would be affected.

b. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the Canada lynx. No critical habitat has been designated for this species, therefore, none will be affected. The impact to habitat for Canada lynx would be insignificant or discountable (less than 0.01 percent change in baseline).

c. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the Columbia Basin DPS of bull trout as listed. The Rock Creek Mine as modified by Alternative V is not likely to destroy or adversely modify the proposed Columbia Basin DPS of bull trout critical habitat.

d. The Rock Creek Mine, as modified by Alternative V, may affect but will not likely adversely affect the bald eagle or the gray wolf.

The reader is referred to the FWS's BO dated May 9, 2003 for a complete description of their conclusion and rationale.

The FWS included in it's 2003 BO reasonable and prudent measures to minimize incidental take, terms and conditions to implement the measures, and conservation recommendations to maintain/enhance protection measures for grizzly bear, lynx and bull trout.

Grizzly Bear
The BO includes reasonable and prudent measures (RPM) to minimize incidental take. These measures, which are described below, are non-discretionary and must be implemented by the KNF in order for the exemption in Section 7(o)(2) ESA, to apply. The KNF has a continuing duty to regulate the activities that are covered by this incidental take statement. If the agency fails to adhere to the terms and conditions of the incidental take statement, the protective coverage of Section 7(o)(2) ESA, may lapse. Should the amount or extent of incidental taking be exceeded, or any of the mitigation and conservation efforts be modified, KNF must confer with the FWS immediately to determine if re-initiation of consultation is required.

Reasonable and prudent measures**:**
The FWS determined the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of grizzly bears:

- Reduce the potential for incidental take of grizzly bears resulting from displacement from essential habitat.
- Reduce the potential for incidental take of grizzly bears resulting from habituation and food conditioning.
- Monitor and record all conflicts between people and grizzly bears, and people and black bears.

In order to be exempt from the prohibitions of section 9 of the ESA Act, the KNF must, in addition to implementing the mitigation plan as proposed, comply with the following terms and conditions which

implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions implement RPM 1:

a. KNF shall ensure no net decrease in core area, and no net increase in open or total motorized route densities within BMUs 4, 5, and 6 during the life of the proposed mine.
b. KNF shall ensure that reductions in open and/or total motorized route densities or increases in core areas made possible by acquisition of or obtaining conservation easements on mitigation habitat shall be completed within 3 years of acquisition or easement. Improvements shall constitute the baseline from which term and condition 1.a. above is then measured during the life of the mine. At a minimum, upon acquisition or easement, the KNF and FWS shall determine whether, where legally possible, KNF shall temporarily immediately close access routes to reduce open motorized route densities. Final planning processes would then be conducted.
c. Within one year of issuing the permit for the evaluation adit KNF shall berm or barrier Bear Creek road (FDR 4784) to increase core area in BMU 5 for the life of the mine (Attachment 7).
d. Currently, Midas Howard Creek Road (FDR 4778) is restricted year-long; the South Fork Miller Creek Road (FDR 4724) is partially open year-long and has a spring closure on about 6 miles of the route. These closures shall remain in place for the life of the mine to increase grizzly bear security in spring habitat. Additional closures may occur through separate planning processes and may occur due to information gained through the monitoring and research effort.
e. KNF shall ensure that land exchanges related to mitigation properties would not result in a loss of MS-1 grizzly bear habitat in the CYE, unless such loss results in significant habitat benefits for grizzly bears, as agreed to by the FWS.
f. KNF shall ensure that administrative use levels on restricted roads in BMUs 2, 4, 5, 6, 7 and 8 shall be limited to no more than 57 round trips per year divided by spring, summer and fall seasons.
g. Access management changes shall be monitored and included in the annual Kootenai National Forest monitoring reports.

The following terms and conditions implement RPM 2 and 3:

a. Prior to mine construction phase, KNF and Sterling Mining Company, along with MFWP and FWS grizzly bear personnel, shall assess county garbage transfer stations along the Clark Fork corridor other than the site near the mine entrance. KNF, Sterling Mining Company and FWS shall work toward providing partial funding and/or support to Sanders County to upgrade these sites to make them grizzly bear resistant at sites deemed in need of such action.
b. Prior to the construction of the evaluation adit, KNF shall ensure that the Sterling Mining Company shall provide funding for the grizzly bear specialist and the law enforcement officer for a period of no less than 5 years. This would ensure the necessary funding to comply with the mitigation plan in the event of a temporary lapse of activity at the mine between the evaluation adit and construction phases. The mitigation plan requires the positions remain active in the event of temporary shutdowns. After the evaluation adit, in the event that Sterling withdraws its plan of operation or rescinds permits, with the intention of not moving forward with development of the mine, this term and condition would not be required.
c. KNF shall seek approval to give the State law enforcement officer authority to enforce the food storage order on KNF within 2 years of issuing the permit to proceed with the evaluation adit.
d. The FWS, Forest and Montana Department of Fish, Wildlife and Parks shall investigate any grizzly bear mortality within the action area. If deemed attributable to the effects of the mine, additional measures as needed and as approved by the FWS shall be taken to prevent additional

grizzly bear mortality.

e. KNF shall monitor grizzly bear and black bear sanitation incidents in BMUs 2, 4, 5, 6, 7, and 8 and take corrective action through Forest enforcement of the food storage order and/or other adequate remedy, or through activities coordinated or conducted by the grizzly bear management specialist and/or oversight committee. Incidences involving black bears will be reviewed by the grizzly bear management specialist and the FWS to assess whether the conditions leading to the incident may also be a risk to grizzly bears in the area.
f. KNF shall work with the grizzly bear specialist on public outreach programs that will increase awareness of grizzly bear conservation issues among the public in and surrounding the Cabinet Mountains.
g. KNF shall prepare an annual report of grizzly bear and black bear sanitation incidents and corrective measures taken by April of the following year.
h. KNF shall prepare an annual report to the FWS that summarizes actions taken to comply with the above terms and conditions implementing RPM 1, 2, and 3.

The reasonable and prudent measures and implementing terms and conditions are designed to minimize the impact of incidental take that might otherwise result from the proposed Rock Creek Mine. If during the course of the proposed action, the level of take (one grizzly bear during life of the mine) is exceeded, such incidental take would require re-initiation of consultation. If terms and conditions implementing reasonable and prudent measure 1 are not adhered to, this may indicate that the level of exempted take due to displacement has been exceeded. The FWS retains the discretion to determine whether this is the case and re-initiation of consultation is required. The KNF must immediately provide an explanation of the causes of the taking and review with the FWS the need for possible modification of the reasonable and prudent measures.

Conservation Recommendations:

Section 7(a)(1) ESA directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- The KNF continue to work on the development and implementation of a proactive Forest-wide food and attractant storage order to address grizzly bear sanitation issues on national forest lands into the future (recommendation).
- Use the list of native species in Tables G-4 through G-6 of the FEIS Revegetation Plan, Appendix G and ensure that a full mix of native species is planted and established following reclamation. Avoid the use of aggressive non-native grasses such as orchard grass, foxtail and mountain brome in any reclamation mix. Require re-seeding of natives in the likely event of failure. Ensure that native shrubs and forbs, particularly fruit and nut-bearing shrubs, are cultivated from on-site sources and cultivated in the vicinity, so that seed or live plants can be acclimated and used for transplant on the reclamation lands. Plant such established individual shrubs at regular intervals throughout the reclamation lands similar to the density and clumpiness found on undisturbed habitat in the Cabinet Yaak Ecosystem (CYE). Incorporate weed controls on these lands for whatever time is necessary to stop weed invasion before native vegetation is assured. Do not authorize release from the reclamation phase of the mine until a suitable mix and distribution of native shrubs, trees, forbs, and grasses has been established and is self-perpetuating.
- Ensure that the optional organic matter and fertilizer addressed in the EIS is required to be incorporated into all topsoil storage piles at the time it is initially removed so that when the soil is

to be re-applied to reclamation sites, the soil biota and organic matter would be more thoroughly incorporated. Additional organic matter may be added at the time the topsoil is placed on the reclamation site 3. Require that wetland mitigation acres also include enhancements to ensure the natural functioning of these important systems will occur following mitigation. Consider a mitigation ratio of at least 2:1 or 3:1.

Lynx

Section 9, ESA and Federal regulation pursuant to section 4(d) ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the FWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the FWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2) ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

Amount or extent of take:
No incidental take is expected as a result of the proposed action.

Effect of the take:
Since no incidental take is expected, there will be no effects to lynx due to take.

Reasonable and prudent measures:
There are no reasonable and prudent measures necessary and appropriate since no incidental take is expected. However, measures designed to mitigate for effects to grizzly bear will provide benefits for the lynx. These measures include road closures, replacement habitat, and bussing employees.

Terms and Conditions:
No terms and conditions are necessary as no incidental take is expected and no reasonable and prudent measures are required.

Conservation recommendations:
Section 7(a)(1) ESA requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. As we do not anticipate any adverse effects of the proposed action on Canada lynx, no conservation recommendations are necessary.

Bull Trout

As proposed, implementation of the Rock Creek mine is anticipated to adversely impact the majority of occupied habitat in the West Fork and main stem of Rock Creek and to a lesser extent habitat in the East Fork Rock Creek. Activities in the action area associated with the proposed mining operation would likely result in some mortality related to expected degradation of aquatic habitat including spawning habitat, rearing habitat, and food supply and the related risk to all bull trout life history stages. Increases in sedimentation, water quality degradation, and changes in channel and habitat complexity related to

mining activities are anticipated to result in reduced egg, larval, and juvenile life history stages by impairing feeding, breeding and sheltering patterns of adult and juvenile bull trout. Implementation of Alternative V may reduce the reproduction, numbers, or distribution of bull trout within Rock Creek to the degree that bull trout persistence in Rock Creek is appreciably reduced.

The Cabinet Gorge Reservoir bull trout subpopulation consists of bull trout in the reservoir, Bull River, and Rock Creek. Rock Creek bull trout are mainly non-migratory, resident fish, so they are essentially isolated from Bull River bull trout. As such, Rock Creek bull trout contribute relatively little to the Cabinet Gorge Reservoir subpopulation. A modest portion of this subpopulation would be negatively impacted by proposed project actions. Anticipated impacts to bull trout are unlikely outside of the Rock Creek drainage. No activity is proposed in the Bull River drainage, the principal contributor of the subpopulation. In the event of extirpation of Rock Creek bull trout, Bull River fish would remain and constitute the Cabinet Gorge Reservoir bull trout subpopulation. However, extirpation of one of only two occupied drainages in the subpopulation would likely reduce subpopulation resiliency and increase the risk of subpopulation extirpation due to environmental stochasticity (Rieman and McIntyre 1993).

If this subpopulation were extirpated, the probability of bull trout persistence in the Clark Fork River subbasin would likely be reduced only marginally, and the probability of the persistence of the Columbia River Basin DPS would not likely be appreciably affected. Based on the magnitude of the project effects in relation to the listed DPS at the Columbia River basin scale the action is not likely to jeopardize the Columbia River basin bull trout DPS.

Conclusion for Proposed Critical Habitat:
As proposed, implementation of the Rock Creek mine is anticipated to adversely impact the majority of occupied habitat in the West Fork and mainstem of Rock Creek and to a lesser extent habitat in the East Fork Rock Creek. Activities in the action area associated with the proposed mining operation would likely degrade aquatic habitat including spawning habitat, rearing habitat, and food supply and impact all bull trout life history stages. Increases in sedimentation, water quality degradation, and changes in channel and habitat complexity related to mining activities are anticipated to reduce the capability of the habitat to support feeding, breeding and sheltering patterns of adult and juvenile bull trout. Implementation of Alternative V may reduce habitat quality and the reproduction, numbers, or distribution of bull trout within Rock Creek to the degree that bull trout persistence in Rock Creek is appreciably reduced.

The Cabinet Gorge Reservoir bull trout subpopulation consists of bull trout in the reservoir, Bull River, and Rock Creek. Rock Creek bull trout are mainly non-migratory, resident fish, so they are essentially isolated from bull river bull trout. As such, Rock Creek bull trout contribute relatively little to the Cabinet Gorge Reservoir subpopulation. A modest portion of this subpopulation would be negatively impacted by proposed project actions. Anticipated impacts to proposed bull trout critical habitat are unlikely outside of the Rock Creek drainage. No activity is proposed in the Bull River drainage, the principal contributor of the subpopulation. In the event of extirpation of Rock Creek bull trout, Bull River fish and proposed critical habitat would remain and constitute the Cabinet Gorge Reservoir bull trout subpopulation. However, extirpation of one of only two occupied drainages in the subpopulation would likely reduce subpopulation resiliency and increase the risk of subpopulation extirpation due to environmental stochasticity (Rieman and McIntyre 1993).

If the value of proposed critical habitat is diminished to the extent that this subpopulation were extirpated, the probability of bull trout persistence in the Clark Fork River subbasin would likely be reduced only marginally, and the overall abundance and quality of proposed critical habitat for the Columbia River Basin DPS would not likely be appreciably affected.

- Clark Fork River subbasin consists of major river drainages including the Blackfoot, Clark Fork, Swan, Flathead, and Bitterroot Rivers.

- Bull trout populations are considered strong in Rock Creek, of the upper Clark Fork River, (not the stream in this projects action area) and the South Fork Flathead, Blackfoot, and Swan Rivers (USDI 1998c; Figure B1).

- Trends in abundance of bull trout are stable in South Fork Flathead River, and increasing in the Blackfoot and Swan Rivers.

- The Cabinet Gorge Reservoir subpopulation contains only 66 of approximately 8,000 miles of potentially occupied bull trout habitat in the Clark Fork River watershed (W. Fredenberg, pers. comm., 2002).

- The Cabinet Gorge Reservoir subpopulation contains 47.2 miles of stream and 3,200 acres of a total of 312 miles of stream and 12,014 acres of lake surface area proposed for designation as critical habitat for bull trout in this CHSU, 1 of 12 CHSUs in the Clark Fork River subbasin.

- As such, the value of proposed critical habitat occupied by this bull trout subpopulation is relatively minor compared to the proposed critical habitat distribution in the Clark Fork River subbasin.

- This small portion of bull trout range is isolated from upstream and downstream areas by dams.

- The probability of persistence of bull trout in the Clark Fork River subbasin would not be significantly reduced even if the Cabinet Gorge Reservoir bull trout subpopulation was extirpated due to diminished value of proposed critical habitat in the Rock Creek watershed.

- The Clark Fork River watershed is only 1 of at least 20 major watersheds forming the Columbia River basin DPS, though it is amongst the largest (USDI 1998b).

- The Cabinet Gorge Reservoir subpopulation contains 47.2 miles of stream and 3,200 acres of a total of 18,175 miles of stream and 498,782 acres of lake surface area proposed for designation as critical habitat for bull trout in the Columbia River basin DPS.

- The probability of persistence of bull trout in the Columbia River basin DPS would not be significantly reduced even if the Cabinet Gorge Reservoir bull trout subpopulation were extirpated due to diminished value of proposed critical habitat in the Rock Creek watershed.

This demonstrates the small fraction of proposed critical habitat distribution of the Columbia River basin bull trout DPS occupied by this subpopulation. Based on the magnitude of the project effects in relation to the listed DPS at the Columbia River basin scale the action is not likely to destroy or adversely modify proposed critical habitat of the Columbia River basin bull trout DPS.

Incidental Take Statement:
The proposed action includes the future refinement and approval of monitoring and mitigation plans for bull trout by the Sterling Mining Company, in cooperation with the MDEQ, the KNF, and the FWS. Appendix K of the FEIS and revised Appendix K Attachment 2 of this ROD contains a complete description of the conceptual monitoring and mitigation plans for Alternatives III through V developed by MDEQ and the KNF.

Sterling Mining Company would develop final monitoring and mitigation plans prior to project startup. The regulatory agencies would review and approve the plans as an interagency team. To minimize impacts to bull trout, the plans potentially directly affecting the fishery would be reviewed from a fisheries perspective. The FWS would participate as needed and will require the KNF fishery biologist, hydrologist, geologist, and soil scientist would be involved in issues related to water use, fishery monitoring plans, sediment abatement plans and monitoring, and groundwater. All plans would need to identify trigger or alert levels, which would require Sterling Mining Company to implement a corrective action plan. Corrective action plans for the most likely scenarios need to be developed and approved by the interagency team prior to project startup.

All monitoring would require an annual report unless otherwise specified. The reporting format and requirements would be reviewed and finalized by MDEQ, the KNF, and the FWS. Reports would be submitted to other review agencies as identified by the KNF and MDEQ. After submittal of a monitoring report, the regulatory agencies and all other relevant agencies would review the monitoring plan and results, and evaluate possible modifications to the plan or permitted operations.

Monitoring and mitigation plans to be refined, approved and ultimately included in the plan of operations include:

Air Quality Monitoring
Rock Mechanics Monitoring
Acid Rock Drainage and Metals Leaching Plan
Evaluation Adit Data Evaluation Plan
Tailings Paste Facility and Tailings Surry Line Construction Monitoring Plan
Soils and Erosion Control Plan
Reclamation Monitoring Plan
Water Resources Monitoring Plan
Influent and Effluent Monitoring Plan
Monitoring of Biological Oxygen Demand Plan
Wildlife Mitigation and Monitoring Plan
Threatened and Endangered Species Mitigation Plan (Attachment 4)
Aquatics and Fisheries Monitoring and Mitigation Plan
Hard Rock Mining Impact Plan
Wetlands Mitigation Plan

Amount or Extent of Take Anticipated
The FWS anticipates activities associated with the proposed mining operation would result in some incidental take of bull trout in the form of harm, harassment or mortality related to expected degradation of aquatic habitat parameters including spawning habitat, rearing habitat and food supply and the related risk to bull trout life history stages. Increases in sedimentation, degradation of water quality, changes in channel and habitat complexity related to mining activities are anticipated to adversely affect and likely result in a take of the egg, larval and juvenile life history stages by harming or impairing feeding, breeding and sheltering patterns of adult and juvenile bull trout.

The KNF anticipates the activities with the likelihood of harm and harassment would continue for approximately 35 years, the life of the plan of operations (USDA 1999). However, mine operation could exceed that time frame and long-term effects of mining operations would likely continue indefinitely after mine closure. Impacts associated with groundwater development, metals contamination, and catastrophic events also are inherent to a proposal of this magnitude and considered risks to bull trout. Such impacts are difficult to predict, but are not anticipated by the FWS. These actions contribute to the overall risk to

bull trout in the Cabinet Gorge Reservoir subpopulation and Reasonable and Prudent Measures must be taken to minimize take.

The amount of take expected in the Rock Creek watershed is difficult to quantify because of the wide ranging distribution of bull trout, identification and detection of dead or impaired species at the egg and larval stages is unlikely, losses may be masked by seasonal fluctuations in numbers and aquatic habitat modifications are difficult to ascribe to particular sources, especially in already degraded watersheds. In addition, the effects of management actions associated with the mining operations are largely unquantifiable in the short term and may only be measurable in the long-term effects to the species or population levels.

The FWS anticipates incidental take of bull trout primarily in the form of harm and harassment at varying levels as described in the biological opinion. The FWS believes incidental take of bull trout could occur because of the implementation of proposed mining activities in post-implementation years 1 through 35; however, long term effects of mining operations would likely continue indefinitely after mine closure. Incidental take is expected to occur primarily in West Fork Rock Creek and Rock Creek downstream from the West Fork confluence, approximately 9 stream miles. No incidental take is anticipated in the Bull River system; therefore, none is exempted.

To ensure protection for a species assigned take due to mining related activities, reinitiation is required if the Terms and Conditions are not adhered to or the magnitude of the mining activities exceed the scope of this opinion.

Effect of the Take
In the biological opinion, the FWS determined that this level of anticipated take is not likely to jeopardize the continued existence of the Columbia Basin DPS of bull trout, as listed.

Reasonable and Prudent Measures
The FWS determined the following reasonable and prudent measure(s) are necessary and appropriate to minimize impacts of incidental take of bull trout:

1. To better assess and quantify incidental take of bull trout, Sterling Mining Company shall complete watershed assessment of the Rock Creek watershed which characterizes Rock Creek bull trout, habitat conditions, and existing sediment sources in the basin. This is to be done in consultation with the Rock Creek Watershed Council, the KNF, and the FWS. Incorporate, as appropriate, any additional findings into monitoring and mitigation plans.

    a. Implement a fish monitoring program to document the current status of Rock Creek bull trout and the effect of mitigation activities on Rock Creek bull trout. Define bull trout distribution, densities, age class structures, genetics, growth rates, fecundity, and status of life history forms.

    b. Implement a fish monitoring program to document the current status of brook and brown trout distribution and the effect of project activities on Rock Creek brook and brown trout. Determine feasibility of reducing risk of hybridization and inter-specific competition by removing brook and brown trout from the Rock Creek drainage using accepted methodology.

    c. Implement an assessment of existing habitat conditions for bull trout. Include assessment of spawning, rearing and over wintering conditions for resident and adfluvial bull trout. Also include temperature monitoring to establish baseline conditions for bull trout.

d. Implement a stream habitat enhancement program that improves the ability of bull trout to move throughout the year in Rock Creek and increases habitat availability and diversity for migratory and resident bull trout. Include an assessment of alternatives and designs for stream diversion to be constructed around the paste facility.

e. Identify sediment sources currently impacting Rock Creek and plan, design, and implement sediment abatement measures to reduce sediment input to the stream prior to initiation of any ground disturbing activities not related to adit exploration and development. This plan should identify existing sediment sources such as culverts, road impacts, bridges, past bank stabilization efforts and utility right of way impacts. Complete a road systems analysis to define existing and future road uses and closures.

f. Implement a sediment monitoring program to document the ongoing condition of Rock Creek and the effect of mitigation activities on sediment levels, and the actual effect of project activities and proposed mitigation actions on sediment levels in the drainage.

2. Evaluate all possible operations of the existing effluent location or relocating the effluent outfall discharge pipe to a location eliminating any potential impacts to bull trout related to project effects on migrating or holding fish moving into Rock Creek from the Clark Fork River.

3. Implement a metals monitoring program that includes monitoring levels of metal concentrations in water, sediments, macroinvertebrates, and fish tissues. This could be incorporated in several conceptual monitoring plans including, but not limited to, the Aquatics and Fisheries Monitoring and Mitigation Plan.

4. Identify key spawning areas and implement a monitoring program of changes in groundwater influence for spawning and rearing bull trout. This would be incorporated into the groundwater monitoring program.

5. Complete a risk assessment of failure related to haul routes and mine related vehicle traffic. Incorporate any additional measures identified to minimize the risk of failures and the associated impacts to bull trout.

6. Incorporate any additional measures identified to minimize the risk of failure of the paste pile or facility and the associated impacts to bull trout.

7. Implement reporting and consultation requirements as outlined in the following terms and conditions.

Terms and Conditions:
In order to be exempt from the prohibitions of section 9 of the Act, the KNF must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions are established to implement reasonable and prudent measure No. 1:

Upon the of issuance of the letter of approval for the Rock Creek mine, the KNF would require the applicant to initiate baseline studies for use in a complete watershed assessment of Rock Creek. The KNF would require the applicant to complete and submit the watershed assessment to the KNF and FWS prior to surface disturbance activity *not* related to the evaluation adit phase of the project.

The assessment would include information to characterize Rock Creek bull trout, habitat conditions and existing sediment sources in the basin and would address the following issues for bull trout:

a. A monitoring plan to document the prevalence of Rock Creek bull trout. That monitoring plan would include studies to define bull trout distribution, densities, age class structures, genetics, and status of migratory (adfluvial) bull trout.

b. An assessment and subsequent monitoring to define the prevalence and distribution of brook and brown trout. In conjunction with Montana Fish, Wildlife and Parks, determine the feasibility of removing brook and brown trout from Rock Creek using accepted methodology. Evaluate the potential reduction of hybridization and competition risk by non-native species and benefit to bull trout. If determined feasible and needed, subject to agreement with Montana Fish, Wildlife and Parks, remove brook and brown trout from the Rock Creek drainage using accepted methodology.

c. An assessment of current habitat conditions for bull trout. The assessment would include information on quantity and quality of spawning, rearing and over wintering conditions for resident and adfluvial bull trout.

d. An assessment of possible sediment mitigation and reduction projects within the Rock Creek basin as outlined in the proposed action. Recommendations of stream enhancement projects should be included in that assessment.

e. A feasibility assessment (including engineering options, conceptual designs, estimated costs and expected sediment load effects) for sediment abatement measures that would reduce sediment levels in the Rock Creek drainage. This assessment would include any designs for the proposed stream diversion around the proposed paste facility and a complete roads analysis and recommendations associated with proposed mitigation projects and mine activities.

   (1) The sediment abatement program shall reduce the sediment levels in Rock Creek by approximately 38 percent (the projected increase in sediment levels attributable to development of the mine as described in the BA) prior to surface disturbance activity **not** related to the evaluation adit phase of the project.

   (2) Upon completion of the feasibility assessment (1. d., above), the KNF would require the applicant to complete design and permitting requirements, in consultation with MDEQ, the KNF, and the FWS, and begin construction of such sediment abatement measures as agreed to by the KNF and the FWS.

f. Upon the issuance of the letter of approval for the Rock Creek Project, the KNF would require the applicant to complete and submit to the KNF and the FWS a sediment monitoring plan that would adequately assess the current and long-term status of sediment levels in Rock Creek. The sediment monitoring plan would be developed in consultation with MDEQ, the KNF and the FWS and would address the entire KNF permit time period. This also would include a complete assessment of the effectiveness of the sediment abatement program in the Rock Creek drainage. If the assessment concludes, and the FWS agrees, that the sediment abatement program failed to substantially reduce sediment levels in Rock Creek, then the applicant would prepare an assessment of other measures that could be implemented in the Rock Creek drainage and would be completed in a time frame agreed to by the FWS.

The following terms and conditions are established to implement reasonable and prudent measure # 2:

a. Prior to surface disturbance activity **not** related to the evaluation adit phase of the project, the KNF would require the applicant to complete, and submit to the KNF and the FWS, an evaluation of operational options with existing diffuser location and alternative locations for siting the diffuser entering the Clark Fork River below Noxon Dam. The evaluation would be prepared in consultation with the KNF, MDEQ, and the FWS and would focus on recommendations that would minimize potential effects on migrating or resident bull trout utilizing the Clark Fork River habitats adjacent to the mouth of Rock Creek and the spring area immediately upstream. The FWS would have the authority to ultimately approve the evaluation.

b. If the evaluation identifies a more appropriate operation or location for the diffuser (2. a., above), the KNF would require the applicant to modify the plan of operations, as agreeable to the FWS, to incorporate the alternative most likely to minimize impacts to bull trout.

The following terms and conditions are established to implement reasonable and prudent measure #3:

a. Prior to surface disturbance activity *not* related to the evaluation adit phase of the project, the applicant shall submit a plan to the KNF and the FWS for metals monitoring as it relates to bull trout habitat requirements that includes monitoring in water samples, sediment samples, and fish samples. This monitoring would start prior to mine development to establish the baseline, and continue during operations and post operations as determined necessary by the KNF and the FWS. The FWS would have the authority to ultimately approve the plan.

The following terms and conditions are established to implement reasonable and prudent measure #4:

a. Prior to surface disturbance activity **not** related to the evaluation adit phase of the project, the KNF shall require the applicant to submit a plan to the KNF and the FWS for monitoring of groundwater effects as they relate to bull trout habitat requirements. This monitoring would start prior to mine development to assess the baseline, and continue during operations and post operations as determined necessary by the KNF and the FWS. The FWS would have the authority to ultimately approve the plan.

The following terms and conditions are established to implement reasonable and prudent measure #5:

a. Prior to surface disturbance activity *not* related to the evaluation adit phase of the project, the KNF shall require the applicant to submit a risk assessment of accidents related to haul routes for mine related vehicle traffic to the KNF and the FWS for evaluation. The assessment would determine areas most at risk for bull trout and make recommendations for additional measures and responses to minimize risk. If any additional measures can be incorporated to minimize the risk of catastrophic failures, the KNF, MDEQ, and the FWS would determine the timeline and mechanism for implementation of those identified measures.

The following terms and conditions are established to implement reasonable and prudent measure # 6:

a. Minimization of paste pile or facility failures includes: employing the Bottom-Up construction sequence, installing blanket and finger drains beneath the paste facility; continually modeling and monitoring the moisture content of the paste pile during operations to better understand saturation levels, generating a detailed design of the paste plant operations and disposal system to ensure quality assurance and quality control during operation and post-closure. If any additional measures can be incorporated to minimize the risk of catastrophic paste pile or facility failures, the KNF, MDEQ, and the FWS would determine the timeline and mechanism for implementation of those identified measures.

The following terms and conditions are established to implement reasonable and prudent measure # 7:

a. The KNF would require the applicant to annually prepare and submit to the FWS a report of the mining year activities as well as the next year's proposed activities.

b. Upon locating dead or injured bull trout or upon observing destruction of redds, notification must be made within 24 hours to the Montana Field Office at 406-449-5225. Record information relative to the date, time, and location of dead or injured bull trout when found, and possible cause of injury or death of each fish and provide this information to the FWS.

c. During project development and operation the KNF or applicant shall notify the FWS within 24 hours of any emergency or unanticipated situations arising that may be detrimental for bull trout relative to the proposed activity.

d. Within 90 days of the end of each year, the KNF or applicant would provide a written report or letter to the FWS indicating the actual number of bull trout taken, if any, as well as any relevant biological/habitat data or other pertinent information on bull trout that was collected.

e. The KNF shall assure consistent implementation of measures and standards specified in the Aquatic Conservation strategies as indicated in the 1998 Biological Opinion for the Effects to Bull Trout from the Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategies for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and portions of Nevada (INFISH), and the Interim Strategy for Managing Anadromous Fish-producing Watershed in Eastern Oregon and Washington, Idaho and portions of California (PACFISH).

f. To better monitor mitigation measures identified, the KNF would provide summaries to the FWS of all INFISH compliance, water quality and fish population monitoring conducted in conjunction with these mining operations.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. With implementation of these measures, the FWS expects that take of bull trout would be a result of the impacts to instream habitat associated with increases in sediment, modifications to water quality, and modifications of instream habitat conditions for the life of the mining operations and reclamation activities. Some long-term effects of mining operations would likely continue indefinitely after mine closure. If, during the course of the action, the project descriptions are not adhered to, the level of incidental take anticipated in the biological opinion may be exceeded. Such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The FWS retains the discretion to determine whether non-compliance with terms and conditions results in take exceeding that considered here, and whether consultation should be re-initiated. This may require suspension of mining operations. The Federal agency must immediately provide an explanation of the causes of the taking and review with the FWS the need for possible modification of the reasonable and prudent measures.

Conservation Recommendations:
Section 7(a)(1) ESA directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of

a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. The FWS recognizes the impacts of past mining, roading and logging actions on watersheds on the KNF. For the benefit of the watershed and listed bull trout, the FWS encourages the KNF to seek funding to reclaim and restore impacts from previous actions.

2. The FWS recognizes and appreciates the KNF and Sterling Mining Company's involvement with the Rock Creek Watershed Council. We encourage continued participation and development of actions to further restore native fish populations in the Rock Creek drainage.

3. To progress toward bull trout recovery in the Clark Fork Recovery Unit, the FWS encourages the KNF to consider incorporating recommended recovery tasks of the bull trout draft recovery plan (USDI 2002b).

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

E. COMMENTS AND REVIEWS AFTER KNF'S WITHDRAWAL OF THE 2001 ROD

Review of Western Mining Action Group Comments on FEIS and 2001 ROD

In September 2001, I signed a Record of Decision (ROD) for the proposed Rock Creek Project plan of operations. The ROD was appealed to the Regional Forester by Western Mining Action Group (WMAG) on behalf of six appellants: Rock Creek Alliance (RCA), Clark Fork Coalition, Cabinet Resource Group, Montana Wilderness Association, Mineral Policy Center and the Sierra Club. After the FWS withdrew its Biological Opinion, I withdrew the Forest Service ROD (please see section I of this ROD). The appeal was therefore rendered moot, and the Regional Forester dismissed it.

WMAG's appeal of the 2001 ROD incorporated and relied substantially upon two separate reports appellants had commissioned and provided to the KNF after the FEIS and ROD had been completed. The two reports were provided as part of the appeal, and comprised comments and opinions by Mr. James Kuipers and Dr. Anne Maest that reflected their disagreement with the professional analyses and opinions of Forest Service and DEQ experts regarding adequacy of environmental impact disclosure in the FEIS; potential for mine subsidence; rock geochemistry; and ground water. These comments and differences of opinion with agency experts expressed in the two reports were submitted long after the EIS public comment period had ended, and therefore couldn't be considered during the FEIS process. Regardless, I requested that Forest Service and DEQ experts further analyze and respond to the issues in the Kuipers and Maest reports so that I could consider the WMAG comments in this new Record of Decision.

I have reviewed the following agency expert analysis and response to the WMAG's Kuipers report, and it is a part of the project record for this ROD:

McKay, John, Joseph Gurrieri, and Peter Werner (2003), Technical Review of RCA Comments on the Rock Creek Project FEIS Subsidence Analysis, 18 pp.

This agency subsidence and ground water review, analysis, and response disagreed with Kuipers' assertions about the potential for subsidence and effects on ground and surface waters. It pointed out that the generalizations in Kuipers' report are not useful in the accurate disclosure of subsidence potential or effects on ground water at a particular mine. The response explains that subsidence potential depends on

many factors, the most important of which are the geologic conditions of the area being mined, the mining technique, the width and depth of the ore zone, amount of material extracted, strength of surrounding rock, and underground support provided either by leaving ore in place or by artificial means such as backfilling. The response further points out that all of Kuipers' issues were thoroughly analyzed in the DEIS, SDEIS, and FEIS. Further, the agency review and response found that the FEIS analysis clearly considers and discloses the potential for environmental impacts caused by subsidence and potential mining-related impacts to surface and ground water resources, and the FEIS analysis supports the rationale for the mitigation outlined in the FEIS to address those potential impacts.

In addition the agencies commissioned Camp Dresser and McKee (CDM), an international engineering firm, with expertise in subsidence to conduct an independent third party study of the subsidence potential for the development of the DEIS, SDEIS and FEIS (CDM, 1989). The CDM report describes the effectiveness of the room and pillar-mining method proposed at Rock Creek and addressed the risk of subsidence. Using standard accepted mining engineering techniques, CDM determined from the information presented to them that the support pillars would be stable, and that any underground instability such as roof spalling, "…would not result in surface effects such as subsidence or the opening of fractures" (CDM, 1989). CDM report supports the conclusion that the risk of subsidence can be reduced to a low or negligible level by employing design and development elements that will alleviate critical stresses that could lead to the collapse of underground workings. The agencies incorporated CDM's findings into the FEIS and in the mitigation measures in the ROD. The second study was conducted by Dave Young, former project manager for the Rock Creek project and a professional engineer (Young, 1994). That analysis was submitted in support of Sterling's proposed mine plan. CDM reviewed and concurred with the conclusion of Mr. Young's analysis.

Agency experts also noted that an excellent analogy for the proposed Rock Creek mining method and risks of subsidence exists at the nearby Troy Mine. This mine has been in operation since the 1970's with full production occurring from 1979 to 1993. The Rock Creek project will use the same mining method as employed at Troy, will mine the same rock type, and will have an overall mining height that will be less than what has been mined at the Troy Mine. Throughout its development and operation, the Troy Mine has been evaluated for subsidence and its effects through monitoring and inspections. To date, there is no indication that subsidence will be an issue either now or in the future.

The FEIS analysis for subsidence does not assert that subsidence would not occur under any of the mining alternatives, rather the FEIS analysis is specific in its statements that if subsidence were to occur, the impacts could potentially be significant (FEIS, 2001, p. 4-27). That is precisely why the agencies' preferred alternative for the Rock Creek project includes provisions to address any uncertainties related to subsidence such as those raised by Mr. Kuipers. The alternatives outlined in the FEIS include specific monitoring, testing and modeling requirements above and beyond what is contained in the proponent's alternative. These requirements will increase the information and understanding of underground conditions, and will result in a reduction in the level of uncertainty associated with the potential for subsidence due to underground mining. This will allow the agencies to identify additional operational requirements, if any that may be needed to further reduce the likelihood of subsidence and its associated impacts.

In summary, the Kuipers's report does not constitute new information bearing on environmental concerns for the proposed Rock Creek project. Rather, the Kuipers's report simply reflects his personal views and disagreements with independent consultants retained by the agencies and the agencies' own experts.

The report authored by Dr. Ann Maest in support of WMAG's appeal of my prior ROD alleged that the FEIS and the agencies had inadequately considered geochemical issues related to the Rock Creek project; inaccurately characterized the geology of the Rock Creek deposit; and inappropriately considered the Troy Mine (Spar Lake deposit) as an analog for the Rock Creek project. I have reviewed the following

agency expert analysis and response to the WMAG's Maest report, and it is a part of the administrative record for this ROD:

> *Kuzel, Laura, and John McKay (2003), Agency Response to Dr. Ann Maest Review Rock Creek FEIS Geochemical Issues, 21 pp. with attachments*

This agency expert geochemical analysis and response disagreed with all of Maest's assertions, and pointed out that numerous errors, inaccuracies, and over-generalizations exist in Maest's report. The agency response points out that the use of the Troy Mine, as a geologic analog for the Rock Creek project is proper and in conformance with practices indicated by other experts in mine drainage issues, including Dr. Geoff Plumlee with the U.S. Geological Survey (Plumlee, 1999). The agency response also indicates that, as disclosed in the FEIS, these geochemical issues were already the subject of a third party evaluation (Klohn Crippen, 1996) that concluded data were sufficient for mine operations to proceed and for completion of the FEIS process. All of Dr. Maest's assertions were fully discussed in the FEIS.

To give even further consideration to the disagreements WMAG and Maest have with agency experts, the Kootenai National Forest contracted in 2002 with Maxim Technologies, an independent expert consulting company with extensive worldwide expertise in geochemical issues, acid rock drainage, metal leaching, geological, and other mining-related issues. Maxim retained world-renowned geochemist Dr. Donald Runnells to assist in this review. He worked with Maxim Senior Geochemist Lisa Bithell Kirk to review Maest's report, the information in the FEIS, the project record, and other available information that relates to acid rock drainage, metal leachate, and water quality effects for the proposed Rock Creek Project.

In regard to these three issues, we asked Maxim to assess and provide an expert report and opinion on the adequacy and sufficiency of the available information to support the agencies' findings in the FEIS and decisions on permit conditions and approval. In addition, we asked Maxim to review the report written by Ann Maest and to prepare a response that specifically addressed each of Maest's conclusions and opinions on the sufficiency and adequacy of the information in the FEIS. I have reviewed the following report prepared by Maxim, and it is a part of the project record for this ROD:

> *Kirk, Lisa Bithell and Dr. Donald Runnells (2003), Rock Creek Project 2003 Geochemistry Review, 84pp. with attachments.*

Maxim reviewed the FEIS and pertinent supporting geochemistry data for the proposed Rock Creek mine. Maxim strongly disagreed with Maest and concluded that the agencies presented adequate data to support the NEPA analysis of the alternatives defined in the FEIS and the decision to proceed with the preferred alternative. Maxim concluded that the FEIS adequately describes the geochemistry of the existing environment and the proposed action. Maxim pointed out that most of the sulfide mineralization in the Rock Creek ore body is either acid-consuming or non-acid generating. Further, Maxim noted that Maest's interpretations based on her assumption that all sulfide minerals present are acid-generating pyrite are inaccurate and misrepresent the potential for water quality impacts.

Maxim stated, "The FEIS is based on a comprehensive understanding of the mineralogy and hydrogeochemistry of Revett-style stratabound copper deposits. It documents and appropriately analyzes potential environmental impacts, as well as uncertainties associated with those impacts. The relative risk introduced by the identified uncertainties is minor, and, in our opinion, additional analysis will not substantively change the management plan. Suitable operational management procedures and additional static, kinetic, and metal mobility testing have been required in the 2001 Record of Decision to protect the environment. The phased approach to final exploration and mine development will facilitate collection of additional representative samples for analyses that are needed to more fully develop an accurate understanding of long-term environmental geochemistry for permitting and operations purposes. This

understanding will continue to evolve during the proposed mine development using an appropriately designed operational geochemistry program."

In addition, KNF authorized Maxim to conduct additional analyses of mineralogy, acid generation potential, whole rock metal content, and metal release potential. Since these analyses were required by the 2001 ROD. Maxim suggested that they could help to further consider Maest's comments prior to issuance of a new Record of Decision. Upon completion of this testing, Maxim found that the…"results of these analyses confirm the use of Troy as a geochemical analog for the Rock Creek deposit, support the interpretations based on assay data that are presented in Chapter 2, and provide additional evidence of the very low risk of acid generation and metal release potential associated with the proposed Rock Creek project." Chapter 2 of the Maxim report concluded that available data were adequate and sufficient to support the agencies' NEPA analysis presented in the final FEIS and 2001 ROD.

In summary, these additional tests conducted by Maxim do not constitute significant new information relevant to environmental concerns with the proposed project or its impacts. Rather, these tests and analyses strongly support and reinforce existing analyses and assumptions in the FEIS. Maxim's analyses indicate that the Maest report does not constitute new information bearing on environmental concerns for the proposed Rock Creek project. Rather, Maest's report simply reflects her personal views and disagreements with independent consultants retained by the agencies and the agencies' own experts.

Sterling Mining Co., on its own volition and in its official capacity as an interested party, filed the following report with the KNF that also addresses and disagrees with the issues raised by the Maest report, particularly her geological and geochemical conclusions:

> *Balla, John C. Dr., Analysis of the Report Entitled "Evaluation of Geochemical Issues at the Rock Creek Project, Montana", January 17, 2003.*

Dr. Balla is an acknowledged expert in the geology of the Rock Creek and other Revett Formation-hosted deposits in northwest Montana. He has worked on these deposits for 35 years, has spent extensive time in the field studying their geological characteristics, and has published numerous professional studies of these deposits (for additional references see Balla 2003). In his 2003 analysis of the Maest report, Dr. Balla strenuously objects to Dr. Maest's asserted expertise on these deposits. He cites that she has never worked on these deposits, never visited them, and has failed to acknowledge and use existing data in the project record. He also objects to her restating and use out of context of his (Balla's) previous work. Balla states emphatically that, "The Rock Creek deposit **is** a geologic analogue to the Troy mine (Spar Lake deposit). The geological characteristics of the Rock Creek deposit are similar to, if not identical with, the Troy mine (Spar Lake deposit)…Based upon the author's 35 years of knowledge of working on these deposits, the author completely disagrees with Maest's assertions. She is just wrong."

In addition, Dr. Balla cites evidence in the KNF project record that depicts the common origin and consistent nature and predictability of Revett Fm.-hosted copper-silver deposits, such as Spar Lake and Rock Creek, which in turn supports reliance upon less data than might be needed with other more geologically variable ore deposits. Balla also points out that there are extensive outcrops where the ore mineralization occurs right at the surface but no where is there evidence of even any minor acid rock drainage having developed on these exposures. He notes that one of the key and somewhat unique characteristics of Revett Fm.-hosted copper silver deposits is that each of the tiny disseminated grains of ore minerals is naturally surrounded and encapsulated by quartz minerals that protect each ore grain from weathering.

In conclusion, I have reviewed the comments submitted by WMAG, including those raised in the Maest and Kuipers reports, and have also reviewed the four above-referenced reports and responses prepared by

agency experts, Maxim, and Dr. Balla. I am convinced that the draft, supplemental draft, and final FEIS's thoroughly discussed and disclosed potential impacts related to all of the issues raised by WMAG, and that the agencies have designed appropriate mitigation to address these impacts. I also conclude that none of these reports constitutes significant new information bearing on environmental concerns for the proposed Rock Creek project. The findings in the FEIS are valid and there is no need for additional NEPA analysis.

Review of Total Maximum Daily Load For Water Quality Limited Streams

Under the Federal Clean Water Act, the State of Montana is required semi-annually to report to EPA a list of water bodies or portions thereof that are water quality-limited, that is that do not meet applicable water quality standards. These water bodies, as well as water bodies that do not fully support their designated beneficial uses, are identified in the Montana 305(b) Report (DEQ 1996). Section 303(d) of the federal Clean Water Act further requires the developments of total maximum daily load (TMDL) for streams on the 305(b) list. The TMDL calculation determines the allowable pollutant load, from all sources, that a water body can assimilate and not violate the applicable water quality standard.

The State of Montana has listed Rock Creek (MT76N003-19) as a moderate priority for development of a TMDL for sediment. This listing is due to the *potential* for water quality degradation associated with the Rock Creek Mine project. The State also lists the Clark Fork River, from Warm Springs Creek to the confluence of the Flathead River, as a high priority for TMDL development due to excessive nutrient loads and other sources of impairment. In addition, 97 miles of the Clark Fork below the confluence with the Flathead River to the Idaho border are listed as partially supporting aquatic life and cold-water fisheries due to flow alternation and thermal modifications resulting from dam operation and construction but are not listed as requiring a TMDL (2001 ROD, Attachment 4).

The pending TMDL for sediment requirements has been addressed through the State's authority to regulate Section 303 of the Clean Water Act. The Montana Pollutant Discharge Elimination System (MPDES) for the Rock Creek Project has been issued pursuant to DEQ's ROD dated December 26, 2001. The MPDES permit is in compliance with U.S. District Court order, (*Friends of the Wild Swan v. U.S. EPA. et al.,* CV 97-35-M-DWM, District of Montana, Missoula Division, September 21, 2000). This court order states until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new permits or increase permitted discharges under the MPDES program unless it is demonstrated that: 1) the discharge is in compliance with the provisions of 75-5-303, MCA (Nondegradation Policy); 2) the discharge will not cause a decline in water quality for the parameters for which the water body is listed; and, 3) the minimum treatment requirements are met.[75-5-703(10), MCA]. The MPDES permit requirements for Rock Creek meet those standards (MPDES Permit, Rock Creek Project, 2001).

Issues concerning Rock Creek as a "Water Quality Limited Stream" (WQLS) and the need to develop a "Total Maximum Daily Load" (TMDL) were considered and used to help determine the amount of mitigation needed to allow the project to go forward and not delay or impair the creation of a TMDL for Rock Creek. The 1998 list of impaired watersheds listed Rock Creek as "threatened" due to metals and siltation from mining and silviculture sources. The definition of "threatened" is; a waterbody for which sufficient credible data and calculated increases in loads show that the water body or stream segment is fully supporting its designated uses but is threatened due to proposed actions. In 2000 ASARCO Hydrometrics (FEIS page 4-63) petitioned the state to remove Rock Creek from the WQLS list based on their existing data set. After a review of the information the threatened status of the impairments was dropped and Rock Creek is now listed as "partially supporting" aquatic life and cold water fisheries. The

probable causes for the listing are fish habitat degradation and other habitat alterations due to silviculture sources. All other uses are being fully supported at this time.

A number of aquatic/fisheries mitigation are included under Alternative V that will benefit bull trout (FEIS, Appendix B, Bull Trout BA pages 22-23 see also ROD pages 32-41). The main focus of most of this mitigation is to prevent sediment from reaching Rock Creek and maintaining vegetation between FDR No. 150 and the creek. The primary mitigation driven by the need to reduce sediment in Rock Creek requires Sterling to reduce 400 tons of suspended sediment per year by identifying existing sources of sediment and rehabilitating those sites to prevent sediment production. An aquatics/fisheries monitoring plan is found in the revised Appendix K (Attachment 2). The agencies are considering development of a public web site that will allow the public to track the arrival of monitoring reports and design plans, the status of operations, inspections, and compliance reviews.

I have determined, based on the review of FEIS; the additional information contained in the Maxim report regarding geochemical behavior of the ore, and waste rock; Maxim's and agencies review of Dr. Maest's and Mr. Kuipers's reports and additional information presented in this ROD that the monitoring plans, conceptual designs of mine facilities and operations, and mitigation plans as outlined in the FEIS contain sufficient information and critical criteria on which to base KNF's analysis for reducing, minimizing, avoiding, or mitigating potential impacts to the surface and ground water associated with this project.

I have also concluded the information does not change the findings in the FEIS and therefore does not warrant additional NEPA analysis. This information is part of the project record and open for public review.

KNF will continue their open door policy to the public and will welcome review and comment on all project-related documents on file. The public will be informed of any subsequent MEPA/NEPA analysis as required by law. The agencies are considering development of a public web site that will allow the public to track the arrival of monitoring reports and design plans, the status of operations, inspections, and compliance reviews.

VIII. ALTERNATIVE DEVELOPMENT

A. ALTERNATIVES CONSIDERED IN DETAIL

Alternatives to the proposed action were developed to address the eight issues identified during the public scoping process and analyzed to determine the effects of the project. The intent of these alternatives was to minimize potentially negative environmental impacts by modification of planned operations/facilities, and new or expanded mitigation and monitoring plans. Table 3 identifies which issues are addressed by the modifications, mitigation, and monitoring plans carried forward into one or more of the agencies' alternatives described below in this ROD and in more detail in the FEIS. The five alternatives, including the no-action alternative, summarized below are described in detail in Chapter 2 of the FEIS (FEIS pages 2-16 through 2-144). A comparison of the components and reclamation plans for these alternatives is presented in Tables 4 (page 50) and 5 (page 54) of this ROD.

The five alternatives considered in the FEIS and this ROD provides a range of alternatives and mitigation as required by NEPA. The FEIS addresses direct, indirect, and cumulative impacts that would occur if any alternative is selected and implemented relative to the issues listed earlier in this document (FEIS Chapter 4).

Alternative I: the No-Action Alternative

Under Alternative I, the no-action alternative, Sterling would not be allowed to develop the project. The no-action alternative provides a baseline for estimating the effects of other alternatives and is required by NEPA. The effects of the No Action Alternative were evaluated. Existing baseline conditions and trends would be maintained.

Table 3. Agency Alternatives Versus Issues

Items Carried Forward to One or More Agency Alternatives	**Issues Addressed or Affected by Modification/mitigation/Monitoring Plans In One or More Agency Alternatives**							
	1: Water	**2**: Fish & Wildlife	**3**: Tailings Stability	**4**: Socioeconomics	**5**: Old Growth	**6**: Wetlands	**7**: Traffic Safety	**8**: Aesthetics
Facilities Location:								
Mine Portal and Mill Site	X	X		X	X	X	X	X
Tailings Impoundment/ Paste Deposition Siting	X	X	X		X	X		X
Air Intake Ventilation Adit		X						X
Utility and Road Corridors	X	X			X	X	X	X
Rail Sidings				X		X	X	X
Water Treatment Plant Location		X				X		
Methods and Procedure:								
Water Treatment Systems	X	X						X
Tailings Surface Disposal Methods	X	X	X			X		X
Modifying the Rail Loadout Facility	X	X					X	
New/Expanded Mitigation	X	X	X			X	X	X
New/Expanded Monitoring Plans	X	X	X			X	X	

Table 4. Rock Creek Project Action Alternative Comparison

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATION	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATION	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
Mill Site	6.5 miles up FDR No. 150 to upper end West Fork Rock Creek	6.5 miles up FDR No. 150 to upper end West Fork Rock Creek	Confluence of east and west forks of Rock Creek	Confluence of east and west forks of Rock Creek
Tailings Impoundment	Rock Creek site 325 feet high, 324 acres, upstream construction	Rock Creek site 325 feet high, 324 acres, upstream construction with modified centerline design w/technical review panel	Rock Creek site 325 feet high, 324 acres, upstream construction with modified centerline design w/technical review panel	Same location as Alternative II but utilizing paste
Adit Waste Rock Dump	Southeast of adit 600,000 tons	Above mill site 600,000 tons, some used to create mill site	No separate waste rock dump. 1,000,000 tons used to create mill site and starter berm	No separate waste rock dump. 1,000,000 tons used to create mill site and starter berm
Mine Adits, Length & Grade (to underground crusher)	Up Chicago Peak Rd (FDR No. 2741) 9,000' @+12.7%	Up Chicago Peak Rd (FDR No. 2741) 9,000' @+12.7%	At confluence mill site 15,530' @+12%, portal east of FDR No. 150, mill west of FDR No. 150	Similar to Alternative IV, both mine portal and mill west of FDR No. 150.
Mine Adit Access	New gravel road from mill site	FDR No. 150 to FDR No. 2741 1.26 mi. to unnamed spur	FDR No. 150 to mill site. All within mill site boundary. FDR No, 150 underpass to access mine portal except for short spur off of FDR No. 150 for large equipment	FDR No. 150 to mill site. All access from within mill site boundary
Evaluation Adit Length & Grade	Portal near end of FDR No. 2741 6,592' @-10%	Portal near end of FDR No. 2741 6,592' @-10%	Portal near end of FDR No. 2741 6,592' @-10%	Portal near end of FDR No. 2741 6,592' @-10%
Evaluation Adit Waste Rock	178,000 tons, Placed downhill of adit entrance	178,000 tons, Placed downhill of adit entrance	178,000 tons, Placed downhill of adit entrance	178,000 tons, Placed downhill of adit entrance
Evaluation Adit Road, Length & Grade	FDR No. 150 to FDR No. 2741, upgrade FDR No. 2741 for 4.6 mi. & reconst 0.18 mi. spur to 14' wide, gravel	FDR No. 150 to FDR No. 2741, upgrade FDR No. 2741 for 4.6 mi. & reconst 0.18 mi. spur to 14' wide, gravel	FDR No. 150 to FDR No. 2741, upgrade FDR No. 2741 for 4.6 mi. & reconst 0.18 mi. spur to 14' wide, gravel, plus improve 2.8 miles of FDR No. 150 above confluence mill site	FDR No. 150 to FDR No. 2741, upgrade FDR No. 2741 for 4.6 mi. & reconst 0.18 mi. spur to 14' wide, gravel, plus improve 2.8 miles of FDR No. 150 above confluence mill site
Evaluation Adit Water Discharge Line	6" polyethylene line approx. 8.5 mi. both X-C & along Rd 150, laid on surface for 3 yrs	6" polyethylene line approx. 8.5 mi. both X-C & along Rd 150, laid on surface for 3 yrs	6" polyethylene line approx. 8.5 mi. both X-C & along Rd 150, laid on surface for 3 yrs	6" polyethylene line approx. 8.5 mi. both X-C & along Rd 150, laid on surface for 3 yrs
New Road Construction for Long-term Use	(1) 1.34 mi. new const beginning of FDR No. 150, 24' paved	(1) 2.16 mi. new const beginning of FDR No. 150, 24' paved (different location than Alternative II)	(1) 2.16 mi. new const beginning of FDR No. 150, 24' paved (different location than Alternative II)	(1) Similar to Alternative III along different alignment for 1.62 miles
	(2) Const 0.88 mi. of 14' graveled road around mill	(2) Const 0.88 mi. of 24' graveled road around mill	(2) Const 0.04 mi. of 24' paved road into mill site	(2) Const 0.04 mi. of 24' paved road into mill site

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATION	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATION	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
	(3) N/A	(3) Const 0.23 mi. to connect FDR No. 150 to FDR No. 1022, gravel, 14' wide	(3) Const 0.23 mi. to connect FDR No. 150 to FDR No. 1022, gravel, 14' wide	(3) Const 0.23 mi. to connect FDR No. 150 to FDR No. 1022, gravel, 14' wide
	(4) Const 2.33 mi. of 14' graveled road from Sec. 15 to impoundment and const 1.02 of 10' graveled road in Sec. 3 & 10, both along slurry/reclaim lines	(4) Const 0.61 mi. of 14' gravel road along slurry line, Sec 3 & 10	(4) N/A	(4) N/A
	(5) N/A	(5) 0.08 mi. of 10' road for slurry/reclaim line (FDR No.150B to water reclaim pump), gravel	(5) 0.08 mi. of 10' road for slurry/reclaim line (FDR No.150B to water reclaim pump), gravel	(5) 0.08 mi. of 10' road for slurry/reclaim line (FDR No.150B to water reclaim pump), gravel
	(6) Const 1.43 mi. of 14' road around S & W of tailings imp for access to dam base and seepage collection line	(6) Const 1.6 mi. of 14' road around S end of tailings imp for access to dam base & rail loadout (paved w/turnouts)	(6) Const 1.6 mi. of 14' road around S end of tailings imp for access to dam base & rail loadout (paved w/turnouts)	(6) Const 1.6 mi. of 14' road around S end of tailings imp for access to dam base & rail loadout (paved w/turnouts)
New Road Construction (Continued)	(7) N/A	(7) Const 0.25 mi. of 14' road to access rail loadout (paved)	(7) Const 0.25 mi. of 14' road to access rail loadout (paved)	(7) Const 0.25 mi. of 14' road to access rail loadout (paved)
	(8) N/A	(8) Const 0.57 mi. of 10' road - gravel for seepage collection line	(8) N/A	(8) Const 0.57 mi. of 10' road – gravel for seepage collection line, plus const 0.22 mi. - 14' of paved road to paste plant
	(9) Mine Adit Access 1.41 mi. @ 6.5%, 20' wide with 75' ROW, graveled	(9) N/A - see Road Reconstruction	(9) N/A	(9) N/A
	TOTALS: 1.34 mi. paved and 7.07 mi. gravel roads	**TOTALS: 4.01 mi. new paved and 2.29 mi. new gravel roads**	**TOTALS: 4.19 miles paved and 0.25 gravel roads**	**TOTALS: 3.73 miles paved and 0.88 gravel roads**
Road Reconstruction for Long-term Use	(1) FDR No. 150 to mill, widened to 24' & paved for 5.1 mi.	(1) FDR No. 150 to mill, widened to 24' & paved for 4.02	(1) FDR No. 150 to mill, widened to 24' confluence mill site, 2.94 mi., paved	(1) FDR No. 150 to mill, widened to 24' confluence mill site, 3.42 mi., paved
	(2) FDR No. 150B from FDR No. 150 to seepage collection system 0.96 mi. of 14' (gravel)	(2) Improve FDR No. 150-B for 1.7 mi. from Rock Creek crossing to tailings impoundment, widen to 14' slurry line on inside edge of road (paved w/turnouts)	(2) Improve FDR No. 150-B for 1.7 mi. from Rock Creek crossing to tailings impoundment, widen to 14' slurry line on inside edge of road (paved w/turnouts)	(2) Improve FDR No. 150-B for 1.7 mi. from Rock Creek crossing to tailings impoundment, widen to 14' slurry line on inside edge of road (paved w/turnouts) including paste plant access 0.76 mi. paved and 1.07 mi. graveled
	(3) Discharge line road to river 0.75 mi. - 10' wide	(3) Discharge line road to river 0.75 mi. - 10' wide graveled	(3) Discharge line road to river 0.75 mi. - 10' wide graveled	(3) Discharge line road to river 0.75 mi. - 10' wide graveled
	(4) N/A	(4) Reconst 0.19 mi. of FDR No. 150 from north end of mill site to FDR No. 1741 to 20' wide graveled	(4) Reconst 0.24 mi. of FDR No. 150 between mill entrance road and portal spur road to 24' wide, graveled	(4) N/A
	TOTALS: 5.1 mi. paved, 0.96 graveled, 0.75 dirt	**TOTALS: 5.72 mi. paved, 2.6 mi. graveled**	**TOTALS: 4.64 mi. paved, 0.99 graveled**	**TOTALS: 4.18 mi. paved, 1.82 graveled**

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATION	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATION	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
Slurry and Reclaim Lines	From mill along FDR No. 150 to approx. center Sec. 3, then X-C to impoundment 4.7 mi. (two 10" high pressure urethane-lined steel slurry lines on piers, 1 buried 12' steel reclaim line) 3.3 mi. would be X-C, 1.4 mi. along FDR No. 150	Same as Alternative II to SE of Sec. 15 then continues on FDR No. 150 to SE of Sec. 22 where it follows FDR No. 150-B to impoundment 0.3 mi. X-C in Sec. 10 & 4.9 mi. parallels FDR No. 150	From mill along FDR No. 150 to intersection of old and new FDR No. 150, parallels FDR No.150B to tailings impoundment 3.8 mi.	Same route as Alternative IV but 4 mi. One 16-24" urethane-lined steel pipeline for slurry, 16" reclaim water pipeline.
Excess Mine Adit Water Handling	(1) 12" polyethylene line buried adjacent to road from adit to mill, 6,700'	(1) Buried from adit down ridge 3,000' to mill	(1) N/A	(1) N/A
	(2) From mill 12" buried line parallels slurry line to Sec. 15, then parallel's FDR No. 150 to MT Hwy 200, then would parallel hwy for 500', would cross and parallel road to Clark Fork for 6.1 mi.	(2) 12" steel excess water line parallels slurry line to intersection of new FDR No. 150, then parallels FDR No. 150 to wastewater treatment plant, remainder same as Alternative II, 7.5 mi.	(2) Follows basically the same route as Alternative III except starts at confluence mill site, 6.1 mi.	(2) Basically the same as Alternative IV except 12-14" and goes X-C in Section 33 5.7 mi.
Transmission Line 230 kV Pole Line	Parallels existing 230 kV line from switchyard. Would cross hwy, then parallel newly constructed & reconstructed FDR No. 150 to mill, 5.7 mi.	Starts as in Alternative II, then parallels proposed FDR No. 150 & reconstructed FDR No. 150 to mill 6.6 mi. total length	Same as Alternative III except only goes to confluence mill site 5.2 mi.	Same as Alternative III except near wastewater treatment site 5.3 mi.
Conveyor Line	From adit to mill 2,500' by 42" wide	From adit to mill 2,500' by 42" wide	750' long within mill site	750' long within mill site
Wilderness Air Intake Ventilation adit	On approx. 57% slope, 1,600' NE of ridge @ elev. of 5,760'	In the cliffs on approx. 150% slope, 400' NE of ridge @ elev. of 6,700'	In the cliffs on approx. 150% slope, 400' NE of ridge @ elev. of 6,700'	In the cliffs on approx. 150% slope, 400' NE of ridge @ elev. of 6,700'
Rail Loadout Location	At Herford siding	Miller Gulch	Miller Gulch	Miller Gulch
Tailings Impoundment Starter Dam Borrow	735,000 cu. yards of borrow from within impoundment & 3 borrow sites (27.2 acres)	735,000 cu. yards of borrow from within impoundment & 3 borrow sites (27.2 acres	735,000 cu. yards of borrow from within impoundment, waste rock from adit construction and borrow site 3 (27.2 acres)	Borrow from within impoundment and utilize waste rock from adit construction
Ore Concentrate Transport Method	Ore concentrate trucked to Hereford Siding	Ore concentrate trucked to Miller Gulch rail loadout	Ore concentrate trucked to Miller Gulch rail loadout	Ore concentrate slurried in buried pipeline to Miller Gulch rail loadout via 3" dual wall pipe with leak detection
Soil Storage (1) Evaluation Adit	(1) North end; 1.2 ac; 8,757 cy	(1) North end; 1.2 ac; 8,757 cy	(1) North end; 1.2 ac; 8,757 cy	(1) North end; 1.2 ac; 8,757 cy
(2) Support Facilities	(2) Adjacent storage; 1.3 ac; 4,193 cy	(2) Adjacent storage; 1.3 ac; 4,193 cy	(2) Adjacent storage; 1.3 ac; 4,193 cy	(2) Adjacent storage; 1.3 ac; 4,193 cy
(3) Tailings Impoundment and associated components	(3) Impoundment, borrow areas, pump station S-1 parallel to power line; 11.3 ac; 248,086 cy S-2 northeast corner near borrow site B-2; 8.3 ac; 179,649 cy Roads (access, haul); adjacent storage; 5.4 ac; 9,290 cy Water control structures; adjacent storage; 9.2 ac; 17,141 cy	(3) Similar to Alternative II but stockpiles S-1 and S-2 expanded to handle additional volume: S-1 increases to 19 ac; 563,227 cy S-2 increases to 17.7 ac; 549,598 cy Roads 9,290 cy Water control structures 17,141 cy	(3) Similar to Alternative II but stockpiles S-1 and S-2 expanded to handle additional volume: S-1 increases to 19 ac; 563,227 cy S-2 increases to 17.7 ac; 549,598 cy Roads 9,290 cy Water control structures 17,141 cy	(3) Same as Alternative III but soil stockpiles reduced to 18 ac. because soil will be salvaged incrementally and replaced concurrently, other sites available if needed.

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATION	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATION	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
(4) Transportation Corridor	(4) Stored adjacent to each component; total 29.3 ac; 56,371 cy	(4) Soil stored adjacent to each component only when salvage showed clear benefit to revegetation and would not result in excessive disturbance	(4) Soil stored adjacent to each component only when salvage showed clear benefit to revegetation and would not result in excessive disturbance	(4) Soil stored adjacent to each component only when salvage showed clear benefit to revegetation and would not result in excessive disturbance
(5) Water Treatment Facility	(5) Adjacent storage; 10.0 ac; 32,269 cy	(5) Adjacent storage; 10.0 ac; 32,269 cy	(5) Adjacent storage; 10.0 ac; 32,269 cy	(5) Adjacent storage; 10.0 ac; 32,269 cy
(6) Mill Facilities	(6) S-3 south end; 2.5 ac; 42,271 cy S-4 north end; 3.4 ac; 56,910 cy adjacent storage 1,010 cy	(6) Similar to Alternative II but stockpiles S-3 and S-4 expanded to handle additional volume: S-3 increases to 78,921 cy S-4 increases to 93,560 cy	(6) New location at confluences mill site: north-center; 4.1 ac; 151,665 cy	(6) New location at confluences mill site: north-center; 4.1 ac; 151,665 cy
(7) Mine	(7) Top soil storage; S-5, 1.5 acres	(7) Similar to Alternative II but soil stored along toe/sides of 2 small waste rock dumps; 9,681 cy	(7) Included in mill facilities (6) above	7) Included in mill facilities (6) above
	Total cubic yards: 655,949	**Total cubic yards: 1,423,010**	**Total cubic yards: 1,392,513**	**Total cubic yards: 1,392,573**
Mine Adit Water Treatment	Clarification filtration with a passive biotreatment and ion exchange system	Clarification filtration with a passive biotreatment and ion exchange system	Clarification filtration with a passive biotreatment and ion exchange system	Clarification, filtration, nitrification, denitrification (anoxic biotreatment and/or reverse osmosis), aerated pond with settling system.
Evaluation Adit Water Treatment	Pressure filtration, oil skimmer, and a passive biotreatment and ion exchange system	Pressure filtration, oil skimmer, and a passive biotreatment and ion exchange system	Pressure filtration, oil skimmer, and a passive biotreatment and ion exchange system	Pressure filtration, oil skimmer, and a reverse osmosis with a pilot anoxic biotreatment system.

Notes: X-C means cross-country; N/A means not applicable; ROW means right-of-way; cy means cubic yards.

Table 5. Rock Creek Project Reclamation Comparison

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigation	Alternative IV Modified Project w/Mitigation	Alternative V Paste Facility & Alternative Water Treatment
TAILINGS STORAGE AND ASSOCIATED FACILITIES					
Soil depth (average)	18-33 inches (30 inches average)	Salvage depth - 11.0 inches Respread depth- 9.5 inches on impoundment - 11.4 inches on facilities - 14.3 inches on transportation corridor	Salvage Depth: 24 inches in two lifts Respread depth - 24 inches on tailings	Salvage Depth: 24 inches in two lifts Respread depth - 24 inches on tailings	Similar to Alternatives III and IV but minimum replaced depth of 24 inches, rocky soils placed on steeper slopes, rocky soils mixed from crushed rocks and non-rocky soils if more is needed than is naturally available
Interim[1] revegetation on dam faces	N/A	None	Interim revegetation with G/F[2] until reshaping completed	Interim revegetation with G/F[2] until reshaping completed	Interim mix (where necessary) will be the same as the final mix. Interim seed mix will be added to paste to limit erosion off paste slopes during operations and to reduce aesthetic impacts.
Final revegetation on dam faces	N/A	Phased during construction with seeded G/F/S[2] Containerized S/T[2] during post mine operation reclamation	Initiated after 7th year of construction. Phased in during remaining years of mine operation with seeded G/F and containerized locally grown and/or native S/T[2] every 3-4 years	Initiated after 7th year of construction. Phased in during remaining years of mine operation with seeded G/F and containerized locally grown and/or native S/T[2] every 3-4 years	Toe buttresses and paste deposit slopes will be seeded with final revegetation mix on any portion that reaches final grade annually regardless of option.
Planting plan	N/A	Alternating strips for drill-seeded species (8-feet wide) and containerized species (2- to 4-feet wide), 6-foot spacing for trees	Plans replicate naturally occurring species, densities, and distributions	Plans replicate naturally occurring species, densities, and distributions	Same as Alternatives III and IV.
Post-mining topography	N/A	Smooth planar faces and abrupt transitions to adjacent topography	Reshaping and grading of faces (years 7-to end of mine life) every 3-4 years Smooth transitions from human made to natural land forms	Reshaping and grading of faces (years 7-to end of mine life) every 3-4 years Smooth transitions from human made to natural land forms	Portions of the paste facility and toe buttresses that reach final grade will be reclaimed annually. Smooth transitions from human made to natural landforms.
Associated facilities: soil stockpiles, roads, pipeline corridors	N/A N/A	Interim reveg with G[2] Final reveg with seeded G/F/S[2] and containerized T[2] on stockpile sites and roads. No T on transportation corridor, only S.	Interim reveg with G[2] Final reveg with containerized locally grown and/or native S/T on stockpile sites as depleted; road cut fill slopes and pipeline corridors immediately	Interim reveg with G[2] Final reveg with containerized locally grown and/or native S/T on stockpile sites as depleted; road cut fill slopes and pipeline corridors immediately	N/A Final revegetation on all operational disturbances as completed. Interim mix (where necessary) will be the same as the final mix.

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigation	Alternative IV Modified Project w/Mitigation	Alternative V Paste Facility & Alternative Water Treatment
MILL SITE, PORTAL, AND ASSOCIATED FACILITIES					
Soil depth (average)	21 inches	Salvage depth - 21 inches Respread depth -11.4 inches	Salvage depths: Lift 1 - 11 inches Lift 2 - up to 25 inches Respread depth - 24 inches (in 2 lifts)	Salvage depth: Lift 1 - 19 inches Lift 2 - 6 inches Respread depth - 24 inches in 2 lifts	Similar to Alternative IV, but minimum replaced depth of 24 inches
Final reclamation	N/A	Revegetation with seeded G/F/S[2] and containerized T[2] at end of mine life	Revegetation with seeded G/F and containerized locally grown and/or native S/T[2] at end of mine life	Revegetation with seeded G/F and containerized native S/T after year 4 on pad faces. Revegetation on pad surface at end of mine life	Revegetation with seeded G/F and containerized native S/T after year 4 on pad faces. Revegetation on pad surface at end of mine life
Planting plans	N/A	Alternating strips for drill-seeded species (8-feet wide) and containerized species (2- to 4-feet wide), 6-foot spacing for trees	Plans replicate naturally occurring species, densities, and distributions	Plans replicate naturally occurring species, densities, and distributions	Plans replicate naturally occurring species, densities, and distributions
Post-mining topography	N/A	Abrupt transition to adjacent topography at mill site and portal	Reshaping and grading of mill site and portal area (at end of mine life) to more natural appearing forms Smooth transitions from human made to natural land forms	Same as Alternative III for portal. Shaping of mill pad faces in years 1-4 Reshaping of pad surface at end of mine life	Same as Alternative III for portal. Shaping of mill pad faces in years 1-4 Reshaping of pad surface at end of mine life
MINE WASTE ROCK DUMP					
Soil depth (average)	0-24 inches	Salvage depth up to 24 inches on part of waste rock dump Respread depth - 11.4 inches (soil from mill site area used on part of upper slope and top)	Salvage depth: Lift 1 - 24 inches on 40% slopes. Respread depth: 0-24 inches with two smaller dumps (additional soil from mill site as needed)	N/A - no separate waste rock dump	N/A - no separate waste rock dump
Final reclamation	N/A	Revegetation with seeded G/F/S[2] and containerized T[2] at end of mine life	Revegetation with containerized native S/T[2] in year 5	N/A	N/A
Planting Plans	N/A	Reforestation on top.	Reforestation on top.	N/A	N/A
Post-mining topography	N/A	Top 1-2 % slope Face 1.25:1 slope	Top 1-2 % slope Face 1.25:1 slope	N/A	N/A

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigation	Alternative IV Modified Project w/Mitigation	Alternative V Paste Facility & Alternative Water Treatment
EVALUATION ADIT AND WASTE ROCK DUMP					
Soil depth (average)	Average 9.2 inches over 7.7 acres	Salvage depth: From 4.3 acres: Lift 1 - 6 inches (2.0 acres) and 5 inches (2.3 acres) Lift 2 - 24 inches (2.0 acres)	Salvage depths same as Alternative II	Salvage depths same as Alternative II	Salvage depths same as Alternative II
Final Reclamation		Respread depth 1.9 acres on dump face 13 inches on 5.0 acres on adit, dump and facilities 12 inches. 1.4 acres of face left as talus. Final revegetation in year 3 on waste rock dump	Respread depth similar to Alternative II but areas respread would coincide with planting plans	Respread depth 1.9 acres on dump face 13 inches on 5.0 acres on adit, dump and facilities 12 inches. 1.4 acres of face left as talus. Final revegetation in year 3 on waste rock dump	Respread depth similar to Alternative II but areas respread would coincide with planting plans
Revegetation	N/A	Seeded immediately after construction with G/F^3 on access road, soil stockpiles, and surface water control features Adit and grass seeding as features are recontoured (as soon as possible after completion of evaluation work)	Interim seeding with G/F^2 on access road, ditches, and soil stockpiles Final seeding of disturbed areas with containerized locally grown S/T^2, except locally grown and native S/T^2 at evaluation adit.	Interim seeding with G/F^2 on access road, ditches, and soil stockpiles Final seeding of disturbed areas with containerized locally grown S/T^2, except locally grown and native S/T^2 at evaluation adit.	Interim seeding with G/F^2 on access road, ditches, and soil stockpiles Final seeding of disturbed areas with containerized locally grown S/T^2, except locally grown and native S/T^2 at evaluation adit.
Planting plans	N/A	Uniform G^2 cover on 4.9 acres with 1.4 acres left as talus. No reforestation	Pockets and edges of disturbed areas planted with locally grown and/or native S/T^2 to achieve mosaic appearance similar to adjacent slopes	Pockets and edges of disturbed areas planted with locally grown and/or native S/T^2 to achieve mosaic appearance similar to adjacent slopes	Pockets and edges of disturbed areas planted with locally grown and/or native S/T^2 to achieve mosaic appearance similar to adjacent slopes
Post-mining topography	N/A	Top of dump 1-2% slope. Face of dump graded to 2H:IV slope; bench approximately 100-feet wide retained.	Dump recontoured to approximate existing contours with no bench.	Dump recontoured to approximate existing contours with no bench.	Dump recontoured to approximate existing contours with no bench.
EVALUATION ADIT SUPPORT FACILITIES SITE					
Soil Depth	24 inches 30 inches average for alternate location	Salvage depth (24 inches)	Salvage depth (24 inches)	Salvage depth (24 inches)	Salvage 24 inches in 2 lifts (adjacent to paste facility site)
Final Reclamation		Respread depth (24 inches)	Respread depth (24 inches)	Respread depth (24 inches)	Respread depth - 24 inches in two lifts
Revegetation	N/A	Same as for impoundment	Same as for impoundment	Same as for impoundment	Same as paste facility
Planting plans	N/A	Same as for impoundment	Same as for impoundment	Same as for impoundment	Same as paste facility

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigation	Alternative IV Modified Project w/Mitigation	Alternative V Paste Facility & Alternative Water Treatment
Post-mining topography	N/A	Support facility site returned to approximate original contour	Support facility site same as Alternative II.	Support facility site same as Alternative II.	alternate support facilities site reclaimed to approximate original contour.
WATER TREATMENT FACILITY					
Soil Depth (ave)	24 inches	Salvage depth 24 inches Respread depth 24 inches	Different location but otherwise same as Alternative II	Different location but otherwise same as Alternative II	Different location but otherwise same as Alternative II
Revegetation	N/A	Interim revegetation during operation. Final revegetation after treatment plant decommissioned	Same as Alternative II, but with same species specified for mill site and impoundment	Same as Alternative II, but with same species specified for mill site and impoundment	Same as Alternative II, but with same species specified for mill site and impoundment
Planting Plans	N/A	Same as for tailings impoundment	Same as for tailings impoundment	Same as for tailings impoundment	Same as for tailings paste facility
Post-mining Topography	N/A	Return to approximate original contour	Same as Alternative II but different location	Same as Alternative II but different location	Same as Alternative II but different location

Notes:
[1]Interim - a temporary grass seed mix used primarily for soil stabilization that would be replanted with a final seed and/or planting mix.
[2] G/F/S/T - Grasses/Forbs/Shrubs/Trees specified for revegetation; see Appendix G for seeding and planting proposals.
[3] Same G/F seed mix proposed for interim and final revegetation on evaluation adit.
N/A = not applicable

Alternative II: The Proposed Action

Alternative II is Sterling's proposed plan. Sterling would construct, operate, monitor, and reclaim the Rock Creek Project as proposed in the plan of operation and hard rock permit application and exploration license application as well as its air quality permit application and MPDES permit application. The evaluation adit would be constructed in about a year. Mine construction would take approximately 3 years. The mine would then produce 10,000 tons of ore per day or 3.5 million tons per year over a 26- to 30-year period depending upon the actual amount of ore and recovery rates. Reclamation activities would take an additional 2 years.

Alternative II would require disturbing five areas (evaluation adit, evaluation adit support facilities site, the mill site and mine portals, the tailings impoundment and wastewater treatment facility, and the rail loadout) along with road and utility corridors during construction and operation of the project. It would disturb a total of 584 acres within a permit area of 2,395 acres. The mill site and the mine portal would be located in the upper end of the West Fork of Rock Creek on FDR No. 150 about 1 mile from the CMW boundary. The mine portals located on the hill above and east of the mill site would provide access via two mine adits to the underground workings. The mine would be developed using a room and pillar or slot and pillar method.

The evaluation adit would be located near the top of the drainage off of FDR No. 2741, less than ¼ mile from the CMW. The evaluation adit, requested under an exploration license application required by DEQ, would be used to delineate and define the orebody. The term "exploration" as used here stems from the DEQ permitting process, where the term "exploration" refers to a spectrum of activities, including those related to early development work prior to production. The use of this term by DEQ is not intended to imply the activity is pre-discovery in the context of the Federal mining laws. To help avoid this confusion, this facility is referred to as the evaluation adit to describe its function rather than its licensure. A small evaluation adit support facilities site would be located in Section 12 on Sterling fee lands. These facilities would be constructed and used prior to mine construction and operation.

A tailings impoundment using an upslope construction method would be located northwest of the confluence of Rock Creek and the Clark Fork River. The impoundment would be 324 feet high and cover 325 acres. A wastewater treatment plant containing a passive biotreatment system and an ion exchange system would be located at the northeast edge of the impoundment.

The intersection of FDR No. 150 and Montana Highway 200 would be relocated approximately 2,000 feet northwest of the FDR No. 1022 and Montana Highway 200 intersection. Utilities, including a 230 kV power line, and pipelines would generally follow FDR No. 150, except for a cross-country piece in Sections 3 and 10 and from the highway to the discharge point in the Clark Fork River in Sections 32 and 33. The pipelines would be above ground except for the return water line; only the tailings pipelines would be double-walled and no leak detection sensors were proposed. Several bridges would be replaced.

Alternative III: The Proposed Project with Modifications and Mitigation

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Alternative III is an agency alternative to the proposed plan. Sterling would construct, operate, monitor, and reclaim the Rock Creek Project as proposed in the plan of operation, its hard rock permit application, and exploration license application as well as in its air quality and MPDES permit applications but as modified by the agencies.

Alternative III would require disturbing six areas (the wastewater treatment facility was relocated to a separate location) along with road and utility corridors during construction and operation of the project. It would disturb a total of 609 acres within a permit area of 2,538 acres. Alternative III included the

evaluation adit and its support facilities site as described for Alternative II. The reclamation plan was modified somewhat to eliminate the bench at the evaluation adit portal. The mill site and portals would be in the same location as Alternative II, although the access to the mine portals was changed to avoid some unstable soils. The basic underground mining design was the same as Alternative II although no pillar robbing would be allowed.

Six other major modifications were included in Alternative III. These included moving the rail loadout facility to Miller Gulch just west of the impoundment, moving the wastewater treatment facility east of Rock Creek, requiring an alternate design of the impoundment to improve its stability, moving the intersection of FDR No. 150 and Montana Highway 200 for siting purposes, combining road and utility corridors whenever possible, and relocating the air-intake ventilation adit in the CMW.

Numerous visual mitigation was added to buffer views and reduce contrast of structures. Mitigation was included to reduce sound levels. Additional requirements to mitigate impacts to wildlife, aquatics and fisheries, and threatened and endangered species, including grizzly bear and bull trout, were included. Substantial mitigation was added to the reclamation plan to provide additional control over soil salvage and replacement, vegetation removal and disposal, vegetation management, and erosion control. Soil would be salvaged in and replaced at deeper thickness (a minimum of 24 inches) and when combined with several additional revegetation mitigation would result in more rapid and more successful revegetation than the original proposal. The wetlands mitigation plan had to be modified to compensate for sites lost due to the alternate realignment of the lower stretch of FDR No. 150.

Rock mechanics studies, a subsidence control and monitoring plan, and a geochemical and acid-base account testing plan were required for this alternative. Monitoring plans for hydrology, soils and revegetation, fisheries/aquatics, and wildlife were expanded.

Alternative IV: Modified Rock Creek Project with Mitigation

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Alternative IV is an agency alternative to the proposed plan. Sterling would construct, operate, monitor, and reclaim the Rock Creek Project as proposed in the plan of operation, its hard rock permit application, and exploration license application as well as in its air quality and MPDES permit applications but as modified by the agencies.

Alternative IV would require disturbing 6 areas. It would disturb a total of 542 acres within a permit area of 1,533 acres. Alternative IV included the evaluation adit and its support facilities site as described for Alternative II. The reclamation plan was modified to eliminate the bench at the evaluation adit portal as in Alternative III. The basic underground mining design was the same as for Alternative II although no pillar robbing would be allowed.

The only major modification incorporated into Alternative IV to differentiate it from Alternative III is the relocation of the mill site to the confluence of the east and west forks of Rock Creek. This reduced the amount of road construction and reconstruction and allowed for a 300-foot buffer between the mill site and the streams as well as a 100-foot buffer between FDR No. 150 and the mill site. It also lengthened the mine development and construction period from 3 to 4.5 years because of the longer mine adit lengths. The remaining six major modifications not associated with the upper mill site that were included in Alternative III are also included in Alternative IV. However, the reclamation plan and the grizzly bear mitigation plan were modified due to the alternate location of the mill and the reduction in disturbed acres.

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Alternative V: Rock Creek Project with Tailings Paste Deposition and Alternate Water Treatment

Alternative V is an agency alternative to the proposed plan and was the preferred alternative in the FEIS. Sterling would construct, operate, monitor, and reclaim the Rock Creek Project as proposed in the plan of operation, its hard rock permit application, and exploration license application, as well as in its air quality and MPDES permit applications as modified by the agencies. The agencies' decision approves operations consistent with this alternative as further modified in the ROD.

Alternative V will disturb five areas along with the road and utility corridors: the evaluation adit portal site, the mine portals and mill site, the wastewater treatment site, the tailings paste plant and storage facility (the evaluation adit support facilities site will be located within this same area), and the air-intake ventilation adit. It would disturb a total of 343 acres of private land and 140 acres of National Forest lands for a total of 483 acres of disturbance. The permit area is 1,560 acres of which 811 acres are National Forest lands. Alternative V includes the evaluation adit as described for Alternative II. The reclamation plan was modified to eliminate the bench at the evaluation adit portal. The basic underground mining design remained as for Alternative II although no pillar robbing would be allowed and buffer zones were added. All other modifications and mitigation included in Alternative IV were carried forward to Alternative V.

The evaluation adit support facilities site was relocated to a site within the proposed footprint of the tailings paste facility, eliminating an area of disturbance. Alternative V added three more major modifications. These were the deposition of tailings as a paste on the ground rather than as a slurry into an impoundment, the use of anoxic biotreatment and reverse osmosis water treatment systems[3] instead of passive biotreatment and ion exchange water treatment systems, and enclosure of the rail loadout facility.

Several additional mitigation were added to address public concerns:

a. These included burying all pipelines except at stream crossings and using double-walled pipes with leak detection sensors.
b. Pumping of concentrate from the mill to the rail loadout.
c. Busing of mine workers from parking lots in lower Rock Creek to the mill and limiting access along FDR No. 150B between the paste plant and FDR No. 150 to mine and agency staff.
d. Restricting road construction/reconstruction and hauling of waste rock to the paste facility between April 1 and July 1.
e. Developing site-specific reclamation requirements for the paste facility.
f. Development of new water management plans that were submitted with a revised MPDES permit application, revision of the wetland mitigation plan to provide additional mitigation sites.
g. Changes in the grizzly bear mitigation plan to substitute road closures on Government Mountain Road for closure of the upper portion of the Chicago Peak Road (FDR No. 2741).
h. Revised Threatened and Endangered Mitigation Plan FEIS, Appendix B and Attachment 4 ROD.
i. Existing mitigation measures and additional mitigation were added to address the concerns of the FWS relative to bull trout and grizzly bears.
j. Additional harlequin duck mitigation was incorporated.
k. Monitoring of vegetation associated with springs and seeps and cultural resources monitoring were added to address some tribal concerns.
l. The acid rock drainage and metals leaching plan, more detailed rock mechanics monitoring, and an evaluation adit data evaluation plan were incorporated into Alternative V.
m. The applicant also suggested moving the mine portal west of FDR No. 150 to line the up conveyor belt with the mill facilities to improve milling efficiency. This also removed any mill- and mine-

[3] Brine generated by the reverse osmosis water treatment system would be treated on-site and transported to a certified landfill for disposal and burial. The brine would not be classified as a toxic or hazardous material according to EPA legal criteria.

related disturbances at the confluence location east of FDR No. 150 and simplified storm water handling requirements. The applicant also requested that the rail loadout facility be included within the permit boundaries, hence the increase in permitted size compared to Alternative IV.

B. ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION

A number of alternatives to the proposed action were evaluated but eliminated from detailed consideration. An in-depth discussion of these alternatives appears in the FEIS in Part III page 2-161, along with the agencies' rationale for dismissal. These potential alternatives were identified as a result of public participation as well as agency concerns. In all, alternatives in 12 categories were evaluated and dismissed from detailed consideration due to technical, operational, economic, or environmental considerations. These twelve categories are:

- other recoverable ore bodies;
- mill and mine portal siting alternatives;
- tailings impoundment siting and construction methods alternatives;
- tailings paste deposition siting alternatives;
- McKay Creek impoundment alternative;
- McKay Creek water retention dam;
- other tailings disposal and transport methods, including backfilling;
- lined tailings disposal facility;
- rail siding (loadout) alternatives;
- combined operations (Rock Creek and Montanore);
- alternate water treatment methods; and
- socioeconomic alternatives.

Because the proposal was only for mining a specific orebody, other recoverable ore bodies were not considered further. Two alternate locations for the mine portal were eliminated as the sites were either unsuitable geologically or would result in greater disturbance than the proposal or the alternate agency sites. Eight sites and combinations of sites for locating the tailings impoundment or paste facility were evaluated and dismissed, as were two alternate construction methods (upslope or down slope impoundment construction) for those sites. Generally, these alternatives had insufficient capacity, greater areas of disturbance than the alternatives considered, had a tailings slurry line crossing the Clark Fork River, required purchases of private property, or required more than one paste plant. The location at McKay Creek to the east of the proposed Rock Creek tailings storage facility was considered in even greater detail under two scenarios, but was eventually dismissed primarily because of the greater impact to wetlands and the need for a permanent perennial stream diversion. Three alternate tailings disposal methods, dry tailings, backfilling with tailings, and paste backfilling with tailings were considered and dismissed along with four options for transporting paste tailings into the mine because there were no greater environmental benefits, operational constraints, and the fact that tailings would still need to be stored on the surface because less than 40 percent could physically be stored underground. Lining the impoundment was determined to have nearly equivalent benefits compared to paste tailings without potential stability problems. Three alternate rail siding locations were examined but eliminated because of construction and access problems.

The combined operations alternative had some definite benefits, however, the agencies have no authority to require different mining companies to jointly mine and process both the Rock Creek and the Rock Lake ore bodies from one location. Three alternate water treatment methods were considered. Land Application Disposal was dismissed because there was insufficient area to use this method to treat all the mine water, and this method could not be used during winter months. Constructed wetlands were

eliminated from consideration because there was not sufficient land available for the ponds needed to retain the water long enough to obtain the desired water quality. Conventional nitrification and denitrification treatment was not considered further because of difficulty of operation. Under Alternative V the same level of treatment could be obtained with the alternate water treatment systems with a lower operating cost. Two socioeconomic alternatives, a construction employment cap was determined not to be necessary because the longer construction period for alternatives IV and V essentially resulted in a work cap, and while the company had committed to working with the communities to address a temporary housing solution, the agencies had no authority to require them to provide temporary housing. The five alternatives considered in the FEIS presented a range of alternatives relative to the issues.

C. ENVIRONMENTALLY PREFERRED ALTERNATIVES

The identification of an environmentally preferred alternative is required by NEPA (40 CFR 1508.2(b)) The environmentally preferred alternative is that alternative which has the least impact on the physical and biological environment and which best protects, preserves, and enhances historic, cultural, and natural resources. Economic, social, technical, and agency mission factors are not considered in the identification of this alternative. The no-action alternative, Alternative I, is the alternative that best meets this definition. Mining would not occur and there would be no mining related disturbances under this alternative at this location. Sterling could, however, submit another plan of operations to mine this orebody, and the agencies would conduct an environmental impact analysis of the new plan under NEPA and MEPA.

Alternative V is the most environmentally preferable of the action alternatives. This alternative meets the purpose and need for the proposal and includes reasonable mitigation to protect resources. There are numerous mitigation incorporated into this alternative that were not incorporated into the other two agency alternatives that greatly reduced impacts to ground water beneath the tailings storage facility, to surface waters, to sensitive plants and animals, to bull trout and other threatened and endangered species, and to scenic resources, transportation, recreational access, sound, and air quality. See Chapter 4 of the FEIS for more detail on impacts under the various alternatives.

IX. DEQ DECISIONS

DEQ's decisions are summarized here in this ROD. A complete discussion is found in DEQ's ROD pages 34 through 44, 2001 ROD. The following decision parameters are discussed to explain the relationship between KNF's and DEQ's decision-making responsibilities.

a. Exploration License Application:

DEQ approved the plan of operations for the Rock Creek evaluation adit with additional modifications and mitigation as incorporated into Alternative V in the final EIS and as modified by the 2001 ROD. These changes to the proposed action are necessary to comply with the Metal Mines Reclamation Act (MMRA). The implementation of the additional modifications and mitigation will ensure that the reclaimed evaluation adit site will support a post-mining land use that has comparable stability and utility to that of the adjacent undisturbed landscape. The company must provide updated replacement pages for the plan of operation and reclamation plan. All final plans and designs are subject to review and approval by the agencies; formal technical panels will accomplish the reviews where required or appropriate. Although the exploration license can be issued as soon as the bond is submitted, all required plans must be finalized and approved before any construction can take place.

Details on these requirements are in Attachment 1 to this ROD, and include the following conditions: Stipulations 8, 9, 10 (a, c), 11, 12, 19(b), 20 (a, b, d-f, h, i), 21, 22, 25(a-e, g), 26, 29, 49, 50, 51, 53(a, e), 54, 55, 57, 58, 64(a-e), 65(a, b), 66, 67, 73(a-d), 74, 75, 76, and 77 will have to be incorporated into the company's plan of operations for the evaluation adit. Monitoring plans are described in the revised Appendix K in Attachment 2. Monitoring report requirements pursuant to these stipulations are contained in Attachment 3. Sterling has elected to add mitigation to the exploration license and that decision is indicated in Attachment 1. Those include Stipulations 20(c, g), 30(c), 33, 34, 35, 37, 39, 42(a-c, e-m, q-t), 43, 69, 73(d), 77, 78, and 79.

b. Hard Rock Mine Permit Application

DEQ conditionally approved the plan of operations for the Rock Creek Mine with additional modifications and mitigation as incorporated into Alternative V in the final EIS and as modified in the 2001 ROD. These changes to the proposed action are necessary to comply with the MMRA. The implementation of the additional modifications and mitigation will ensure that the reclaimed mine facility sites will support a post-mining land use that has comparable stability and utility to that of the adjacent undisturbed landscape. The company must provide updated replacement pages for the plan of operation and reclamation plan. All final plans and designs are subject to review and approval by the agencies; formal technical panels will accomplish the reviews where required or appropriate. Although the hard rock permit can be issued as soon as the bond is submitted, all required plans must be finalized and approved before any construction can take place. Details on these requirements are in Attachment 1 to this document and the FEIS and include the following conditions. Stipulations 1 (c, d, e, g, h), 5(a), 6(a), 7, 10(a-c), 14, 15, 16, 17, 19 (a, b, d, e), 20(a, b, d-f, h, i), 22, 23(a-b), 24, 25 (a-i), 26, 27, 28, 29, 41, 47, 48, 49, 50, 52, 53(b, c, e), 54, 55, 56, 57, 58 (a, b), 59, 60, 61(b), 63(a, b), 64(a-e), 65(a-b), 66, 67, 70, 71, 73(a-d), 74, 75, and 76 will have to be incorporated into the company's plan of operations. Stipulations 2, 9, 11, 12, 13, 44, 45, 46, 47, and 51 are already contained in Sterling's MPDES or air quality permit applications but need to be incorporated into the hard rock operating permit's plan of operations and reclamation plan. Monitoring plans are described in the revised Appendix K in Attachment 2. Monitoring report requirements pursuant to these stipulations are contained in Attachment 3. Any other stipulations identified as being applicable to the mine operation can only be added to the permit requirements if Sterling chooses to add those requirements; however, they may be required by the USFS or Corps of Engineers. Sterling has elected to add some of that mitigation to the hard rock operating permit and that decision is indicated in Attachment 1. Those include Stipulations 1(a, b, f), 2, 3, 5(b), 18, 19(c), 20(c, g), 21, 30(a-c), 31, 32(a-c), 33, 34, 35, 36, 37, 38, 39, 40, 42(a-t), 43(a-b), 61(a), 62(b-c), 63(a-f), 68, 69(a), 72, 77, 78, and 79.

The conditional approval of the project refers to changes to the plan of operation, reclamation plan, monitoring plans, or mitigation plans that may be required based on the analysis of data collected during evaluation adit construction. If the data analysis indicates that there would be no significant changes in potential impacts from implementation of the project, as approved, then final approval would be granted after the analysis was completed. If, however, the analysis indicated that impacts would be significantly different from or greater than disclosed in the final EIS, then the plan of operations must to be revised to address the impacts. Any such revisions will require some level of MEPA/NEPA analysis and the project will not be able to proceed until that analysis has been completed and decisions have been rendered according to state law on the proposed changes.

c. MPDES Permit Application

The discharge limitations and monitoring requirements are necessary to ensure that all project-related discharges comply with the Montana Water Quality Act. The effluent limits and other conditions of

the MPDES permit for the Rock Creek Mine are based on state water quality standards, including nondegradation standards, to protect all applicable beneficial uses. Because the discharge will enter the Clark Fork River 18 miles upstream of the Idaho border, the discharge must also comply with Idaho water quality standards. Idaho standards designate the Clark Fork River in Idaho and Lake Pend Oreille as Special Resources Waters. This designation requires that existing water quality cannot be lowered. Lowering of water quality is defined as a measurable adverse change in chemical, physical, or biological parameters relevant to a beneficial use. The effluent limits in the proposed MPDES permit would not result in a measurable change in either Montana or Idaho, according to the criteria discussed in the Statement of Basis in the FEIS (FEIS Appendix D); therefore, will comply with Idaho's regulations.

Additional stipulation to the MPDES permit addresses remaining concerns about the timeliness of monitoring reports versus actual discharge conditions. The Water Resources Monitoring Plan, Revised Appendix K (Attachment 2), for the exploration license and the hard rock operating permit, requires that all laboratory data must be submitted upon completion regardless of the timing of the next monitoring report. However, the Discharge Monitoring Reports required by the MPDES permit are submitted on a monthly basis, which adequately addresses this concern, and so the additional stipulation will not be added to the MPDES permit. Minor editorial corrections have also been made to the Statement of Basis on file with DEQ.

d. Air Quality Permit Application

The limits in the approved permit are necessary to ensure that all potential sources of air pollutants comply with the Clean Air Act of Montana (2001 ROD).

Additional mitigation has been added to the air quality permit to address potential problems of blowing tailings such as occurred in Butte in the spring of 2001. These three mitigation include: chemical stabilization of problem areas as needed, upgrading of the sprinkler system to provide more extensive coverage and water availability should blowing tailings become a problem, and the development of a detailed sprinkler operating plan that would be updated as the tailings surface expanded. (These are listed as items numbered 14, 15, and 16 in Attachment 1. These were included in Alternative III analysis in Chapter 4 as possible mitigation but were not incorporated into Alternative V in the FEIS because of the two different designs for the tailings facility. This additional mitigation will provide an extra measure of protection.

e. Section 401 Certification

Based on the analysis contained in Chapter 4, Hydrology, and Wetlands and Non-wetland Waters of the U.S. of the FEIS, Alternative V and the MPDES permit and Sterling's 404(b)(1) permit application contain sufficient restrictions to protect surface water quality and wetlands within the project area. Therefore, DEQ will waive 401certification concurrent with other DEQ decisions relative to the Rock Creek Mine (FEIS, Appendix F).

X. KNF's DECISION AND RATIONALE FOR THE DECISION

As Kootenai National Forest Supervisor, I must make a decision on Sterling's proposal and its associated permits. I fully understand this decision will again be controversial. As in section I of this decision, the ROD I issued in 2001 was appealed. The FWS was subsequently sued and withdrew their BO. Even with a new BO that contains additional mitigation measures and the supporting documentation on the

affects of mine subsidence and rock geochemistry on ground water, my decision to permit the Rock Creek Mine will probably not meet the expectations of the original appellants.
As unpopular as the mine may be to some groups or individuals I have an obligation to permit the project when I believe all applicable state and federal environmental laws and regulations have been met.

A. KNF DECISION AND RATIONALE

Forest Service decision authority applies only to National Forest Service (NFS) lands and does not extend to private lands within or adjacent to the National Forest. The DEQ's authority applies to state, federal, and private lands inclusively.

Decision

It is my decision to approve Sterling's plan of operations consistent with Alternative V of the FEIS (FEIS, pages 2-94 through 2-160) and as modified by this ROD. This ROD requires Sterling to phase its plan of operation, with implementation of the second phase contingent upon the results confirming previous analyses of the first phase.

In addition, Sterling must complete the following items prior to proceeding with first phase surface disturbing activities for the evaluation adit:

- Modify and/or update the Plan of Operations/exploration license application for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the reclamation portion of the Plan of Operations for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the monitoring portion of the Plan of Operations for the evaluation adit as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD; and
- Submit the reclamation performance bond for the evaluation adit.

In addition, Sterling must implement the following items related to the evaluation adit prior to the KNF authorizing them to proceed:

- The reasonable and prudent measures, terms, conditions and conservation measures and mitigation relative to the evaluation adit as required by the 2003 BO, the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

Sterling cannot implement the second phase of the project (facility construction, mine development, and mine operation) until the agencies review and confirm that the following items have been submitted and are acceptable. The agencies will then inform Sterling in writing that operations may proceed.

- A modified and/or updated Plan of Operations/hard rock permit application for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated reclamation portion of the Plan of Operations for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated monitoring portion of the Plan of Operations for the mine as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD;
- Submittal of the reclamation performance bond for mine construction and mine development;
- The agencies have conducted a technical panel review of pertinent data as outlined in the FEIS and ROD and Sterling has completed any additional studies the agencies deem necessary. This could include review and analysis of applicable evaluation adit data to determine if that information is consistent with the conclusions reached in the FEIS in regards to ground water flow and quality,

geochemistry, and rock mechanics.
- Final facility design plans and mitigation to be implemented during mine construction if not submitted earlier.

In addition, Sterling must implement the following items related to the mine development and construction prior to the KNF authorizing Sterling to proceed:
- The reasonable and prudent measures, terms, conditions, conservation measures and mitigation relative to the construction and development phases of the project as established by the Biological Opinion (2003), the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

This approval is consistent with DEQ's approval of Sterling's State Exploration License for the Evaluation Adit, the Hard Rock Mine Permit, Air Quality Permit and MPDES permit for Sterling's Plan of Operations (DEQ, 2001 ROD pages 34 through 44).

Over the life of the project, Sterling has the potential to conduct mining operations on of 140 acres of NFS lands for road access, mill site location and operation, evaluation adit location and operation, air-intake ventilation adit location, utility corridors, and for a portion of the paste tailings facility. The disturbance will be fully bonded to insure reclamation. The plan of operations as approved will involve the closure of 7.2 miles of road for bear habitat, and allow the Chicago Peak Road to remain open to the public (Attachment 4 page 4 and Attachment 7). The KNF is required to implement a food storage order for the protection of the grizzly bears in bear management units 4, 5 and 6 located in the southern end of the Cabinet Mountains (see ROD page 28). A full disclosure of impacts as a result of my decision is described in Alternative V of the FEIS for the Rock Creek Project (FEIS, Chapter 4). A list of all the mitigation and monitoring requirements required by Alternative V and the new ROD are found in Attachment 1 of the ROD.

Rationale

My decision considered the following factors, which are discussed below. Specifically, my decision considered: a) how the project complies with federal and state laws and/or regulation and policy mandates; b) how the projects meets the objectives of the Forest Service's Minerals Program Policy of 1995; c) how the project meets the direction of the Kootenai National Forest LRMP (Forest Plan) and; d) how the project addresses the public's concerns and/or expectations.

a. Does the project comply with federal and state laws and/or regulation and policy mandates?

36 CFR 228 Subpart A

288. 4 Plan of Operations-notice of intent requirements
The KNF and DEQ have carefully analyzed the completeness of Sterling's proposed plan of operations. We have determined the final plan of operations as submitted by the proponent meets the requirements of this regulation (Project File, Plan of Operations).

228.5 Plan of Operations---approval
The correspondence between the proponent and KNF as documented in the project record and the completion of the FEIS and this ROD fulfills the requirement of this regulation.

228.6 Availability of information to the public
The extent of public involvement is summarized in this ROD and documented in the project file (Title E Vol. 1, Notice to Federal Register, Vo. 3, Public Involvement, Sections a, b, e, and i).

228.7 Inspection and compliance

While this document conditionally approves Sterling's plan as amended by the stipulations described in Attachment 1, Sterling is not authorized to proceed with surface disturbing activities associated with either phase of the project that impacts National Forest lands until the Forest Service confirms in writing to the company that it has completed the appropriate line items of mitigation and or monitoring items as outlined in this ROD. If the agencies' review of the evaluation adit information leads them to determine there are new circumstances outside the scope of the FEIS and its effects analysis, or significant new information relevant to environmental concerns and bearing on the proposed action or its impacts, the agencies will conduct an appropriate level of supplemental NEPA/MEPA analysis before the company will be allowed to proceed with constructing the mine, mill, and all other associated facilities. Modifications to the mine plan may be required as well. A revised decision would be based on that analysis.

In addition, it is my decision as Kootenai National Forest Supervisor that the KNF will commit to have a Forest Staff Coordinator for the purposes of implementing, monitoring and inspection of the Plan of Operations as outlined in Alternative V and modified by this ROD.

288.8 Requirements for environmental protection

Forest Service regulations at 36 CFR 228.8 require that the Forest Service ensure that "all operations shall be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources, including air quality, water quality, solid waste, scenic values, fisheries and wildlife habitat, and roads" during the life of the mineral operation. Alternative V fulfills this requirement by virtue of agency-prescribed modifications and mitigation measures, described in Attachment 1 and stipulated in this ROD.

Alternative V includes measures to reduce, minimize, or avoid impacts to water quality and quantity, wildlife and fisheries habitats, air quality, scenic resources, sound, transportation, socioeconomic, tailings storage facility stability, and reclamation issues identified by the public and the agencies. It addresses these issues by requiring reasonable mitigation measures for anticipated adverse impacts and by requiring reclamation of lands disturbed by proposed mining activities.

288. 9 Maintenance during operations and public safety

During all operations, the operator shall maintain the structures, equipment, and other facilities in a safe, neat and workmanlike manner. Hazardous sites or conditions resulting from operations shall be marked by signs, fenced or otherwise identified to protect the public in accordance with Federal and State laws and regulations. This requirement meets the objective of this regulation. [Attachment 1, item 26 (i)].

288.10 Cessation of operations, removal of structures and equipment

The requirements as outlined in the reclamation plan and the bond requirements meet the objective of this regulation. If at any point during project life, the operator shuts down the operation, 36 CFR 228.10 requires the following items to be implemented [Attachment 1, item 26 (j)].

"Unless otherwise agreed to by the authorized officer, operator shall remove within a reasonable time following cessation of operation all structures, equipment and facilities and clean up the site of operation. Other than seasonally, where operations have ceased temporarily, an operator shall file a statement with the District Ranger, which includes:

(1) Verification of intent to maintain the structures, equipment and other facilities,
(2) The expected reopening date, and
(3) An estimate of extended duration of operation. A statement shall be filed every year in the event operations are not reactivated."[Attachment 1, item (j)]

In addition, it is my decision as Kootenai National Forest Supervisor to also require that:

- If after 5 years from initiating construction of the evaluation adit, the remaining portion of the project has not proceeded for reasons other than litigation, the KNF will consult with the operator, DEQ, FWP, EPA, FWS and other interested agencies on interim or final reclamation plans to be implemented as outlined in Alternative V and this ROD, and the timeframes for implementation.
- If after 5 years of any cessation of mine development or operation, for reasons other than litigation, KNF will consult with the operator, Montana and Idaho DEQ, FWP, EPA, FWS, Tribal representatives and other interested agencies on interim or final reclamation plans to be implemented as outlined in Alternative V and this ROD, and the timeframes for implementation (Attachment 1, item 25).

The mitigation as outlined above meet the requirement of this regulation

228.11 Prevention and control of fire
It is my decision as Kootenai National Forest Supervisor to require the operator to comply with all applicable Federal and State fire laws and regulations; take all reasonable measures to prevent and suppress fires on the area of operations; and require employees, contractors and subcontractors to do likewise within the permit boundary [Attachment 1 item 65 (f)]. The mitigation as outlined above meet the requirement of this regulation.

228.12 Access
The modification to National Forest roads as outlined in the FEIS, Alternative V, pages 2-45-48 met the objective of this regulation.

228.13 Bonds
This ROD includes a draft bond calculation for the Plan of Operations as modified by Alternative V and this ROD. The bond summary is itemized for the cost of reclamation and wildlife mitigation (Attachment 5).

228.15 Operations within National Forest Wilderness
The completion of the FEIS, the requirements as outlined in the mitigation and monitoring of Alternative V and this ROD, meet the objective of this regulation.

Mining and Minerals Policy Act of 1970

This Act provides a national policy that the United States will administer its minerals program to provide commodities for current and future generations commensurate with the need to sustain the long-term health and biological diversity of ecosystems. The Forest Service must ensure that exploration, development, and production of mineral resources are conducted in an environmentally sensitive manner and that these activities are integrated with the planning and management of other resources using the principles of ecosystem management.

I have determined KNF has met the objective of this act by approving the plan of operations as outlined in Alternative V of the FEIS and modified by this ROD. KNF has ensured that the

exploration, development, and production of this mineral resource will be conducted in an environmentally sensitive manner and that these activities are integrated with the Forest Plan and compatible with other resources. The KNF has achieved this by requiring the mitigation outlined in Attachment 1, the monitoring plans described in the revised Appendix K in Attachment 2, the monitoring plan reports as outlined in Attachment 3, and the conditions of the Biological Assessment (FEIS Appendix B) and Biological Opinion dated May 9, 2003.

Clean Water Act

EPA has delegated authority to administer the Clean Water Act to the State of Montana but still maintains oversight. Any approved plan of operations for the Rock Creek project must meet the standards set by EPA or the Montana Clean Water Act.

As discussed previously in this ROD, the MPDES permit requirements for Rock Creek (MPDES Permit, Rock Creek Project, 2001) meet the following standards: 1) the discharge is in compliance with the provisions of 75-5-303, MCA (Nondegradation Policy); 2) the discharge will not cause a decline in water quality for the parameters for which the water body is listed; and, 3) the minimum treatment requirements are met. [75-5-703(10), MCA].

The agencies considered issues related to Rock Creek as a "Water Quality Limited Stream" (WQLS) and the need to develop a "Total Maximum Daily Load" (TMDL) and addressed these issues through mitigation requirements that restrict the project so as not to delay or impair the creation of a TMDL for Rock Creek. The 1998 list of impaired water bodies listed Rock Creek as "threatened" due to potential metals and siltation from proposed mining and silvicultural sources. The definition of "threatened" is: a water body for which sufficient credible data and calculated increases in loads show that the water body or stream segment is fully supporting its designated uses but is threatened due to proposed actions. In 2000, ASARCO (FEIS page 4-63) petitioned the state to remove Rock Creek from the WQLS list based on the existing data set. After a review of the information, the state dropped the threatened status of Rock Creek, and listed it as "partially supporting" aquatic life and cold water fisheries. The stream is listed for fish habitat degradation and other habitat alterations due to solely to silvicultural sources. All other uses are being fully supported at this time (FEIS page 4-63).

Under Section 404 of the federal Clean Water Act, Sterling must obtain a permit to place waste rock or tailings in drainages that are considered "waters of the U.S." The COE administers this section of the act. The COE's decision will be issued separately. Under Section 401 of the Act, DEQ must either certify that the action will comply with state law or waive such certification.

Sterling's proposed plan as modified by the decision in this ROD will directly impact 5.2 acres of wetlands and 0.4 acres of non-wetland waters of the U.S. and indirectly impact 1 acre of wetlands. According to Sterling's Wetland Mitigation Plan, DEQ, KNF, the COE and EPA will be notified if impacts to wetlands or riparian areas not otherwise addressed in the FEIS are likely to occur. All wetland mitigation sites are to be developed prior to disturbance of the impacted wetlands and are to be constructed on a minimum ratio of 1.5:1. Based on the analysis contained in Chapter 4, Wetlands and Non-wetland Waters of the U.S. of the FEIS, DEQ has waived 401 certification (DEQ 2001 ROD Attachment 6).

The EPA administers the State of Idaho water quality permits. Although there is a treated water discharge into the Clark Fork River that enters Idaho, no water quality permits are currently required by either the State of Idaho or EPA. All discharges for this project meet Idaho's water quality standards (MPDES Permit, Fact Sheet Statement of Basis page 31.)

I have determined, based on the review of the authorities established by the Clean Water Act, and the mitigation and requirements outlined in the States MPDES permit and the Wetland Mitigation Plan, that KNF has met the standards set by Section 303 and 404 of the Clean Water Act (FEIS page 4-61). In addition, the MPDES permit limits discharge to Rock Creek at Outfall 004 (except for storm water) and the States non-degradation standard applies (FEIS Appendix D). Therefore, Rock Creek is protected from any impairment by sediment as it relates to a pending TMDL through the requirements (mitigation and monitoring) of the MPDES permit.

Endangered Species Act

Numerous mitigation measures have been incorporated into Alternative V to reduce, eliminate, avoid, or minimize the potential impacts to threatened and endangered species including the grizzly bear and bull trout. The FWS concurred in their Biological Opinion (BO) with the KNF's BA determination that the Rock Creek Project may affect but will not likely adversely affect the bald eagle and the gray wolf. The FWS concluded after reviewing the current status of the grizzly bear, Canada lynx and Columbia Basin DPS of bull trout, the environmental baseline for the action area, the effects of the proposed Rock Creek Mine (Alternative V), and the cumulative effects, that:

a. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the grizzly bear in the Cabinet Yaak Ecosystem. No critical habitat has been designated for the species, therefore, none would be affected.
b. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the Canada lynx. No critical habitat has been designated for this species, therefore none will be affected. The impact to habitat for Canada lynx would be insignificant or discountable (less than 0.01 percent change in baseline).
c. The Rock Creek Mine as modified by Alternative V is not likely to jeopardize the continued existence of the Columbia Basin DPS of bull trout as listed. It is the FWS's opinion that the proposed mining operations comply with the Kootenai Forest Plan as amended by INFS. FWS has made a determination of "May Affect" and that the project is "Likely to Adversely Affect" individual fish within the Rock Creek drainage.
The Rock Creek Mine as modified by Alternative V is not likely to destroy or adversely modify the proposed Columbia Basin DPS of bull trout critical habitat (2003 Biological Opinion, FWS).

The FWS developed reasonable and prudent measures, terms, conditions and conservation recommendations in the BO (as summarized in this ROD, Section VII, page 18) and are now incorporated into this ROD as a means to reduce the potential impacts to threatened and endangered species.

I have determined that the KNF has met the obligation of the Endangered Species Act. This determination is based on the review of data presented in the BO and FEIS, and that the reasonable and prudent measures, terms, conditions, conservation recommendation and mitigation (as outlined in the BO and incorporated into this decision), the BA (FEIS, Appendix A), and Clarification of the Terrestrial Threatened and Endangered Species Mitigation Plan (Attachment 4) will protect the threatened and endangered species.

Alaska National Interest Lands and Conservation Act (ANILCA)

The access provisions of ANILCA state in part: "The Secretary shall provide such access to non-federally owned land within the boundaries of the National Forest System as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof: Provided, that such owner comply with rules and regulations applicable to ingress and egress to or from National Forest System (16 USC 3210)." The private mineral estate is non-federally owned real estate subject to the access provisions of ANILCA. Granting access for reasonable use includes the responsible officers authorizing only "those access facilities or modes of access that are needed for the reasonable use and enjoyment of the land and that minimize the impacts on Federal resources." What constitutes reasonable use and enjoyment of the land is "based on the contemporaneous uses made of similarly situated lands in the area and any other relevant criteria (36 CFR 251.114, Criteria, Terms and Conditions)."

In the proposed plan of operations, Sterling requested access to develop its privately owned mineral resources located in and outside the CMW. I have determined that the KNF has met the conditions of ANILCA by approving the plan of operations as defined by Alternative V of the FEIS and this ROD. The reasonable use is defined in Alternative V, and mitigation will be required as listed in Attachment 1 that minimize impacts on Federal resources.

1872 General Mining Act

The 1872 General Mining Act allows for mining claims to be staked and developed on federal lands subject to other federal laws. Sterling Mining currently owns unpatented mining claims within the project area, and those lands would be utilized for the evaluation adit, mill site and portions of the tailings facility. Alternative V and additional mitigation as stated in this ROD outline how the claims can be developed in a manner to meet the required applicable laws.

I have determined the plan of operations as modified by Alternative V and this ROD demonstrate the property can be developed in a manner to meet the required applicable laws. I have met the objective of this law.

1964 Wilderness Act

The Wilderness Act withdrew the lands in the CMW from mineral entry on January 1, 1984, subject to valid existing rights. Under provisions of the 1964 Wilderness Act, only claims within the CMW that had documented valid existing rights as of December 31, 1983, could be allowed reasonable and prudent access and development of facilities required for a mine within the wilderness boundary. ASARCO established valid existing rights in the CMW as of December 31, 1983 and received a patent (deed) to 99 lode mining claims (1,686 acres of mineral estate within the CMW and 123 acres of surface and mineral estate outside but adjacent to the CMW) from the U.S. Department of Interior in 1989 (see Figure 2). Sterling acquired those private lands from ASARCO on October 14, 1999. Under the Wilderness Act, Sterling has access and development rights to their private lands within the CMW, and must be allowed to develop those lands if all other applicable laws and regulations are met.

I have determined the plan of operations as modified by Alternative V and this ROD demonstrate the property can be developed in a manner to meet the required applicable laws. I have met the objective of this law.

Sensitive Species

Federal law and direction applicable to sensitive species includes the National Forest Management Act and the Forest Service Manual (2670). The Regional Forester has approved the sensitive species list – those plants and animals for which population viability is a concern. In making my decision, I have reviewed the analysis and projected effects on all sensitive species listed as occurring or possible occurring on the Kootenai National Forest (FEIS pages 3-97 and biological evaluations found in the project file). I concur with the findings documented for these species. These findings document that Alternative V will not likely contribute to a trend towards federal listing of loss of viability to the population or species.

It is my determination that all other applicable laws and regulations are met if the plan of operations is implemented as outlined in Alternative V and this ROD.

Executive Order 12898 on Environmental Justice

On February 11, 1994, President William Clinton signed Executive Order 12898 that requires federal agencies to address environmental justice issues when implementing their respective programs. The order directs federal agencies to take the lead role in coordinating environmental justice issues with federally-recognized American Indian tribes.

Several different situations are often cited in defining environmental justice. The following is a summary of each.

- The targeted siting of potentially polluting facilities in areas with racial minorities or impoverished populations. The motives often attributed to the proponent are: 1) that they do not care about the effects on minority populations, and/or 2) that the site is desirable because minorities and the poor do not have the resources to oppose the project.

- Discrimination by regulatory agencies in enforcement of environmental standards where projects may be affecting low income or minority populations. The argument is that these groups cannot obtain the same level of regulatory protection as other groups that may be wealthier, more politically powerful, or racially different.

- The inequitable distribution of project benefits, primarily economic, with project impacts such as increased pollution or perceived potential risk of pollution.

Therefore, environmental justice considerations can be grouped into three general categories: 1) facility siting and opposition, 2) regulatory agency discrimination, and 3) equitable distribution of project benefits and risks.

The agencies have considered each of these factors in reaching the decision to approve the modified mine and reclamation plans using Alternative V from the FEIS. The following is a discussion of each concern. Other than members of four American Indian tribes within the region, the agencies have not identified any other racial minorities or impoverished populations within the project area that might be affected by implementation of this project.

Facility Siting and Opposition. The proposed mine is not located within or adjacent to any tribal reservations. It is, however, located within the region affected by the Hellgate Treaty. Alternative V will restrict access to mine facility sites to all members of the public, including tribal members, but it will at the same time improve access via FDR No. 150 in the drainage

as far as the mill site and to some extent to the CMW via FDR No. 2741. Numerous mitigation will be required to minimize, eliminate, or avoid impacts to resources wherever possible and practicable.

Tribal government representatives and members of four area tribes have been invited to participate in the development and review of the EIS. Comments from four tribes have been received on the draft and/or supplemental EISs and in the development of the FEIS. It is likely that comments from individual tribal members were received as well, but the agencies cannot determine which commentors were or were not tribal members. Please see section VI of this ROD for additional information.

Regulatory Agency Discrimination. DEQ, KNF, EPA, and the COE all have devoted considerable regulatory resources to studying the potential effects of the proposed action and its alternatives. DEQ and KNF have afforded the public several means of obtaining information regarding the proposal. Please see Section VI above for more details regarding public participation.

The KNF has consulted with the tribes regarding the importance of the Rock Creek drainage to their religion, medicine, foods, and culture. Although the tribes acknowledge that there is historic use of the area, they have not identified any specific places or items of tribal or religious interest.

Equitable Distribution of Project Benefits and Risks. Because the project is neither adjacent to or near tribal reservations, there will be no risk of impacts to reservation lands. Members of any tribes living off the reservations and in the project area will be affected to the same extent as other people in the area with respect to non-traditional use. Traditional use of the area will be impacted in terms of traditional use with respect to hunting, gathering, and spiritual setting. The communities in the area will benefit through provisions in the approved Hard Rock Impact Plan without regard to whether the people within the community were tribal members or not. Tribal members will also have the same opportunities to seek employment for higher paying jobs at the mine, as will other members of the general population.

I have determined, through the review of the FEIS, public comments and communication with tribal representatives, that there are no environmental justice issues relative to the Rock Creek Mine that violate or are inconsistent with the intent of Executive Order 12898. All efforts have been made to minimize environmental impacts resulting from the mine regardless of the minority status or economic ability of the people in the area. Impacts to personal religious values or beliefs are not within the scope of the environmental justice initiative and cannot be resolved through environmental justice mandates. The regulatory agencies have actively pursued enforcement of these mandates. It is the communities within the project area, regardless of the population's minority or economic status, who will experience both the economic benefits and risks of the proposed project.

Clean Air Act

The State of Montana administers the Federal Clean Air Act. The limits in the approved permit are necessary to ensure that all potential sources of air pollutants comply with the Clean Air Act of Montana. A copy of the permit (#2414-01) is found in the 2001 ROD, Attachment 5.

DEQ required three additional mitigation measures be added to the air quality permit to address potential problems of blowing tailings. These three mitigation include: chemical stabilization of problem areas as needed, upgrading of the sprinkler system to provide more extensive coverage and water availability should blowing tailings become a problem, and the development of a detailed sprinkler operating plan that would be updated as the tailings surface expanded. (These are listed as items #14, 15, and 16 in Attachment 1 of this ROD and are incorporated into this ROD) The mitigation were included in Alternative III analysis in Chapter 4 as possible mitigation but were not incorporated into Alternative V in the final EIS. These additional mitigation will provide an extra measure of protection. Potential emission levels are not expected to exceed ambient air quality standards (FEIS pages 4-10 and 4-19). During the construction and operation of the facility, Sterling will be required to use a SAG or wet milling and crushing facility, propane generators, and electric ore haulers, and reduced-emission diesel vehicles. Sterling must also control dust from all facilities, including the tailings paste facility, using chemical stabilization and irrigation as necessary. (The reclamation plan in the approved Plan of Operations requires concurrent reclamation on all surfaces, such as the outer slopes, that reach final grade during construction of the paste facility. This plan will greatly reduce the potential for blowing dust from this facility. The water management plan developed in the plan of operations and the MPDES permit includes provisions to use collected mine seepage and storm water for irrigating the revegetation and for dust suppression on active areas.) The limits included in the air quality permit achieve compliance with the increments established for the Class I and Class II airsheds, which includes the CMW. Sterling will also be required to conduct ambient air monitoring during the facility's operation.

I have determined that the KNF meets the obligations of the Clean Air Act through cooperation with the State of Montana in the permit process of the State Air Quality Permit and the incorporation of the permit requirements into the Plan of Operation.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act (AIFRA) was passed as a joint resolution of Congress in 1978. The resolution states that it shall be the policy of the United States to protect and preserve for the American Indian the inherent right of freedom to believe, express, and exercise traditional religions, to use sacred objects, and to worship through ceremonies and ritual. The Forest Service complies with this act by consulting with and considering the views of American Indians when a proposed land use might conflict with traditional American Indian religious beliefs or practices. The act does not require that land uses, which conflict with American Indian religious beliefs or practices, be denied.

Conflicts identified for Alternative V include visual and audible disruption from mining activities of some American Indian traditionalists who may be worshiping in portions of the CMW, and desecration of lands containing or supporting sacred plants and animals by intrusive activities. However, no tribes with aboriginal affiliation to the area have identified specific sites of religious, medicinal, or cultural importance. This may be related to issues of confidentiality for the tribes and not to an absence of actual sites.

Although efforts have been made to minimize impacts to tribal concerns about water quality, fisheries, grizzly bears, huckleberries, and medicinal plants through mitigation, the land use of mining is simply not compatible with some traditional American Indian values and how those values relate to traditional uses of the land. No mitigation to the impacts from mining through reclamation is viewed as acceptable to some people since they consider surface disturbance an act of desecration. While many portions of the Cabinet Mountains and other mountains within the area will continue to be conducive for religious practices, residual impacts to the Rock Creek area are unavoidable even with successful reclamation.

In selecting the preferred alternative, it is important to acknowledge these concerns, while recognizing that complete mitigation is not possible because the impact is as much spiritual as it is physical. It is also important to note that this decision does not limit the American Indians' freedom to believe, express, or exercise their traditional religious beliefs, their right to possession of sacred objects, and freedom to worship through ceremonies and traditional rites as required by AIRFA.

This decision is also consistent with President Clinton's executive order (E.O. 13007) requiring each agency, to the extent practicable, to accommodate access to and use of sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. No "sacred site(s)" as defined in the executive order have been identified that will be disturbed by implementation of Alternative V. Access to the Rock Creek drainage and the CMW will not be eliminated, although access to areas occupied by active mine operations will be limited during the life of the mine.

Treaty Rights

The following laws and executive orders outline the responsibilities that the Forest Service has to federally recognized Tribes. The Confederated Salish and Kootenai Tribes and the Kootenai Tribe of Idaho have retained off-reservation treaty rights through the Hellgate Treaty of 1855.

Meetings and correspondence between Tribal representatives and KNF were conducted throughout the NEPA process (see Table 2, page 14 of this ROD). Tribal representatives attended IDT meetings and supplied verbal and written comments including recommended mitigation measures for additional environmental protection.

Although efforts were made to minimize impacts to tribal concerns about water quality, fisheries, grizzly bears, huckleberries, and medicinal plants through mitigation; mining is simply not compatible with some traditional American Indian values and how those values are placed on the traditional use.

National Historic Preservation Act

KNF has completed the process for considering the effect of the proposed action and its alternatives on historic properties as required by Section 106 of the National Historic Preservation Act. The area of potential effect has been inventoried; potential historic properties identified, and interested parties consulted. A total of eight cultural sites were documented but all eight sites have been determined by the State Historic Preservation Office as ineligible for nomination to the National Register of Historic Places. No prehistoric sites were documented within the surveyed areas and no specific sites of importance to interested American Indian tribes in the area have been identified. The implementation of any of the action alternatives will have both direct and indirect impacts on some of these sites, but because they are ineligible for listing, no mitigation is

required. Sterling will be required to immediately inform KNF (and stop ground disturbing activities) if any buried artifacts, human remains, or other undiscovered cultural resources are found during mine construction as required by the National Historic Preservation Act, the Archeological Resources Protection Act, and the Native American Protection and Repatriation Act.

Migratory Bird Treaty Act

On January 10, 2001, President Clinton signed an Executive Order outlining responsibilities of federal agencies to protect migratory birds. Upon review of the information regarding neotropical migratory birds in the FEIS (page 4-155) and project record, I find that the selected alternative complies with this Executive Order.

***Roads Analysis Policy* (36 CFR Part 212 et al).**

A roads analysis has been prepared for the Rock Creek analysis area (KNF Project file, Road Analysis for the Rock Creek Project). I have determined that the report titled " Roads Analysis for the Rock Creek Project" meet the objectives as outlined in Forest Handbook 7712.1 and Miscellaneous Report FS-643.

b. Does the project meet the objectives of the Forest Service's Minerals Program Policy of 1995?

The objectives of the Forest Minerals Policy are: Exploration, development, and production of mineral and energy resources and reclamation of activities are part of the Forest ecosystem management responsibility. Therefore, Forest will administer its minerals program to provide commodities for current and future generations commensurate with the need to sustain the long-term health and biological diversity of ecosystems. Accordingly, the Forest will strive to:

- Ensure that exploration, development, and production of mineral and energy resources are conducted in an environmentally sensitive manner and that these activities are integrated with the planning and management of other resources using the principles of ecosystem management.

- Facilitate the orderly exploration, development, and production of mineral and energy resources within the National Forest System and lands open to these activities or on withdrawn lands consistent with valid existing rights.

- Maintain opportunities to access mineral and energy resources that are important to sustain viable rural economies and to contribute to the national defense and economic growth.

- Ensure that lands disturbed by mineral and energy activities, both past and present, are reclaimed using the best scientific knowledge and principles and returned to other productive uses.

I have determined KNF has met the objective of the minerals program policy by approving the plan of operations as outlined in Alternative V of the FEIS and modified by this ROD. KNF has ensured that the exploration, development, and production of this mineral resource will be conducted in an environmentally sensitive manner and that these activities are integrated with the Forest Plan and compatible with other resources. The KNF has achieved this by requiring the mitigation outlined in Attachment 1, the monitoring plans described in the revised Appendix K in

Attachment 2, the monitoring plan reports as outlined in Attachment 3, and the conditions of the Biological Assessment in the FEIS, Appendix B, and Biological Opinion dated May 9 2003.

c. Does the project meet the direction in the Kootenai National Forest LRMP?

I have determined, after review of the analysis conducted for the FEIS and management area changes, that this project is consistent with the direction in the Forest Plan as documented below.

The 1987 Record of Decision for the Land and Resource Management Plan (Forest Plan) for the KNF recognized the potential for minerals development in the Cabinet Mountains Wilderness (CMW). The Forest Plan does not approve site-specific mineral development, but does direct that mining proposals be evaluated through the NEPA process.

Management of NFS lands in the vicinity of the proposed Rock Creek Project is guided by the direction found in the Kootenai Forest Plan. The Forest Plan guides all natural resource management activities and establishes management standards. The Forest Plan uses management areas (MAs) with different goals and objectives, based on the capabilities of the lands in those areas, to guide natural resource management decision-making. Management prescriptions are specified for each MA by resource, including wildlife habitat, timber, wilderness, recreation, visuals, water resources, grizzly bear habitat, transportation, or developed facilities. Except for Existing Wilderness (MA 7), all MA's within the project area use Forest-wide goals and objectives for mineral development. Forest Plan Goal #11, mineral development, states, "Encourage responsible development of mineral resources in a manner that recognizes national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation." The mineral objective states that mineral exploration may occur on most (88 percent) of the KNF.

Activities approved under this project as demonstrated in Chapter 4 of the FEIS including the monitoring and mitigation comply with the goals and objectives of the Forest Plan. Management Area 7 goals include maintaining natural ecosystems, providing opportunities for solitude and primitive recreation, and providing critical grizzly bear habitat. Existing mineral rights are recognized and these rights are managed in accordance with the Wilderness Act and other laws. Sterling has valid existing rights for claims within the CMW. As discussed in Chapter 4 of the FEIS, the ventilation adit portal and the underground mining in the wilderness are considered necessary for the mining operations. Noise from the ventilation adit could degrade the wilderness character (FEIS page 4-259). This is consistent with the Wilderness Act since this facility may be required for Sterling to exercise the valid existing rights it owns in the CMW, and provide for mine worker health and safety.

The Road Use Permit will allow Sterling to upgrade and maintain FDR No. 150 as described in the FEIS, including relocating, widening, and paving the road between Montana Highway 200 and the mill site along with constructing several other small access roads, totaling approximately 8.97 miles. Sterling will also be allowed to recondition and stabilize cut-and-fill slopes along FDR No. 2741 and FDR No. 150 between the mill site and FDR No. 2741 to allow for safe travel to and from the evaluation adit. Winter plowing of these roads will be conducted according to Forest Service guidelines; no salt will be used. All conditions of the transportation management plan will be adhered to. This permit will be issued once Sterling has agreed to all transportation and road-related modifications and mitigation required in Attachment 1 and required traffic management plan updated and finalized.

No borrow has been identified as necessary for the mine facilities other than waste rock from the mine or material within the potential disturbed area of the tailings facility. However, road construction and reconstruction activities may require minimal amounts of borrow material. Currently, private sources are available for this use. If Sterling needed to develop a source from an unpatented mining claim, NEPA analysis would have to be conducted to determine the significances of the development before being authorized to develop such a source.

An electric transmission line will be installed between the Noxon/Libby 230 kV line and the tailings facility and the mill site. The transmission lines will be located along the approved road alignments and two new substations will be constructed at the mill site and adjacent to the tailings facility/paste plant. A smaller power line for power during evaluation adit construction will be constructed from a local distribution line in the Government Mountain Road area to the evaluation adit support facilities site. Sterling will also install buried pipelines within the utility corridor adjacent to FDR No. 150 and 150B as described in the FEIS (Table 2-17 in the FEIS). A telephone line may be installed above ground if attached to the electrical power poles or underground adjacent to the buried pipelines. If Sterling accepts all conditions in this ROD pertaining to the alignment, construction, design, and operation of the utilities needed for the construction and operation of the Rock Creek Mine, then a Special Use Permit for the installation of the electrical transmission lines, substations, pipelines, and telephone lines will be issued.

Prior to construction of the mine facilities, Sterling will need to request a Timber Sale Contract for authorization to harvest timber from NFS lands to be disturbed by construction of the mill site, the paste facility and paste plant, the water treatment facility, and road construction and reconstruction.

I have determined that approval of the plan of operations is within the guidelines of the Forest Plan and within my authority to approve. My decision to approve this plan of operations is not an authorization to proceed. The authorization to proceed will be completed only when all the conditions required to move forward for each phase of the project is completed by Sterling and agencies as defined by Alternative V and this ROD on pages 7, 65 and 87 of this ROD.

Rationale for Approving Non-Significant Forest Plan Amendments

Based upon an analysis of the objectives, contents and guidelines contained in a Forest Plan, a Forest Supervisor may elect to amend the Forest Plan. According to 36 CFR 219.10, the Forest Supervisor must determine whether a proposed amendment would result in a significant change in the plan.

The FSH 1909.12 Land and Resource Management Handbook, 5.32, Process to Amend the Forest Plan, identifies four factors to consider in determining whether a change to the Forest Plan is significant or non-significant, based on NFMA planning requirements. These factors have been considered in my determination that the changes are non-significant, as demonstrated below.

- Timing. The Forest Plan recognized that mineral development could occur on the forest in Forest Plan Goal #11, mineral development, which states, "Encourage responsible development of mineral resources in a manner that recognizes national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation." The mineral objective states that mineral exploration may occur on most (88 percent) of the KNF. Given that the current Forest Plan recognized the potential for mineral development, I find that the timing of this amendment is non-significant. These management area reallocations may be changed once the mine has been closed and all disturbed land reclaimed according to the approved reclamation plan.

- Location and Size. Management areas in the vicinity of the project are described in Chapter 3 of the FEIS. Figure 3-1 in the FEIS shows the location and distribution of KNF management areas in the vicinity of the Rock Creek Project. The project area as described in Alternative V, lies primarily within Timber Compartment 711 of the Cabinet Ranger District and beneath the Cabinet Mountain Wilderness as described in the Forest Plan. The minerals standard requires the KNF to "recognize the value and importance of the mineral resource in management activities," subject to the restrictions of various laws. Three management areas are being changed by this amendment for a total of 217 acres. The Alternative V retains 11.9 percent of its acreage as MA 13 - Old Growth for Compartment 711 that complies with the Forest Plan requirement of a minimum of 10 percent old growth in each timber compartment. The reduction in open road densities through road closures and the mitigation in Alternative V for grizzly bear adequately compensate for the change of 215 acres of MA 11 and MA 14. In addition, Alternative V had the least amount of acres reallocated. I believe the location and size of these changes are non-significant for these reasons.

- Goals, Objectives, and Outputs. The Forest-wide management direction included in Chapter II of the Forest Plan still applies to the new MA's. The 217 acres allocated from an MA suitable for timber harvest (MA 11, MA 14) to a non-suitable allocation does not significantly alter the long-term relationships between the levels of goods and services projected by the Forest Plan. The reallocation supports Forest Plan Goal #11, mineral development, which states, "Encourage responsible development of mineral resources in a manner that recognizes national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation." The mineral objective states that mineral exploration may occur on most (88 percent) of the KNF.

- Management Prescription. The amendment does change the management prescription for the area to be more consistent with the mineral development and associated electric transmission needs. Future management decisions within these management areas will need to follow the goals and standards specific to these MA's. This change does not significantly alter the anticipated goods and services expected to be produced from these lands. The Forest Plan allows for minor revisions to management area allocations for site-specific projects to allow for more appropriate short- and/or long-term management objectives, standards, and guidelines. These management area reallocations may be changed once the mine has been closed and all disturbed land reclaimed according to the approved reclamation plan.

This decision revises the management area designation on 217 acres of NFS lands (see Attachment 6, Table 1). Big game winter range MA 11 (96 acres) and MA 14-grizzly bear habitat (40 acres) are changed to management areas MA 31-mineral development; and 49 acres of MA 11 and 30 acres of MA 14 and 2 acres of MA 13 are changed to MA 23-electric transmission corridor.

I have determined that with these approved non-significant amendments, the KNF decision to implement Alternative V is consistent with the Kootenai Forest Plan.

d. How well does the project address the public's concerns and/or expectations?

In the past 5 years as Forest Supervisor, I have met with and listened to numerous individuals, interest groups, tribal entities, and government agencies regarding the Rock Creek mine proposal. The concerns that were raised for this project over the past 16 years have helped to ensure that the mining activities will be conducted in a manner that will protect the environment. This process has sought to address the concerns in the context of all applicable legal standards. How well the

project addresses the publics' expectations has been more challenging. Specifically, I received numerous written comments throughout the NEPA process that were opposed to permitting the mine. However, the legal requirements of the 1897 Organic Act, Forest Service mining regulations at 36 CFR 228 Subpart A, and the 1955 Multiple Use Mining Act clearly outline my decision authority with respect to regulating mining activities. Several court decisions have made it clear that while the Forest Service can reasonably regulate mining, it cannot prohibit nor unreasonably restrict operations that comply with legal requirements [30 USCA §26 (1970) Decision Notes IV, Possessory Rights 118, page 136]. Because I have concluded that the mining proposal minimizes adverse environmental effects on National Forest resources and complies with applicable environmental laws (including the 1964 Wilderness Act, 1972 Clean Water Act, Clean Air Act and the 1973 Endangered Species Act), I can regulate, but not deny the proposed plan of operations as outlined in Alternative V and modified by this ROD.

Other comments received after the FEIS expressed concerns about the Forest Service and State of Montana DEQ's ability and/or commitment to on-site administration. I recognize the importance of meeting our respective agencies responsibilities and have agreed to have a full time on-site project administrator.

Public concerns were raised as to the frequency and accuracy of water quality monitoring required by Sterling; therefore, the agencies and Sterling have agreed to the development of a Memorandum of Agreement (MOA) or Understanding (MOU) where the agencies would conduct water quality monitoring through a third party consultant, with the contract administered by KNF or DEQ. Sterling would fund its portion of the water monitoring, as required in the approved plan.

I have determined that the issues identified in the FEIS and summarized in this ROD, (Issues, 1 through 8, pages 18 through 22) have been addressed through the development and incorporation of the mitigation, stipulations and monitoring identified in the FEIS and ROD; the terms, conditions, and measures identified by the FWS and incorporated into this ROD, and modifications to Alternative V identified in this ROD.

B. ALTERNATIVES NOT SELECTED AND THE DECISION MAKER'S RATIONALE

The following paragraphs explain the rationale for my decision.

Alternative I: the No Action Alternative

I did not select Alternative I, the no action alternative, because it fails to meet the purpose of and need for the proposal to mine the Rock Creek ore body. Alternative I is not consistent with the Wilderness Act, the Mining Law, ANILCA, or the Minerals Policy Act. The Wilderness Act specifically contemplated that private interests under the mining laws would be established within wilderness areas and that development could occur. Further, Alternative V and its required mitigation measures and monitoring plans provide an acceptable degree of protection to environmental resources in the area, complying with all state and federal environmental laws, policies, and regulations.

It is possible that if Alternative I were selected, development of copper-silver mines would occur elsewhere in the world where there are fewer environmental restrictions or less enforcement of any restrictions. The analysis in Chapter 4 of the FEIS does not investigate this possible impact because it was outside the scope of the EIS. There are resources in several third world countries that could be developed in lieu of the Rock Creek deposit; however, they are not owned by Sterling, nor could I require

Sterling to go elsewhere to mine these metals at a time when market demands become such that it would be profitable to construct and operate the Rock Creek Mine.

Alternative II: the Proposed Action

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I did not select Alternative II, due to greater adverse environmental impacts as compared to Alternative V. Implementation of Alternative II would disturb 583 acres in a permit area of 2,395 acres of which 70 percent were NFS lands and 30 percent were owned by Sterling.

Under Alternative II, the impoundment would have a greater potential risk of failure under all modes of failure than would occur with the alternate impoundment design under Alternatives III or IV or the tailings paste facility design under Alternative V. The impoundment would have more seepage to be controlled and/or treated than that generated by the paste facility under Alternative V. The proposed impoundment would also take longer to reclaim than the paste facility under Alternative V and would retain a more engineered and unnatural landform after reclamation.

The upper mill site would not allow a sufficiently large buffer zone between operations and the West Fork of Rock Creek to meet INFS requirements, would need a diversion of the creek around the mill site, require the construction of an additional road to access the mine portal on less stable slopes than under Alternative III, and would require the construction of a large waste rock dump. There would have been more miles of road construction and reconstruction in close proximity to the creek than under Alternative V, greatly increasing the potential for sediment impacts to the creek and for spills from vehicular accidents to reach the West Fork of Rock Creek below the mill site.

There would be greater impacts from the sound and the operation of the proposed rail loadout facility at Noxon and from the use of open rail cars than at the alternate rail loadout facility in Miller Gulch under all three agency alternatives and the use of covered rail cars under Alternative V, including greater potential for concentrate spills to contaminate ground and surface waters and to contribute to blowing dust in the area. There were siting problems with the location of the proposed relocated intersection of FDR No. 150 with Montana Highway 200 that could have led to a greater potential risk of vehicular accidents at that location compared to the alternate location of this intersection under the agency alternatives. The separation of road and utility corridors increased the area of disturbance and potential sources for sediment compared to Alternative V. Above ground, single-walled pipelines would be more susceptible to vandalism, and the company would not be as able to quickly locate leaks and prevent spills from the pipelines as could be accomplished by the buried, double-walled pipelines with leak detection sensors under Alternative V.

The proposed location of the air-intake ventilation adit would disturb more land and the fans in the adit would generate more noise than that proposed by the agency locations, potentially impacting wildlife in the CMW as well as people recreating in the vicinity of the adit.

The passive biotreatment portion of the originally proposed water treatment system potentially had more problems meeting water quality limits in the MPDES permit than the biotreatment system under Alternative V. The ion exchange portion of the water treatment system would generate more waste products that might need off-site disposal than the reverse osmosis system proposed under Alternative V and would require the use of several chemicals.

Although the proposed reclamation plans would result in successful reclamation of the mine facilities, the agencies' proposed changes would allow reclamation to be achieved more quickly and with a greater assurance of meeting long-term reclamation goals as well as KNF visual quality objectives. Lack of

vegetative screening would increase the visibility of mine facilities as compared to the agency alternatives.

One of the road closures needed to offset impacts to grizzly bears would affect recreational access to the CMW on FDR. No. 2741. Implementation of the applicant's proposed mitigation plans would reduce impacts to water quality, wildlife and fisheries, threatened and endangered species, transportation, and wetlands. However, additional mitigation and monitoring requirements proposed under the agency alternatives would further reduce impacts beyond what would be accomplished under Alternative II.

I believe Alternative V minimized the potential risks that would remain under Alternative II and did not increase impacts to other resources.

Alternative III: the Proposed Project with Modifications and Mitigation

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I did not select Alternative III, due to greater adverse environmental impacts as compared to Alternative V. Implementation of Alternative III would disturb 609 acres in a permit area of 2,538 acres of which 71 percent were NFS lands and 29 percent were owned by Sterling. Much of this increase in disturbed acreage over the proposed action would be from the longer length of the relocated stretch of FDR No. 150 near Montana Highway 200, additional soil stockpile areas near the impoundment, and an alternate portal access road. The increase in permit area would be due primarily to the relocation of the wastewater treatment facility.

Under Alternative III, the alternate impoundment design would result in a smaller potential risk of failure under all modes of failure than would occur with proposed impoundment design under Alternative II. It could be engineered to be as stable as the tailings paste facility design under Alternative V, but the greater volume of water stored in an impoundment greatly increases the potential risk of tailings and tailings water reaching surface waters should the impoundment fail compared to the potential risk of paste tailings reaching surface waters under Alternative V. The alternate impoundment would still have significantly more seepage to be controlled and/or treated than that generated by the paste facility under Alternative V. The alternate impoundment would also take longer to reclaim than the paste facility under Alternative V and would retain a more engineered and unnatural landform after reclamation.

In Alternative III, as with Alternative II, the upper mill site would not allow a sufficiently large buffer zone between operations and the West Fork of Rock Creek to meet INFS requirements and required a diversion of the creek around the mill site. An alternate access route to the mine portal eliminated the concern about an access road on unstable slopes under Alternative III, and the creation of two smaller waste rock dumps reduced the visual impact of one large dump, but these features increased the area of disturbance. There would have been more miles of road construction and reconstruction in close proximity to the creek than under Alternative V, greatly increasing the potential for sediment impacts to the creek and for spills from vehicular accidents to reach the West Fork of Rock Creek below the mill site.

The impacts from the sound and the operation of the proposed rail loadout facility at Noxon would be eliminated by constructing the rail loadout facility near Miller Gulch where there are fewer residents to be affected. However, the use of an unenclosed facility and open rail cars would result in a greater potential for concentrate spills to contaminate ground and surface waters and to contribute to blowing dust in the area than under Alternative V. The agencies alternate intersection of FDR No. 150 with Montana Highway 200 reduced the potential risk of vehicular accidents compared to the proposed location of this intersection, and routing the ore concentrate haul trucks along FDR No. 150B around the impoundment to the rail loadout further reduced the potential for accidents on the highway. As with Alternative II, the separation of road and utility corridors in Sections 3 and 10 increased the area of disturbance and

potential sources for sediment compared to Alternative V, although the merging of utilities into one corridor separate from the road did reduce the area of disturbance somewhat compared to Alternative II. Above ground, single-walled pipelines would be more susceptible to vandalism, and the company would not be able to quickly locate leaks and prevent spills from the pipelines as could be accomplished by the buried, double-walled pipelines with leak detection sensors under Alternative V.

The agencies' alternate location of the air-intake ventilation adit would disturb less land than under Alternative II, and the fans in the adit would generate less noise due to a number of sound mitigation thus reducing potential impacts to wildlife in the CMW as well as to people recreating in the vicinity of the air-intake adit.

The passive biotreatment portion of the originally proposed water treatment system potentially had more problems meeting water quality limits in the MPDES permit than the biotreatment system under Alternative V. The ion exchange portion of the water treatment system would generate more waste products that might need off-site disposal than the reverse osmosis system proposed under Alternative V and would require the use of several chemicals.

Although the proposed reclamation plans under Alternative II would probably result in successful reclamation of the mine facilities, the agencies' proposed changes under Alternative III would allow reclamation to be achieved more quickly and with a greater assurance of meeting long-term reclamation goals as well as KNF visual quality objectives. However, additional mitigation incorporated into Alternative V would increase the potential for successful reclamation over Alternative III. Vegetative screening between mine facilities and area roads would decrease the visibility of mine facilities as compared to Alternative II.

One of the road closures needed to reduce potential impacts to grizzly bears would affect recreational access to the CMW from FDR. No. 2741. Implementation of the agencies' proposed mitigation and monitoring plans would reduce impacts to water quality (including acid mine drainage monitoring and rock mechanics monitoring), wildlife and fisheries, threatened and endangered species, transportation, and wetlands beyond what would be accomplished under Alternative II.

I believe Alternative V minimizes the potential risks that would remain under Alternative III and will not increase impacts to other resources.

Alternative IV: Modified Rock Creek Project with Mitigation.

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I did not select Alternative IV due to greater adverse environmental impacts as compared to Alternative V. Implementation of Alternative IV would disturb 542 acres in a permit area of 1,533 acres, of which 52 percent were NFS lands and 48 percent were owned by Sterling. Much of this decrease in disturbed and permit acreage compared to the proposed action would be due to the relocation of the mill site and mine portals.

Under Alternative IV as with Alternative III, the alternate impoundment design would result in a smaller potential risk of failure under all modes of failure than would occur with the proposed impoundment design under Alternative II. It could be engineered to be as stable as the tailings paste facility design under Alternative V, but the greater volume of water stored in an impoundment increases the risk of tailings and tailings water reaching surface waters should the impoundment fail compared to the potential risk of paste tailings reaching surface waters under Alternative V. The alternate impoundment would still have significantly more seepage to be controlled and/or treated than that generated by the paste facility under Alternative V. The alternate impoundment would also take longer to reclaim than the paste facility under Alternative V and would retain a more engineered and unnatural landform after reclamation.

The alternate mill site at the confluence of the east and west forks of Rock Creek would allow a sufficiently large buffer zone (300 feet or more) between operations and the east and west forks of Rock Creek to meet INFS requirements. No waste rock dumps would be constructed as the waste rock from the adits would be used to construct the mill pad and excess waste rock would be used to construct the starter dams at the impoundment. There would be less road reconstruction above the mill site under Alternative IV, which greatly reduces the potential for sediment impacts to the creek and for spills from vehicular accidents to reach the West Fork of Rock Creek above the alternate mill site.

An alternate work schedule needed to construct the longer mine access adits had a slight benefit in that it minimized the impacts from changes in employment numbers that would occur between mine construction and operation under Alternative II, although it did not completely eliminate them.

The impacts from the sound and the operation of the proposed rail loadout facility at Noxon would be eliminated by constructing the rail loadout facility near Miller Gulch where there are fewer residents to be affected. However, the use of an unenclosed facility and open rail cars would result in a greater potential for concentrate spills to contaminate ground and surface waters and to contribute to blowing dust in the area than under Alternative V. The agencies alternate intersection of FDR No. 150 with Montana Highway 200 reduced the potential risk of vehicular accidents compared to the proposed location of this intersection, and routing the ore concentrate haul trucks along FDR No. 150B around the impoundment to the rail loadout further reduced the potential for accidents on the highway. The utility and road corridors, combined under Alternative IV, were kept as far from Rock Creek as possible to reduce the potential for sediment impacts to the creek. Alternative IV still retained the above ground pipelines that would be more susceptible to vandalism, and the company would not be able to quickly locate leaks and prevent spills from the pipelines as could be accomplished by the buried, double-walled pipelines with leak detection sensors under Alternative V.

The agencies alternate location of the air-intake ventilation adit would disturb less land than under Alternative II, and the fans in the adit would generate less noise due to a number of sound mitigation, thus reducing potential impacts to wildlife in the CMW as well as people recreating in the vicinity of the air-intake adit.

The passive biotreatment portion of the originally proposed water treatment system potentially had more problems meeting water quality limits in the MPDES permit than the biotreatment system under Alternative V. The ion exchange portion of the water treatment system would generate more waste products that might need off-site disposal than the reverse osmosis system proposed under Alternative V and would require the use of several chemicals.

Although the proposed reclamation plans under Alternative II would result in successful reclamation of the mine facilities, the agencies' proposed changes would allow reclamation to be achieved more quickly and with a greater assurance of meeting long-term reclamation goals as well as KNF visual quality objectives. Vegetative screening between mine facilities and area roads would decrease the visibility of mine facilities as compared to Alternative II.

The large number of road closures needed to offset impacts to grizzly bears would also affect recreational access to the CMW on FDR. No. 2741. Implementation of the agencies' proposed mitigation and monitoring plans would reduce impacts to water quality (including acid mine drainage monitoring and rock mechanics monitoring), wildlife and fisheries, threatened and endangered species, transportation, and wetlands beyond what would be accomplished under Alternative II.

Alternative IV was the preferred alternative in the draft EIS. However, after Alternative V was developed and included in the supplemental DEIS and FEIS, it became the preferred alternative primarily because it reduced tailings seepage and had additional mitigation and monitoring plans not included under Alternative IV that dealt with public concerns about acid rock drainage, subsidence, and ground water seepage from the mine. Alternative V also limits initial construction to the evaluation adit and requires the evaluation of data collected from the adit before construction of the mine may begin. I believe Alternative V minimized the potential risks that would remain under Alternative IV and did not increase impacts to other resources.

C. BONDING

Bonding is a requirement of a plan of operations as defined at 36 CFR 228.13. The purpose of a bond is to provide a financial guarantee that all surface disturbances will be reclaimed and all mitigation related to the plan of operations is performed. The following is a discussion of how this is implemented to satisfy this requirement.

- **Reclamation**

  A reclamation bond is to be posted and maintained at a level adequate for the agencies to implement the reclamation plans as stipulated above should Sterling be unable or unwilling to do so. The reclamation bond amount has been calculated based upon the requirements of Alternative V. This included costs associated with wastewater treatment. A separate bond has been calculated for evaluation adit construction. The reclamation bond may be incrementally posted or released to reflect phases of mine development and performance of concurrent reclamation requirements, but shall always remain at an amount adequate to pay for the reclamation of any disturbances that may exist. The entire reclamation cost estimate will be reviewed and adjusted by the agencies at least every 5 years to account for changes in reclamation costs and inflation or when there are operator submitted or agency required changes to the plan of operations that would affect bonding amounts.

  A cost breakdown for the reclamation bonds required for Alternative V can be found in Attachment 5 to this ROD. The costs used in the calculations will be reviewed by agency engineering staff to make sure the costs are still current when Sterling informs the agencies that it wants to post a reclamation bond for one or both phases of construction and operation. The final calculations will be available from DEQ and KNF upon request at that time. The reclamation bond amount is subject to change should more detailed cost information become available. The reclamation bond does not represent the limits of the operator's liability should actual reclamation performance not meet the requirements in the reclamation plan or comply with environmental laws.

  The bond shall be payable to both the state of Montana and the U.S. Forest Service with surety satisfactory to DEQ and KNF in the amounts listed below. The bond may be submitted as a surety bond, cash bond, certificate of deposit, an irrevocable letter of credit, or other surety acceptable to the agencies except as noted below. The bond must be in place and accepted by the agencies prior to issuance of the permit or license and before activities under the plan of operations can commence.

- **Evaluation Adit** (under a DEQ Exploration License and KNF's Plan of Operation Proposal)

  The reclamation liability associated with development of the evaluation adit is estimated at $2,576,000. It is assumed that reclamation would occur over a two (2) year period. Major cost

centers, associated with the reclamation of the evaluation adit, include closure of the adit, water treatment of adit water for nitrate reduction, implementation of post-development monitoring programs, and project management and oversight. The reclamation estimate is based on preliminary information and is subject to modification should supplemental information warrant changes in assumptions or presumed conditions upon which the bond is based. A detailed reclamation cost analysis for the evaluation adit is in Attachment 5.

- **Mine Construction, Operation, and Reclamation** (under a DEQ Hard Rock Mine Operating Permit)

  A preliminary estimate has been prepared for full mine construction, operation, and reclamation. The reclamation costs for surface disturbances associated with the preferred alternative is estimated at $30,019,669. The cost estimate is based on information provided during the permitting and EIS process. Revisions to this estimate and bonding requirements will be made after completion of the evaluation adit phase.

- **Wastewater Treatment for Each Phase of the Rock Creek Project**

  Evaluation Adit Wastewater Treatment

  Costs associated with water treatment during the evaluation adit phase are based on the assumption that water treatment for nitrate reduction will be required for approximately one year after cessation of adit development. The cost for treatment also assumes that the reverse osmosis treatment system will be used for nitrate reduction. The reclamation liability associated with plant operation, plant removal and site reclamation is estimated at approximately $350,000.

  Post-mining Wastewater Treatment

  Water treatment for the preferred alternative ranges between $14,381,518 and $44,423,628. The difference in water treatment cost is associated with the length of time required for water treatment post-closure. Information collected during the evaluation adit phase and during initial mine start-up will provide information on the efficacy of the specified water treatment system and the length of time required for water treatment. Revisions to the water treatment bond will be made at the completion of the evaluation adit phase.

- **Wildlife Mitigation Bond**

  The KNF will require a bond for the mitigation as outlined in the Clarification of the Terrestrial Threaten and Endangered Species Mitigation Plan (Attachment 4), the 2003 BO and this ROD. The bond may be submitted as a surety bond, cash bond, certificate of deposit, an irrevocable letter of credit, or other surety acceptable to KNF according to 36 CFR 228.13. The bond must be in place and accepted by the agencies prior to the authorization to proceed with the applicable portion of the plan of operations for which the bond applies.

  The bond for funding the two Montana Department of Fish Wildlife and Parks (MDFWP) positions will is implemented in the following manner: 1) Funding for the first 5 years must be in place prior to MDFWP initiating the process to fill the positions. 2) The first year is paid directly to the MDFWP and a bond to the KNF in the amount to cover an additional 4 years of funding. The bond will be used to fund the positions for years two through five. 3) KNF, FWS and MDFWP will review the bond for adequacy two months prior to the end of each MFWP's fiscal year. 4) At the beginning of mine construction, Sterling must maintain a bond in the amount of two years funding for the positions for the life of the mine. This would ensure the necessary

funding to comply with the mitigation plan in the event of a temporary lapse of activity at the mine construction/mine development phases of the project.

If at any time after construction of the evaluation adit, Sterling withdraws its plan of operation or returns its permits with the intention of not moving forward with development of the mine, this term and condition would not be required. The funding would be based on the terms and condition that remain to be completed in the ROD or BO with respect to final reclamation and associated impacts effecting threatened and endangered species.

D. SUMMARY OF DECISION RATIONALE

In selecting Alternative V, as modified by this ROD, I have considered the potential cumulative effects and the reasonably foreseeable activities. I recognize that management decisions have trade-offs among various resources. I have determined, based on discussions summarized in this ROD, that Alternative V, as modified by this ROD, will best respond to the purpose and need as defined on page 9 and the principal factors identified in the issues considered and addressed as outlined on page 18 as contributing to my decision. Forest Service authorities and this decision apply only to NFS lands and do not extend to non-federal lands within or adjacent to the National Forest.

XI. IMPLEMENTATION

Implementation of the first phase of the project (evaluation adit) may begin when the following items are submitted by the company and approved by the agencies.

Sterling must complete the following items prior to proceeding with first phase surface disturbing activities for the evaluation adit.

- Modify and/or update the Plan of Operations/exploration license application for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the reclamation portion of the Plan of Operations for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modify and/or update the monitoring portion of the Plan of Operations for the evaluation adit as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD; and
- Submit the reclamation performance bond for the evaluation adit.

In addition, Sterling must implement the following items related to the evaluation adit prior to the KNF authorizing them to proceed:

- The reasonable and prudent measures, terms, conditions and conservation measures and mitigation relative to the evaluation adit as required by the Biological Opinion (2003), the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

Sterling cannot implement the second phase of the project (facility construction, mine development, and mine operation) until the agencies review and confirm that the following items have been submitted and are acceptable. The agencies will then inform Sterling in writing that operations may proceed.

- A modified and/or updated Plan of Operations/hard rock permit application for the mine consistent with Alternative V and as modified in this ROD;

- Modified and/or updated reclamation portion of the Plan of Operations for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated monitoring portion of the Plan of Operations for the mine as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the FEIS, and as modified in this ROD;
- Submittal of the reclamation performance bond for mine construction and mine development;
- The agencies have conducted a technical panel review of pertinent data as outlined in the FEIS and ROD and Sterling has completed any additional studies the agencies deem necessary. This could include review and analysis of applicable evaluation adit data to determine if that information is consistent with the conclusions reached in the FEIS in regards to ground water flow and quality, geochemistry, and rock mechanics.
- Final facility design plans and mitigation to be implemented during mine construction if not submitted earlier.

In addition, Sterling must implement the following items related to the mine development and construction prior to the KNF authorizing Sterling to proceed:

- The reasonable and prudent measures, terms, conditions, conservation measures and mitigation relative to the construction and development phases of the project as established by the Biological Opinion (2003), the mitigation and modifications as outlined in Alternative V of the FEIS, and this ROD.

XII. APPEAL PROVISIONS

The statutes under my decision are documented in this Record of Decision and may be appealed as described below.

A. 215 APPEALS

This decision is subject to appeal pursuant to 36 CFR 215.7. As stated in 36 CFR 215.11, an appeal may be filed by any person or non-Federal organization. A written appeal must be submitted within 45 days after the date of the notice of this decision is published in the *Daily Inter Lake*, Kalispell, Montana. Appeals must be submitted to:

USDA Forest Service, Northern Region
ATTN: Appeals Deciding Officer (RFO)
P.O. Box 7669
Missoula, MT 59807

Appeals must meet the content requirements of 36 CFR 215.14. Detailed records of the analysis are available for public review at the Forest Supervisor's Office, 1101 Hwy 2 West, Libby, Montana, 59923.

If no appeal is received, implementation of this decision may occur on, but not before, five business days from the close of the appeal filing period. If an appeal is received, implementation may not occur for 15 days following the date of appeal disposition.

Proponent's Appeal Process (36 CFR 251, Subpart C)

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The project proponent (Sterling) may appeal this decision pursuant to 36 CFR 251, Subpart C. Appeals filed under this section must be filed within 45 days of the written notice of the decision sent to the proponent. Filing procedures must conform to direction provided at 36 CFR 251.87 and 251.88 in order

for the Notice of Appeal to be considered. The content of the Notice of Appeal must conform to direction provided at 36 CFR 251.90.

B. CONTACT PERSON

For additional information on the mining, operation, and closure plan, this Record of Decision, or the Environmental Impact Statement, please contact John McKay, Project Team Leader, US Forest Service, Kootenai National Forest, 1101 US Highway 2 West, Libby, MT 59823 OR at 406-293-6211.

Bob Castaneda

June 27, 2003

BOB CASTANEDA
Forest Supervisor, Kootenai National Forest

Date

ATTACHMENT 1

TABLE OF APPROVED STIPULATIONS

AGENCY STIPULATIONS –
MODIFICATIONS, MITIGATION, AND MONITORING REQUIREMENTS

The modifications and mitigation listed in Tables 1 and 2 of the FEIS, and the monitoring plans listed in Table 3 of the FEIS and described in the revised Appendix K in Attachment 2 of the ROD are the agency stipulations as described for Alternative V (and the portions of Alternatives III and IV as pertain to Alternative V) in Chapter 2 of the FEIS. Each item includes a brief rationale for one or both agencies for that specific item and each agency's authority for requiring that item. The main authorities for these requirements is 36 CFR 228 for the US Forest Service and 82-4-301 *et seq.,* MCA, and ARM Title 17 Chapter 24 for DEQ. Some of the more specific components of these laws and regulations are identified for each of the requirements or group of requirements.

The monitoring requirements are taken from the revised Appendix K (Attachment 2), the MPDES permit, the air quality permit, the wetlands mitigation plan, and applicable regulations.

Items with an asterisk (*) apply to the evaluation adit and its exploration license, although some may also pertain in part to the Plan of Operations and the Hard Rock Permit.

Italicized items are new items added to Alternative V since the FEIS. Generally these are items that either were part of another alternative that had not been carried forward into Alternative V or additional detail provided per input from EPA. These items were added to provide additional measures of environmental protection or clarification of certain requirements.

Items marked with "◄ " are the changes KNF is requiring that are not in the 2001-ROD for DEQ.

Items with "N/A" will not be included in the DEQ permit unless Sterling consents to their placement pursuant to 75-1-201(5)(b), MCA. If Sterling has consented to the mitigation it will be so stated. In general Sterling has consented to inclusion of all stipulations required by the KNF, including some that can only be required on National Forest System (NFS) lands. Others they have also agreed to include that need to pertain to both private and federal lands in order to be effective.

A. Modifications

Modifications and Associated Mitigation	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
1. Sterling will deposit tailings as a paste rather than as a slurry and submit a final plan to agencies for technical panel review and approval prior to construction. The Bottom-Up construction process will be used as described in the Alternative V description in Chapter 2 of the FEIS. The final plan will also include the following mitigation items:	The paste facility is required because it reduces tailings seepage, tailings will be less likely to reach surface waters if a portion failed, and the facility will be reclaimed faster and more easily than a traditional tailings impoundment. The authority for this mitigation is 36 CFR 228.8(b). This authority applies to NFS lands only.	The paste facility is required because it reduces tailings seepage, tailings will be less likely to reach surface waters if a portion failed, and the facility will be reclaimed faster and more easily than a traditional impoundment. The authority for this is 75-5-303, MCA, 82-4-351, MCA, and ARM 17.24.115. The water management plan for the MPDES permit and the air quality permit application is based on the paste facility and Alternative V, so Sterling has indirectly committed to this requirement.
a. Mine waste rock will be used for constructing the tailings paste facility key buttresses to eliminate the need for a waste rock dump at the mine site.	The objective of this mitigation is to lessen the total acreage of surface disturbance. The authority for this mitigation is 36 CFR 228.8(c). This authority applies to NFS lands only.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit on both private and federal lands as allowed by 75-1-201(5)(b), MCA.
b. The final plan will incorporate deposition and grading requirements to flatten slopes and push the tailings crest back towards Government Mountain and to create a varying topographic surface that blends in with surrounding landforms as described for Alternative V in the FEIS.	The KNF can only require this on NFS lands in order to meet VQOs. The authority for this mitigation is 36 CFR 228.8(b), (d), and (e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit on both private and federal lands as allowed by 75-1-201(5)(b), MCA.
c. The grading plan for the tailings paste facility will incorporate drainages to move water off the facility and eliminate long straight slopes and crest-lines to reduce visual impacts.	Grading for drainage control can be required to minimize erosion potential including breaking up long slopes. The authority for this mitigation is 36 CFR 228.8(b), (d), and (e). KNF can only require this mitigation on that portion of the tailings paste facility involving NFS lands.	Grading for drainage control can be required to minimize erosion potential including breaking up long slopes. The authority for this is 82-4-336(2) MCA and ARM 17.24.115(1)(b), (d), and (g).
d. Soils will be selectively replaced with rocky soils being placed on steeper slopes (see reclamation below for more details). Sterling needs to include calculations for the amount of rocky soils versus non-rocky soils needed based on area of steep slopes versus gentler slopes of the final configuration of the paste facility at mine closure.	The objective of this mitigation is to reduce erosion rates on steeper slopes and therefore facilitated reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (g). KNF can only require this mitigation on NFS lands.	Rockier soils are less prone to erosion and will therefore facilitate reclamation on the slopes of the tailings facility. Stability of the soils and the slopes will be enhanced. The authority for this is 82-4-336(2) and (9)(a) MCA and ARM 17.24.115(1)(b) and (g).

Modifications and Associated Mitigation	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
e. Final designs for storm water and sediment control structures must be submitted in conjunction with the storm water permit in conjunction with the storm water permit.	The objective of this mitigation is to confirm that the most appropriate BMPs are utilized to avoid and minimize impacts to streams. The authority is 36 CFR 228.8(h).	Storm water is a source of erosion and sediment and necessary structures are needed for control. The authority for this is 82-4-336(10 and (12), MCA, and ARM 17.24.115(1)(d).
f. Sterling may, after notifying the agencies in writing, add, organic amendments or fertilizer added to uppermost lifts of the tailings paste, if needed.	The objective of this mitigation is to enhance plant growth, therefore, facilitating reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (g). KNF can only require this mitigation on NFS lands.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit on both private and federal lands as allowed by 75-1-201(5)(b), MCA.
g. Sterling may, after notifying the agencies in writing, add, cement to the drainage ways to provide an additional measure of stability.	The objective of this mitigation is to reduce erosion therefore facilitating reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (g). KNF can only require this mitigation on NFS lands.	Drainage ways are more susceptible to erosion due to concentrated flow of water. Armoring the drainage ways with cement would help minimize that problem. The authority for this is 82-4-336(10 and (12), MCA, and ARM 17.24.115(1)(d).
h. If Sterling does not commence commercial mining operations within 5 years of issuance of the ROD and if the agencies, based on peer-reviewed studies or other reliable information, determines and notifies Sterling that it is likely that paste deposition of tailings will not adequately reduce the possibility that tailings will reach surface waters in the event of a paste facility failure, Sterling shall propose modifications to the paste facility design or an alternative method of disposing of tailings. Sterling may not commence ore processing operations until the agencies approve the modifications or alternate tailings deposition method.	This mitigation is needed to ensure that the tailings storage facility is adequately designed using the most applicable technologies to protect surface waters. The authority for this is 36 CFR 228.	This mitigation is needed to ensure that the tailings storage facility is adequately designed using the most applicable technologies to protect surface waters as required by 82-4-336(10) and (12) and 75-5-605, MCA.
2. An alternate rail load-out location near Miller Gulch in Section 29 T26N and R32W as described in Alternative V in the FEIS will be constructed. Access to the rail loadout will be about 0.75 miles on Government Mountain Road from the existing FDR No. 150 intersection with Montana Highway 200, and then over about 0.25 miles of new road to the siding. Approximately 1,200 feet of track will be installed between the main track and Government Mountain Road. The rail loadout facility will be enclosed and covered railcars used.	The alternate location is necessary to avoid impacts to the town of Noxon and possible traffic problems on Montana Highway 200. The enclosure of the loadout facility and railcars will minimize ground contamination and blowing of concentrate at the site and en route to the smelter. The authority for this mitigation is 36 CFR 228.8(a), (c), and (f).	While DEQ has no authority to require an alternate rail loadout facility, the MPDES permit application and supporting material references the Miller Gulch site. Enclosure of the loadout facility and railcars will minimize ground contamination and blowing of concentrate at the site and en route to the smelter. This will prevent ground and surface water contamination at the rail loadout site as required by ARM 17.24.115(1)(b), (d), and (g).
3. When additional ventilation is required to maintain compliance with MSHA regulations, Sterling and the agencies will review air intake	This requirement will help minimize the impact of the air-intake adit on mountain goats and	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as

Modifications and Associated Mitigation	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
ventilation adit plan and determine if there are any other reasonable options available at the time. Sterling will submit a detailed study to evaluate variations in topography and rock formations if a wilderness adit is needed. The final approved location for a wilderness air-intake ventilation adit will be verified on the ground by the agencies.	wilderness users. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), and (e) and 228.15.	allowed by 75-1-201(5)(b), MCA.
4. The Rock Creek Road (FDR No. 150) and MT Highway 200 intersection will be relocated approximately 1,400 feet north of the existing intersection of FDR No. 1022 as described in Chapter 2 of the FEIS and sited according to MDOT regulations. A tie to FDR No. 1022 will be constructed and the intersection of FDR No. 1022 and MT Highway 200 will be obliterated along with a short stretch of road between the intersection and the new tie road.	The objective of this mitigation is to minimize the impacts associated with increased use of the KNF roads. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), (e), and (f), 228.9, and 228.12.	N/A. However, this requirement is needed to comply with MDOT regulations. The final alignment will be subject to review by MDOT under 60-5-101 et seq., MCA.
5. Reroute and combine the utility and road (primarily FDR No. 150) corridors as described for Alternative V in Chapter 2 of the FEIS so that the power lines and pipelines are located within a right-of-way adjacent to the roads.	This requirement will reduce the area of disturbance and will reduce some impacts to wildlife, especially harlequin ducks. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), (e), and (f), 228.9, and 228.12.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
a. FDR No. 150 will be widened to 24 feet wide and paved between Montana Highway 200 and the mill site. The old existing road near wastewater treatment plant will be widened. That road will be connected to the existing FDR No. 150 just north of Engle Creek and east of the lower bridge over Rock Creek. Other siting constraints are described below under "Wildlife Mitigation" for harlequin ducks and "Transportation."	The objective of this mitigation is to minimize the impacts associated with increased use of the KNF roads. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), (e), and (f), 228.9, and 228.12.	Paving of roads and using existing road alignments helps to minimize erosion and sedimentation of surface waters. The authority for this mitigation is ARM 17.24.115(1)(d).
b. A new bridge will be constructed over Engle Creek, the upper bridge over Rock Creek will be reconstructed, and the culvert for the West Fork of Rock Creek will be extended.	The objective of this mitigation is to minimize the impacts to wildlife, aquatics, fisheries, and non-wetland waters of the U.S.; reduce sedimentation associated with re-construction; and increased use of the KNF roads. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), (e), and (f), 228.9, and 228.12.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

Modifications and Associated Mitigation	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
6. Relocate the mine portal, adits & mill site to the land between the confluence of the east and west forks of Rock Creek as described in the Alternative V description in Chapter 2 of the FEIS.	This requirement will subsequently reduce utility & road corridor length and will allow for a buffer between the mill site and the east and west forks of Rock Creek and minimize the impacts to grizzly bears. The authority for this mitigation is 36 CFR 228.8(b), (e), and (h).	The MPDES permit application bases some storm water management features on the confluence mill site and requests Outfall 004 from the pond below the mill site. This location eliminates the need for a diversion of the West Fork of Rock Creek, allows a buffer between the mill site and Rock Creek that decreases the risk that sediment from site construction, runoff from the mill site, and any spills at the mill site will reach Rock Creek. Authority for this mitigation is ARM 17.24.115(1)(b and d).
a. The mill pad will be constructed with non-acid generating waste rock from the mine adits and will have an underdrain system to intercept and route seepage through the mill pad. See item 10c for information regarding classification of waste rock as non-acid generating.	This requirement will avoid the potential for ground and surface water contamination from water seeping through the mill pad. The authority for this mitigation is 36 CFR 228.8(b), (e), and (h).	This requirement will avoid the potential for ground and surface water contamination from water seeping through the mill pad. The authority for this mitigation is 82-4-336(10) and (12), MCA.
7. The mine portals and adits will be aligned with the mill west of FDR No. 150.	This mitigation avoids mine disturbance east of the road and reduces surface disturbance. The mine functions more efficiently. The authority for this mitigation is 36 CFR 228.8(b), (e), and (h).	This was a company suggestion to facilitate operation of the conveyor belts. It also minimizes disturbance and the potential for erosion east of FDR No. 150 at the confluence mill site. The authority for this mitigation is ARM 17.24.115(1)(d and h).
8. *The evaluation adit support facilities will be located on a site away from Rock Creek near the footprint of the proposed tailings paste facility as described in the Alternative V description in Chapter 2 of the FEIS. A temporary wastewater treatment facility will be included at this site during evaluation adit construction with a temporary pipeline to the discharge point. These facilities will be decommissioned and structures removed once the mill site and the wastewater treatment plant are operational. The original site was located close to Rock Creek in an area where harlequin ducks breed.	Moving the site down by the tailings storage facility site eliminates that potential impact on harlequin ducks and grizzly bears, and reduces the area of disturbance in the drainage compared to the proposed action. The authority for this mitigation is 36 CFR 228.8(b) and (e).	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit on both private and federal lands as allowed by 75-1-201(5)(b), MCA.

Modifications and Associated Mitigation	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
9. *The water treatment system will include a semi-passive biotreatment and reverse osmosis system as described in the FEIS and Sterling's Water Management Plan for Alternative V.	The agencies were concerned that the passive biotreatment system originally proposed would be unable to treat the volumes of water predicted to the limits in the original MPDES permit. The reverse osmosis system proposed in the company's current MPDES permit application is a more traditional system, uses fewer chemicals, and has a smaller waste system than the ion exchange system in the original proposal. Both systems can be enlarged to handle increasing amounts of mine drainage over the mine life by adding additional units. The KNF has no authority to require a particular treatment system. KNF can only require that any discharge shall comply with applicable Federal and State water quality standards including regulations pursuant to the Federal Water Pollution Control Act. This requirement is stated in 36 CFR 228.8(b) and (h).	The agencies were concerned that the passive biotreatment system originally proposed would be unable to treat the volumes of water predicted to the limits in the original MPDES permit. The reverse osmosis system proposed in the company's current MPDES permit application is a more traditional system, uses fewer chemicals, and has a smaller waste system than the ion exchange system in the original proposal. Both systems can be enlarged to handle increasing amounts of mine drainage over the mine life by adding additional units. DEQ has no authority to require a specific method of water treatment as long as the discharge complies with discharge limits in an approved MPDES permit. However, Sterling proposed these methods in its MPDES permit application and the MPDES permit is based on the commitments in the application.

B. Mitigation

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
<u>Acid Rock Drainage and Metals Leaching (Geochemistry)</u>		
10. *Sterling will be required to develop an Acid Rock Drainage and Metals Leaching Plan as outlined in the revised Appendix K Attachment 2, of this ROD. (The monitoring plan requirement is described in Table C.) It shall include but is not limited to the following items:	This plan is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The objective of this plan is to protect water resources and to ensure the most current information and technology between the ROD and implementation of the project is used in the plan. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This plan is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 82-4-336 (10) and (12), MCA and ARM 17.24.115(1)(d) and 17.24.107(6).

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a. *If geochemical testing shows ARD potential, then Sterling will need to develop a plan to address potential long-term storage of potentially acid-generating material at the evaluation adit until the mine is developed and the material can be returned underground or taken to the mill for processing.	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This mitigation is needed if testing shows potential for ARD or metals leaching in order to avoid pollution of surface and/or ground waters. The authority for this mitigation is ARM 17.24.115(1)(d) and 17.24.107(6).
b. If geochemical testing shows ARD potential, then an additional tailings paste facility and mill pad design review will be required. This will include the identification of some form of mitigation and may include potential redesign of waste rock/tailings facility cover, some form of liner beneath the facility, segregation and capping of certain materials, and/or return of materials underground.	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This mitigation is needed if testing shows potential for ARD or metals leaching in order to avoid pollution of surface and/or ground waters. The authority for this mitigation is 82-4-336 (10) and (12), MCA and ARM 17.24.115(1)(d).
c. *Geochemical contingency plans/mitigation will be included for other facilities where mine waste rock or ore are used or stored.	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This mitigation is needed if testing shows potential for ARD or metals leaching in order to avoid pollution of surface and/or ground waters. The authority for this mitigation is 82-4-336 (10) and (12), MCA and ARM 17.24.115(1)(d) and 17.24.107(6).
Air Quality		
11. *Sterling will use propane generators at the evaluation adit.	This mitigation will help reduce noxious fumes in air emissions and is included in Sterling's air quality permit application. The authority for this mitigation is 36 CFR 228.8(a) and (h).	This mitigation will help reduce noxious fumes in air emissions and is included in Sterling's air quality permit application. This mitigation is required to comply with 82-4-351, MCA and ARM 17.8.710(1).
12. *Sterling will use reduced-emission diesel engines underground and electric underground ore trucks.	This mitigation will help reduce noxious fumes in air emissions and is included in Sterling's air quality permit application. The authority for this mitigation is 36 CFR 228.8(a) and (h).	This mitigation will help reduce noxious fumes in air emissions both above and below ground. This should help improve worker conditions underground. This mitigation is included in Sterling's air quality permit application and is required to comply with 82-4-351, MCA and ARM 17.8.710(1).

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
13. Sterling will use a semi-autogenous grinding (SAG) mill as specified in the Air Quality Permit.	This mitigation will eliminate dry crushing above ground, reducing suspended particulates in the air. This is included in Sterling's air quality permit application. The authority for this mitigation is 36 CFR 228.8(a) and (h).	This will eliminate dry crushing above ground, reducing suspended particulates in the air. This is included in Sterling's air quality permit application. This mitigation is required to comply with 82-4-351, MCA and ARM 17.8.710(1).
14. *Chemical stabilization of problem areas of blowing tailings will be used when necessary.* [1]	The objective of the mitigation is to reduce the amount of airborne dust. The authority is 36 CFR 228.8(a), (c), and (h).	This mitigation will help prevent blowing tailings should additional stabilization be required. This mitigation was added to the air quality permit to comply with ARM 17.24.115(m), 17.8.710, and 17.8.715.
15. *Sterling will develop a detailed sprinkler operating plan that will be updated as the tailings paste surface expanded. This will include but is not limited to specific record-keeping requirements such as times of sprinkler operation and the amount of water used. A minimum threshold wind speed, above which sprinkling will be required will also be developed.*[1]	The objective of the mitigation is to reduce the amount of airborne dust. The authority is 36 CFR 228.8(a), (c), and (h).	Sprinklers can control wind-blown tailings. A plan is necessary to determine how and when sprinkler use will be necessary. This mitigation was added to the air quality permit to comply with ARM 17.24.115(m), 17.8.710, and 17.8.715.
16. *The sprinkler system will be upgraded as necessary to provide more extensive coverage and water availability.*[1]	The objective of the mitigation is to reduce the amount of airborne dust. The authority is 36 CFR 228.8(a), (c), and (h).	This mitigation will help prevent blowing tailings should additional control be required. This mitigation was added to the air quality permit to comply with ARM 17.24.115(m), 17.8.710, and 17.8.715. to comply with ARM 17.24.115(m).
<u>Aquatics & Fisheries</u>		
17. A minimum 300-foot stream-side buffer will be retained around the mill site.	This requirement is necessary to comply with INFSH requirements and the Biological Opinion on bull trout. The authority for this mitigation is 36 CFR 228.8(a), (c), and (h).	This buffer zone is necessary to minimize the amount of sediment reaching Rock Creek from the mill site. The authority for this mitigation is ARM 17.24.115(1)(d).
<u>Cultural Resources</u>		
18. Sterling will have a professional archeologist present during disturbance of identified lands who will work with the USFS and [4]American Indian Tribes.	The objective is to avoid or minimize potential impacts to undiscovered cultural sites. The authority for this mitigation is the National Historic Preservation Act (NHPA), the Native America Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

[1] In the FEIS the pipes were to be drained and capped. It was believed by the decision makers that filling the pipes with an inert material prior to capping will minimize the risk of surface depressions developing above the pipes as they began to rust and deteriorate long after mine closure.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
Reclamation		
19. *Sterling will need to submit site specific grading and reclamation plans for all mine-related facilities as described in the Alternative V description in Chapter 2 of the FEIS (pages 2-137 to143) and applicable portions of the Alternative III description (pages 2-76 to 80 of the FEIS). The plans shall also include the following items.	The original plans are not specific for the sites and facilities included in the selected alternative. These items may result in more concurrent reclamation, more natural landforms, and less post-mining disturbance. The objective of this plan is to protect water resources, wildlife habitat and to ensure the most current information and technology between the ROD and implementation of the project is used in the plan. The authority for this mitigation is 36 CFR 228.8(g).	The original plans are not specific for the sites and facilities included in the selected alternative. These items may result in more concurrent reclamation and less post-mining disturbance. ARM 17.24.115(1)(b), (n), (o), (p), and (q) and 17.24.107(9).
a. The mill pad face will be reclaimed immediately after construction.	The objective of this mitigation is to meet the requirements of 36 CFR 228.8(g).	This item minimizes the potential for erosion and encourages earlier reclamation of this site. The authority for this is ARM 17.24.115(1)(r).
b. *The evaluation adit waste rock dump and mine portal areas should be regraded to eliminate benches and create a more natural landform.	The objective of this mitigation is to meet the requirements of 36 CFR 228.8(g).	N/A. Sterling has consented to apply this stipulation to the exploration license as allowed by 75-1-201(5)(b), MCA.
c. The grading plan for the tailings paste facility will result in a landform that blends in with surrounding landforms (see item #1(b) above).	USFS can only require this be done on Forest Service lands to comply with VQO's. The objective of this mitigation is to meet the requirements of 36 CFR 228.8(d) and (g).	N/A. Paste technology allows for more grading options. Sterling has consented to apply this stipulation to the hard rock operating permit for both private and federal lands as allowed by 75-1-201(5)(b), MCA, since visual impacts are an especially significant issue with the public.
d. The plan will also address reclamation of storm water control structures, soil stockpile sites, access roads and the tailings paste plant site.	The objective of this mitigation is to meet the requirement of 36 CFR 228.8(g).	The additions to the reclamation plan are necessary to comply with 82-4-336, MCA.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
e. Once the pipelines are no longer needed they shall be removed from all stream crossings and approximately 15 to 20 feet of pipe on either side shall be removed, *the pipes filled with non-acid generating and non-metal leaching materials*[5], the pipes capped, and the banks regraded and reclaimed, leaving the remaining portions of the pipelines buried in place.	The objective of this mitigation is to protect streams bed integrity over the long term and to lessen areas of re-disturbance. The authority for this mitigation is 36CFR 228.8(b), (f), and (g).	Leaving pipes primarily buried avoids redisturbance along most of the pipeline route; this provides for earlier and better reclamation. Capping insures that the pipes do not act as an uncontrolled conduit for water and prevents potential erosion. Removal of the pipe at stream crossings will eliminate having the pipe become exposed at a later date by stream action. The authority for this mitigation is 82-4-336(8), (9), and (10), MCA and ARM 17.24.115(1)(p and r).
20. *General reclamation and revegetation plans and site-specific planting designs for each mine facility as described in the Alternative V description in Chapter 2 of the FEIS pages 2-141 through 2-143. These plans will include but are not limited to the following items:	The objective of these mitigation as itemized in items a through h below, is to minimize the potential impact from disturbed areas by ensuring a higher rate of successful reclamation and by re-creating appropriate wildlife habitat. KNF can only require the following items on NFS lands in which reclamation is needed. The authority for this mitigation is 36 CFR 228.8.	These items will improve and increase site stability and increase the success of revegetation over the proposed plans. These requirements are necessary to establish the post-mining land use of wildlife habitat and to ensure comparable stability and utility of the site. This mitigation is necessary for compliance with 82-4-303(14) and 82-4-336 MCA and ARM 17.24.115(1) and 17.24.107(12) and (13).
a. *Interim seeding will be done as soon as possible after disturbance.	This mitigation is needed to minimize erosion.	This mitigation is needed to minimize erosion. This mitigation is authorized by ARM 17.24.115(1)(m), (p), and (r) and 17.24.105(11).
b. *Trees and shrubs will be hand planted on slopes exceeding 30%.	This mitigation is a standard agricultural practice.	This mitigation is a standard agricultural practice as authorized by ARM 17.24.115(1)(r).
c. *Sterling will plant trees grown trees grown from locally collected seed inoculated with appropriate mychorizza.	This mitigation is required to lessen the risk of early tree life mortality.	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
d. *Tree and shrub seedling protection will include shade cards, netting, and drip irrigation used April-June for up to 3 years on tailings paste facility.	This mitigation is necessary to facilitate successful reclamation.	This mitigation is necessary to facilitate successful reclamation and is a standard agricultural practice as authorized by ARM 17.24.115(1)(r).
e. *The soil will be scarified prior to seeding.	This mitigation is a standard agricultural practice.	This mitigation is necessary a standard agricultural practice as authorized by ARM 17.24.115(1)(r).
f. *Any legumes used will be inoculated.	This mitigation is a standard agricultural practice.	This mitigation is a standard agricultural practice as authorized by ARM 17.24.115(1)(r).

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
g. *Sterling will use locally collected seeds.	This mitigation is necessary required to lessen the risk of early plant life mortality	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
h. *The seed mixes will contain palatable forbs and grass species to facilitate use by wildlife. The use of native species will be encouraged. The approved seed mixes are described in Appendix J of the FEIS.	This mitigation is necessary for establishing the post-mining land use for wildlife habitat.	This mitigation is necessary for establishing the post-mining land use of wildlife habitat as authorized by ARM 17.24.115(1)(c) and 17.24.107(12).
i. *Native shrubs and trees should be planted at evaluation adit.	This mitigation is necessary for establishing the post-mining land use for wildlife habitat.	This mitigation is for establishing the post-mining land use of wildlife habitat as authorized by 82-4-336(8) and (9), MCA, and ARM 17.24.115(1)(c) and 17.24.107(12).
21. *A Vegetation Removal and Deposition Plan needs to be developed as outlined in the Alternative V description in Chapter 2 of the FEIS to ensure proper removal and disposition of existing vegetation prior to site construction. Slash will be used for BMPs and erosion control.	This mitigation is a standard reclamation practice. The authority for this mitigation is 36 CFR 228.8	This mitigation is a standard reclamation practice as authorized by ARM 17.24.115(1)(r).
22. *A Vegetation Management Plan needs to be developed to minimize disturbance during clearing and construction and to maximize revegetation success on all cut-and-fill slopes and reclaimed road segments described in the Alternative V description in Chapter 2 of the FEIS.	This mitigation is a standard reclamation practice. The authority for this mitigation is 36 CFR 228.8.	This mitigation is a standard reclamation practice needed to enhance revegetation success as authorized by ARM 17.24.115(1)(r) and 17.24.105(5).
23. The preliminary plan for mine adit closure will be developed for two potential scenarios as outlined in the Alternative V description in Chapter 2 of the FEIS. The final plan will be completed as mine closure approaches and will be based on information gained during mine operation regarding rock stability, bedrock and ore geochemistry, and mine seepage rates.	The objective of this mitigation, including items a and b, is to ensure that the most up to date information and technology is used in determining the final adit closure. The authority for this mitigation is 36 CFR 228.8(g).	An adit closure plan for the alternate portal site is needed. These plans are needed to ensure that water in the mine does not pollute surface or ground waters after mine closure. This mitigation authorized by 82-4-336(10) and (12) MCA and ARM 17.24.15(1)(d) and (g).

Mitigation			USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
	a.	The first preliminary plan will address the initial closure of the mine before water treatment ceases. The initial closure of the mine will provide for closing or sealing the mine adits to prevent unauthorized access and allow for maintenance of equipment needed to monitor and pump mine water to the water treatment plant until such time as it is determined that pumping can cease and the mine can fill up with water. The plan must address long-term maintenance of the pumping equipment and adit closure gates/seals in case a determination is made that the water must be treated and discharged to the Clark Fork River in perpetuity. Reclamation of the wastewater treatment facility must also be described in the reclamation plan.	See item 23 above.	This portion of the closure plan addresses the closure option to be bonded for—perpetual water discharge with or without treatment as needed to meet approved MPDES permit limits. The reclamation plan must include reevaluation of all facilities required for water treatment per Judge Hansel's decision regarding Golden Sunlight Mine. This is necessary to comply with 82-4-336(10) and (12), MCA and 17.24.115(1)(d).
	b.	A second preliminary plan needs to be developed to address how the mine will be closed if a decision is made to cease pumping and allow the mine to fill with water. In that case the mine adits will be closed and sealed at the top of the access adits to prevent or minimize seepage through the adits and closed at the mine portal to prevent unauthorized access into the adits after mine closure. Other measures also need to be identified.	See item 23 above	Since there is a possibility of sealing the mine after the mine water meets applicable standards and if storing the water under ground will not cause any problems to surface and ground waters from hydrofracturing, a preliminary plan needs to be included in the plan of operations. This is necessary to comply with 82-4-336(10) and (12), MCA and 17.24.115(1)(d).
24.	The closure plan for the air-intake ventilation adit in the CMW at the alternate location will include provisions to return the site to pre-mining appearance and configuration except as modified for bat habitat, if deemed appropriate (see item 62a) as described in the Alternative V description in Chapter 2 of the FEIS.		The objective of this mitigation is to maintain wilderness quality and wildlife habitat. The authority for this mitigation is 36 CFR 228.8(e) and 228.15.	The closure plan will need to be modified for the selected site and provide reclamation of the site to comparable stability and utility as the adjacent undisturbed landscape. The plan will minimize visual contrast with adjacent land as required by 82-4-336(9)(b).
25.	Sterling will develop a more specific soil salvage, handling and replacement plan as outlined in the Alternative V description in Chapter 2 of the FEIS (pages 2-139-10) and in the Alternative III description (pages 2-76-79) that shall include but is not limited to the following items:		These items (a-h) will improve our knowledge of the soil resources and the volume of soil available for reclamation, and increase the potential for successful revegetation and reclamation of disturbed areas. They will also help reduce soil loss and reduce risks to surface and ground waters from seepage through the soil stockpiles. The authority for this mitigation is 36 CFR 228.8(g). KNF can only enforce this on NFS lands.	These items (a-h) will improve our knowledge of the soil resources and the volume of soil available for reclamation, and increase the potential for successful revegetation and reclamation of disturbed areas. They will also help reduce soil loss and reduce risks to surface and ground waters from seepage through the soil stockpiles. The authority for this mitigation is 82-4-336(12), MCA and ARM 17.24.115(1)(a), (b), (d), (g), and (r).
	a.	*A detailed soil survey shall be conducted in areas to be disturbed to more accurately identify the volumes of different soil types that will be needed to facilitate soil	A more detailed survey is needed to improve knowledge of the soil resources and identify the volume of soil types available for	A more detailed survey is needed to improve knowledge of the soil resources and identify the volume of soil types available for reclamation.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
	storage and replacement.	reclamation.	The authority for this mitigation is ARM 17.24.115(1)(b).
b.	*Soils will be salvaged using a two-lift removal process and replacement soil depths shall be a minimum of 24" at all facilities except as specified in the evaluation adit reclamation plan.	This mitigation is a standard reclamation practice. Placing topsoil above subsoil on reclaimed sites will improve the success rate of revegetation efforts.	This mitigation is a standard reclamation practice as authorized by ARM 17.24.115(1)(r). Placing topsoil above subsoil on reclaimed sites will improve the success rate of revegetation efforts. The authority for this mitigation is ARM 17.24.115(1)(b) and (c).
c.	*Rocky soil (with a maximum of 50 percent rock fragments by volume) will be replaced on slopes 8% or greater. Lacustrine soils will be replaced on flatter slopes. Additional rocky soils shall be created from adding crushed rock to non-rocky (lacustrine) soils if sufficient volumes are not naturally available.	Rocky soils are more stable on steeper slopes.	Rocky soils are more stable on steeper slopes. The authority for this mitigation is ARM 17.24.115(1)(d) and (g).
d.	*Soils will be stockpiled and signed separately according to erodability to facilitate replacement of appropriate soils according to reclaimed slopes.	This mitigation is needed to keep rocky soils separated so that the appropriate soil types are placed on the slopes to be reclaimed.	This mitigation is needed to keep rocky soils separated so that the appropriate soil types are placed on the slopes to be reclaimed. The authority for this mitigation is ARM 17.24.115(1)(b) and (d).
e.	*Soil stockpiles will be incrementally stabilized to minimize erosion and loss of soil.	Needed to minimize erosion and reduce the loss of soil.	Needed to minimize erosion and reduce the loss of soil. The authority for this mitigation is ARM 17.24.115(1)(b) and (d).
f.	Soil stockpiles within 300 feet of surface water or less than 6 feet above ground water levels will be limed to minimize contamination from runoff from and seepage through the soil stockpiles.	Liming is needed to neutralize the acid leachate from the decomposition of coniferous organic materials in the soils that could seep into ground water beneath the stockpiles	Liming is needed to neutralize the acid leachate from the decomposition of coniferous organic materials in the soils that could seep into ground water beneath the stockpiles. This mitigation is authorized by 82-4-336(12) MCA.
g.	*Direct haul of topsoil is to be maximized. This helps to retain soil structure and contains seeds that will help maintain plant diversity on reclaimed sites.	This mitigation is a standard reclamation practice	This mitigation is a standard reclamation practice as authorized by ARM 17.24.115(1)(r).
h.	Organic matter will be added to soil stockpiles to help maintain organic matter content, soil structure, and fertility.	N/A. Recommendation only. This could be a way to recycle chipped organic debris from site clearing operations.	N/A. Recommendation only. This could be a way to recycle chipped organic debris from site clearing operations.
i.	◄During all operations the operator shall maintain the structures, equipment, and other facilities in a safe, neat an workman like manner. Hazardous sites or conditions resulting from operations shall be marked by signs, fenced or otherwise identified to protect the public in accordance with Federal and State laws and regulations. .	The purpose of this requirement is public safety and environmental protection. . The authority for this mitigation is 36 CFR 228.9. KNF can only enforce this on NFS lands.	N/A

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
j. Unless otherwise agreed to by the authorized officer, the operator shall remove within a reasonable time following cessation of operation all structures, equipment and facilities and clean up the site of operation. Other than seasonally, where operations have ceased temporarily, an operator shall file an annual statement with the KNF a verification statement that includes: an expected reopening date; estimate time of shut-down. Rock Mechanics/Subsidence/Hydrofracturing	The purpose of this requirement is to assist in the reclamation process. The authority is 36 CFR 228.10.	N/A
26. *Sterling will provide an updated mine design plan prior to evaluation adit and mine adit construction.	The objective of this mitigation is to ensure that the most up-to-date information and technology is used in determining the final mine construction plan. The authority for this mitigation is 36 CFR 228.8(g).	Needed to maintain minimal risk of subsidence due to wilderness lakes above the mine workings. This mitigation is necessary to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA, and ARM 17.24.105(1)(c).
27. Sterling will submit updated mine plans prior to entering areas where mining could result in impacts to the surface (thick ore zones and ore outcrop zones).	The objective of this mitigation is to ensure the most current information is available for review to determine if any additional mitigation may be required to protect the resources. The authority is 36 CFR 228.8	Needed to maintain minimal risk of subsidence due to wilderness lakes above the mine workings. This mitigation is necessary to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
28. No secondary ore recovery from pillars will be allowed to reduce the risk of subsidence.	This mitigation is needed to maintain minimal risk of subsidence due to wilderness lakes above the mine workings. The authority for this mitigation is 36 CFR 228.8(b) and (d), and 228.15	This mitigation is needed to maintain minimal risk of subsidence due to wilderness lakes above the mine workings. This mitigation is necessary to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
29. *A 1000-foot buffer zone will be maintained around Cliff Lake and the north and south ore outcrop interfaces in addition to the 100-foot buffer on either side of the Moran fault, the Copper Lake Fault, and other faults as proposed by the applicant. A 450-foot vertical buffer will be maintained between the mine workings and the surface.	The buffers around the faults and Cliff Lake are necessary to reduce the risk of modifying the potentiometric surface of the ground water in the faults that recharge wilderness lakes that could affect lake levels and water chemistry. The buffers at the ore outcrop zones are necessary to minimize the potential for creating new seeps and springs from water stored in underground workings. Those buffers as well as the vertical buffer are also required to prevent hydrofracturing of the bedrock and creating new springs and seeps from water stored in the mine workings, especially after mine closure. The authority for this mitigation is 36 CFR 228.8b and d, and 228.15.	The buffers around the faults and Cliff Lake are necessary to reduce the risk of modifying the potentiometric surface of the ground water in the faults that recharge wilderness lakes that could affect lake levels and water chemistry. The buffers at the ore outcrop zones are necessary to minimize the potential for creating new seeps and springs from water stored in underground workings. Those buffers as well as the vertical buffer are also required to prevent hydrofracturing of the bedrock and creating new springs and seeps from water stored in the mine workings, especially after mine closure. This mitigation is necessary to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
Scenic Resources		
30. A number of facility features will be painted, stained, or modified to reduce contrast with the surrounding area as defined in the Alternative V description in Chapter 2 of the FEIS. These include but are not limited to the following items:	The mitigation (a-c) is required to minimize the visual impact of various mine facilities. The authority for this mitigation is 36 CFR 228.8(d). This authority only extends to NFS lands	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
a. Wooden utility poles, dark porcelain or polymer insulators and non specular conductors will be used.	This mitigation is required to minimize the visual impact of various mine facilities. The authority for this mitigation is 36 CFR 228.8(d). This authority only extends to NFS lands	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
b. Permanent (life-of-mine) structures within the project area will be treated and/or painted to visually blend with the surrounding landscape.	This mitigation is required to minimize the visual impact of various mine facilities. The authority for this mitigation is 36 CFR 228.8(d). This authority only extends to NFS lands	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
c. *Exposed rock and waste rock surfaces will be treated with oxidating compounds if necessary to meet long-term Visual Quality Objectives (VQOs) at the mill, the wilderness ventilation adit, and the evaluation adit.	Necessary to meet long-term VQOs at the mill and the wilderness ventilation adit. The authority for this mitigation is 36 CFR 228.8(d) and 228.15	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
31. Sterling will use modified right of way clearance measures and vegetation management plans as described in the Alternative V description in Chapter 2 of the FEIS.	These measures are necessary to reduce visual impacts along the road and utility corridor and comply with FS VQOs. The authority for this mitigation is 36 CFR 228.89d). This authority only extends to NFS lands	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
32. Sterling will maintain a number of buffer zones throughout the permit area to help screen mine facilities from nearby roads as described in the Alternative V description in Chapter 2 of the FEIS. These will include but are not limited to the following items.	The mitigation (b-c) is required to minimize the visual impact of various mine facilities. The authority for this mitigation is 36 CFR 228.8d. This authority only extends to NFS lands	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
a. Sterling will plant or replant trees between the tailings paste facility and Montana Highway 200.	KNF cannot require this, as this site is located on privately owned lands.	N/A Sterling has consented to apply this stipulation to the hard rock operating permit only on private and federal lands as allowed by 75-1-201(5)(b), MCA.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
b. Sterling will plant or retain a vegetative buffer of sufficient width between FDR No. 150 and the biotreatment facility and the substation in the lower Rock Creek drainage for visual screening as approved by the agencies.	KNF can only require this mitigation on that portion of FDR 150 that is on NFS lands. The authority is 36 CFR 228.8d.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
c. A 100-foot visual buffer between the mill site and FDR No. 150 will be maintained. In addition, the mill pad will have a maximum height of 50 feet.	The objective of this mitigation is to provide visual screening. The authority is 36 CFR 228.8d.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
33. *Exterior exploration adit and mill site lights will be shielded or baffled from viewpoints in the Clark Fork Valley and from night-migrating songbirds.	This mitigation is required to minimize the visual impact of various mine facilities on night-migrating songbirds. The authority for this mitigation is 36 CFR 228.8d and e.	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
34. *Sterling will install and remove the temporary water line from the evaluation adit with a winch and cable.	This mitigation will eliminate the visual impact of dragging the water line through timbered area with large motorized equipment that will require removal of timber and possible disturbance of other vegetation and soil for the passage and movement of the equipment. The authority for this mitigation is 36 CFR 228.8b, f, and g.	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA. ARM 17.24.105(4) also requires that areas disturbed by vegetation removal be kept to a minimum size necessary to accommodate the exploration activity.
<u>Sound</u>		
35. *Sterling will replace above-ground vehicle back-up beeper with discriminating back-up alarms that sense movement behind a vehicle if allowed by OSHA.	The objective of this mitigation is to preserve wilderness quality and to minimize impacts to wildlife. The mitigation applies to all NFS lands involved with the project. The authority is 36 CFR 228.8 (e) and 228.15.	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit on both private and federal lands as allowed by 75-1-201(5)(b), MCA.
36. Sterling will operate all surface and mill equipment so that sound levels do not exceed 55 dBA measured 250 feet from the mill.	The objective of this mitigation is to preserve wilderness quality and to minimize impacts to wildlife. The mitigation applies to all NFS lands involved with the project. The authority is 36 CFR 228.8(e) and 228.15.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
37. *Sterling will adjust intake and exhaust ventilation fans in the evaluation and mine adits so that they generate sounds less than 82 dBA measured 50 feet downwind.	The objective of this mitigation is to preserve wilderness quality and to minimize impacts to wildlife. The mitigation applies to all NFS lands involved with the project. The authority is 36 CFR 228.8(e) and 228.15.	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
38. Sterling will adjust the ventilation fans in the air-intake ventilation adit in the wilderness such that they generate sounds less than 45 dBA measured 50 feet from the adit. If necessary, specially designed low-noise fan blades or active noise-suppression equipment will be used.	The objective of this mitigation is to preserve wilderness quality and to minimize impacts to wildlife. The mitigation applies to all NFS lands involved with the project. The authority is 36 CFR 228.8(e) and 228.15.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit only on federal lands as allowed by 75-1-201(5)(b), MCA.
Threatened and Endangered Species (Bull Trout)		
39. *Sterling will submit a final mitigation plan to maintain sensitive and T&E fish populations as outlined in the Alternative V description in Chapter 2, the Biological Assessment in Appendix B, FEIS, and the Biological Opinion May 9, 2003. This plan will include the development of a sediment source identification and reduction plan that will reduce 400 tons of sediment per year (see 53a for more detail).	This item is required in the FWS BO for bull trout. The purpose of the mitigation is to avoid or minimize adverse impacts to threatened and endangered species. The objective is to ensure that the most current data and technology between the ROD and implementation of the project are used in the plan. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
40. Barriers will be installed at two bridges and one culvert along FDR No. 150 to reduce the risk of vehicles and their contents from reaching Rock Creek in the event of an accident.	The objective of the mitigation is to avoid or minimize adverse impacts to threatened and endangered species. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
41. The final design of erosion and sediment control BMPs will incorporate features to minimize the risk of failures of potential impacts for sedimentation from surface disturbing activities and associated impacts to bull trout.	The objective of the mitigation is to avoid or minimize adverse impacts to threatened and endangered species. The authority is 36 CFR 228.8(b), (d), and (h).	Needed to reduce erosion and sediment in Rock Creek and will help reduce impairment of beneficial uses by cold water fishes. This mitigation is authorized by ARM 17.24.115(1)(d).
Threatened and Endangered Species (Terrestrial Species)		
42. *A more detailed T&E mitigation plan will be developed and will include but is not limited to the following items and others identified in the Biological Assessment in Appendix B (FEIS)	These items (a-t) are required in the FWS BO. Some are already included in the applicant's plan of operations. All were included in Alternative V. These items are necessary in order to avoid jeopardizing the existence of grizzly bears in the lower Cabinet-Yaak ecosystem. A more detailed plan is required to ensure that the most up to data information and technology developed between the ROD and implementation of the project is used. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply these stipulations (a-t) to the exploration license and hard rock operating permit as appropriate and as allowed by 75-1-201(5)(b), MCA.
a. *Sterling will develop a traffic management plan (see item 43 for details). Traffic on mine roads will be monitored (see #78 in Table C).	This is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
b.	*Road salt will not be used in the winter.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
c.	*Road kills will be removed daily and the numbers monitored. The need for monitoring will be re-evaluated after 5 years of operation.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
d.	Construct powerlines following criteria outlined by Olendorff, Miller, and Lehman (1981) to reduce the potential for electrocution of bald eagles.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears. This was included in the applicant's plan of operations.	N/A. Sterling has consented to apply this stipulation.
e.	◄*Sterling will fund an FWP information and education position and program for grizzly bear conservation in conjunction with other mines operating in the area, such as the Montanore Mine for a period of five years.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
f.	◄*Sterling will help fund one FWP law enforcement position in conjunction with other mines operating in the area, such as the Montanore Mine for a period of five years.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
g.	*Bear proof containers will be used and garbage will be removed in a timely manner at mine facilities.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
h.	*Clover will not be included in any seed mixes during mine construction and operation.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
i.	*Prohibit employees from carrying firearms except for security personnel and other designated persons.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears. This was included in the applicant's plan of operations.	N/A. Sterling has consented to apply this stipulation.
j.	*Prohibit personnel from feeding wildlife especially bears.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.
k.	*Sterling will fund the acquisition of bear-proof garbage cans for campgrounds within BMUs 4, 5, and 6.	This mitigation is necessary to reduce mortality risk, maintain habitat effectiveness, reduce incidental take of grizzly bears, and avoid jeopardy for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
l.	*Sterling will require employees to attend training related to living near and working in grizzly bear habitat prior to starting work and on an annual basis thereafter.	This mitigation is necessary to reduce mortality risk and incidental take of grizzly bears.	N/A. Sterling has consented to apply this stipulation.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
m.	*Sterling will acquire perpetual conservation easements or purchase replacement grizzly bear habitat (2,350 acres). Of this, 153 acres will be acquired prior to evaluation adit construction, an additional 1721acres prior to mine construction, 10 acres prior to constructing the air-intake ventilation adit, and 566 prior to mine operation. Details of transferring these lands to the USFS are described in the mitigation plan attached to the BA in Appendix B of the FEIS, Biological Opinion May 9 2003, pages A-11, A12.	This mitigation is necessary to maintain habitat effectiveness for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
n.	Sterling will fund grizzly bear habitat enhancement activities on 484 acres that include but are not limited to prescribed fire.	This mitigation is necessary to maintain habitat effectiveness for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
o.	◄Sterling will fund a total of 7.22 miles of road closures: 2.92 miles on FDR No. 150, 0.18 miles on FDR No. 2741X, 0.51 miles on FDR No. 2741A, 1.61 miles on FDR No. 2285 and 2 miles on Bear Creek Road FDR 4784	This mitigation is necessary to reduce mortality risk, maintain habitat effectiveness, reduce incidental take of grizzly bears, and avoid jeopardy for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
p.	Sterling will fund monitoring of trail use on the Rock Lake and St. Paul Lake trails.	This mitigation is necessary to reduce mortality risk, maintain habitat effectiveness, reduce incidental take of grizzly bears, and avoid jeopardy for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
q.	*Sterling will acquire an additional 100 acres within the north-south corridor of which 53 acres must be acquired prior to evaluation adit construction. Location of these lands must be approved by the USFS and the FWS. Details of transferring these lands to the USFS are described in the revised mitigation plan attached to the BA in Appendix B.	This mitigation is needed to address habitat constriction that reduces the potential to achieve CYE grizzly bear recover goals and to avoid jeopardy.	N/A. Sterling has consented to apply this stipulation.
r.	*Sterling will establish a trust fund/post a bond prior to initiating any activities to cover grizzly bear mitigation implementation costs according to the schedule in the revised mitigation plan attached to the BA in Appendix B.	This mitigation is necessary to ensure compliance with the Threatened and Endangered Species Mitigation Plan for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
s.	*Sterling will enter into a Memorandum of Understanding that outlines all participants' roles, the process for evaluating and approving components of the mitigation plan and describes the two FWP positions.	This mitigation is necessary to ensure compliance with the Threatened and Endangered Species Mitigation Plan for grizzly bears.	N/A. Sterling has consented to apply this stipulation.
t.	*Sterling will contribute funding to support radio telemetry monitoring of grizzly bear movements in the southern Cabinet Mountains.	This mitigation is necessary to ensure compliance with the Threatened and Endangered Species Mitigation Plan for grizzly bears.	N/A. Sterling has consented to apply this stipulation.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
u. ◄ Sterling will fund the needed measures to make the Sanders County garbage transfer station near the mine entrance bear-resistant.	This mitigation is necessary to ensure compliance with the Threatened and Endangered Species Mitigation Plan for grizzly bears.	N/A. Sterling has consented to apply this stipulation
Transportation, Roads, & Utilities		
43. *Sterling will develop a traffic management plan that will include but is not limited to the following items:	The mitigation (a-b) will help minimize mine-related traffic and address construction and reconstruction of project-area roads for mining-related purposes. The authority to require this mitigation a and b is 36 CFR 228.8(f) and (e).	N/A. Sterling has consented to apply these stipulations to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
a. Mine workers and visitors will be bused from parking lot in lower Rock Creek area. (Also see item # 63f below).	This mitigation will minimize the amount of mine-related traffic on FDR No. 150 and will also minimize impacts to wildlife, especially harlequin ducks, in the Rock Creek drainage.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
b. A travel lane will need to be maintained for traffic on FDR No. 150 during road construction and reconstruction.	This mitigation will allow private landowners reasonable access to their properties and public access to NFS lands in the drainage.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
44. All major roads used during mine operation will be paved or graveled and constructed as outlined in Alternative V (Table 2-16) in Chapter 2 of the FEIS.	The objective of this mitigation is to reduce erosion and sedimentation to the streams and increase traffic safety. This is part of the Water Management Plan. The authority to have this plan is 36 CFR 228.8.	This mitigation is proposed in the applicant's Water Management Plan for Alternative V.
45. All pipelines will be buried at least 24 inches deep within a right-of-way adjacent to FDR No. 150 or FDR No. 150B.	Burial of the pipelines will reduce visual impacts and the potential for vandalism of the pipelines that could result in a release of tailings, mine water, and/or ore concentrate into Rock Creek and the Clark Fork River. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), (e), and (f).	Supporting material for the MPDES permit indicates that the pipelines will be buried. Burial of the pipelines will minimize the risk of vandalism that could result in release of tailings, mine water, and/or ore concentrate into Rock Creek and the Clark Fork River.
46. Dual-wall pipelines with leak detection sensors will be used on all pipelines, except for the mine water discharge pipeline that will be single-walled.	The objective of this mitigation is to lessen the risk of impacting streams from potential pipe failure. The authority of this mitigation 36 CFR 228.8 (b), (c) (e), and (h).	This mitigation is proposed in the applicant's Water Management Plan for Alternative V.
47. A 3-inch dual-wall, buried pipeline will be installed between the mill site and the rail loadout facility for pumping ore concentrate to the rail loadout and excess water will be pumped back to the mill site in a 2-inch dual-wall buried pipeline for reuse or to the wastewater treatment plant prior to discharge to the Clark Fork River.	The objective of this mitigation is to reduce traffic therefore increase traffic safety, reduce potential vandalism, and lessen the risks of potential impacts to streams from pipe failure. The authority of this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This is proposed in the applicant's Water Management Plan for Alternative V.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
Water Quality		
48. The location all domestic water supply wells or springs downgradient of the tailings paste facility will be verified with DNRC before mine construction commences.	The objective of this mitigation is to be able to monitor known ground water wells for impacts as a result of implementing this proposal. The authority for this mitigation is 36 CFR 228.8(b). KNF cannot require the wells be monitored.	This mitigation is needed to verify all beneficial users so that impacts related to mining can be identified and alternate water sources developed if necessary. Authority for this monitoring is 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
49. *The mine adits will be grouted ahead of blasting (directional grouting) to minimize seepage of ground water into the adits during and after mine construction and operation.	The objective of this mitigation is to protect ground water resources and lessen the impact to surface water resources. The authority is 36 CFR 228.8(a).	This is mitigation is a standard mining practice to minimize water inflows and reduce the amount of water to be treated or stored in the mine. It is necessary in order to ensure that mine water inflows are controlled after mine closure and do not affect surface or ground waters as required by 82-4-336(10) and (12) and ARM 17.24.107(6).
50. *A detailed water balance will be refined annually during evaluation adit construction and mine construction and operation as outlined in Appendix K of the FEIS.	This mitigation is necessary so that trends can be identified and so that the wastewater treatment plant is sized appropriately to handle the flow of water. It will also help determine how accurate the predictions in the EIS were and whether additional mitigation is needed to deal with different flows than were predicted. The authority for this mitigation is 36 CFR 228.8(b) and (h).	This mitigation is necessary so that trends can be identified and so that the wastewater treatment plant is sized appropriately to handle the flow of water. It will also help determine how accurate the predictions in the EIS were and whether additional mitigation is needed to deal with different flows than were predicted. Authority for this monitoring is 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
51. All storm water detention and retention ponds and all ponds and diversion ditches will be lined and sized to handle the 100 year/24 hour storm event, with the exception of the mill drain containment pond which will be sized for the 10 year/24 hour storm event.	The objective of this mitigation is to lessen the potential impacts to surface waters from the proposed project. The KNF can only require this on that portion of the project facilities that utilizes NFS lands. The authority for this mitigation is 36 CFR 228.8(b) and (h).	This mitigation is proposed in the applicant's Water Management Plan for Alternative V. This mitigation is also necessary to ensure that all water control and impounding structures will protect against washouts during a 100-year flood (ARM 17.24.115(1)(e)).
52. Clays excavated for stability purposes in the vicinity of the key buttresses will be used to seal more permeable areas within the tailings paste facility footprint.	The objective of this mitigation is to lessen the potential impacts to ground water from the proposed paste facility. The KNF can only require this on that portion of the paste facility that utilizes NFS lands. The authority for this mitigation is 36 CFR 228.8(b) and (h).	This mitigation is needed to help reduce the amount of seepage below the tailings facility. The mitigation is authorized by 82-4-336(12), 82-4-351, 75-5-303, and 75-5-605, MCA.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
53. Mitigation to reduce sediment and erosion during construction and operation will include the following as defined in the FEIS.	The objective of the mitigation (a-d) is to lessen potential impacts to streams and wildlife from construction activity and road use. The authority for this mitigation is 36 CFR 228.8(b), (e), (f), and (h).	This mitigation is needed to reduce erosion and sediment in Rock Creek and will help reduce impairment of beneficial uses by cold water fishes. This mitigation is authorized by ARM 17.24.115(1)(d).
a. A sediment source reduction plan will be developed and implemented to reduce at least 400 tons of sediment per year within the drainage (see item 39). See Appendix N, the bull trout BA in Appendix B, and the bull trout BO in Appendix E in the FEIS for more detail.	The objective of this mitigation is to lessen potential impacts to streams from sedimentation. This is also a requirement in the BO for bull trout in Appendix E in the FEIS. The authority for this mitigation is 36 CFR 228.8(b), (e), (f), and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
b. Sediment catchment basins will be constructed where fine sediments could be transported to Rock Creek.	The objective of this mitigation is to lessen potential impacts to streams from sedimentation. The authority for this mitigation is 36 CFR 228.8(b), (e), (f), and (h).	This mitigation is proposed in the applicant's Water Management Plan for Alternative V. This mitigation is also authorized by ARM 17.24.115(1)(d).
c. Unaltered vegetation zones between Rock Creek and the road and utility corridors will be retained to the greatest extent possible (see item 32b).	The objective of this mitigation is to lessen potential impacts to streams from sedimentation and lessen potential impacts to the harlequin duck. The authority for this mitigation is 36 CFR 228.8(b), (e), (f), and (h).	This mitigation will help minimize the potential for erosion and sediment reaching the stream. This mitigation is authorized by ARM 17.24.115(1)(d).
d. Bridges over Engle and Rock creeks will have nearly perpendicular realignment to the streams.	The objective of this mitigation is to meet standard engineering designs, lessen potential impacts to the harlequin duck. The authority for this mitigation is 36 CFR 228.8(b), (e), (f), and (h).	N/A. However, this mitigation could be authorized under a Section 318 authorization when Sterling applies for that authorization prior to construction.
e. All road and facility locations must be staked in the field for agency review and approval prior to construction and to determine if additional site-specific BMPs will be necessary.	The objective of this mitigation is to ensure that any issues that may come forward between issuance of the ROD and actual construction may be addressed. This mitigation is also tied to mitigation requiring the resurvey for sensitive plants. The authority for this mitigation is 36 CFR 228.8(f) and (h).	This mitigation will help minimize the potential for erosion and sediment reaching the stream. This mitigation is authorized by ARM 17.24.115(1)(d).
54. Sterling will need to apply for a storm water permit and obtain 318 permit prior to any land disturbing activities and construction.	This mitigation meets the objective of 36 CFR 228.8(b) and (h), which is for the protection of water resources.	Storm water control is necessary to comply with 75-5-318, 75-5-605, and 82-4-336(10) and (12), MCA, and ARM 17.24.115(1)(d) and 17.30.1322.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
55.	*Underground monitoring wells will be installed in water storage areas in the mine workings to monitor for the same parameters as identified in the MPDES permit to identify migratory pathways of mine waters down gradient from the mine during mine operation and after mine closure. This will be used to identify the potential for impacts to surface and ground waters.*[2]	The objective of installing and using these monitoring wells is to determine if ground water in the mine is impacting ground water and to maintain long term baseline data in order to evaluate changes in ground water as a result of mining activity. The authority for KNF to require this monitoring is 36 CFR 228.8b, e, and h.	Monitoring is required to determine if ground water in the mine is impacting ground water and to maintain long term baseline data in order to evaluate changes in ground water as a result of mining activity. These monitoring wells are necessary to achieve that monitoring and to comply with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
56.	*The hydrostatic head for ground water impounded in the mine will be maintained at a sufficiently low level of hydrostatic head to prevent or minimize leakage or transport of the ground water to the surface, or the system must be lined, sealed or grouted to prevent leakage or transport of ground water to the surface. The water storage areas will be maintained in perpetuity or until such time that the agencies determine that another means of protection of surface waters from contamination by underground mine water is more appropriate*[3].	The objective of maintaining hydrostatic head and the integrity of underground reservoir areas is to ensure that ground water in the mine will not impact surface and ground waters as a result of mining activity. The authority for KNF to require this monitoring is 36 CFR 228.8b, e, and h.	Maintaining hydrostatic head and the integrity of underground reservoir areas necessary to ensure that ground water in the mine will not impact surface and ground waters as a result of mining activity. These monitoring wells are necessary to achieve that monitoring and to comply with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
57.	*An alert level & contingency/corrective action plan for water quality will be developed (this is a component of the Water Resources Monitoring Plan as outlined in Appendix K of the FEIS).	The objective of this mitigation is to lessen the potential impacts that may result to surface and ground water associated from the proposed project. The KNF can require this mitigation under 36 CFR 228.8b and h.	This is necessary to help identify potential trends toward degradation of surface and ground waters and to have contingency plans in place to deal with the most likely scenarios. This mitigation is needed to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.
58.	*Sterling will provide for maintenance and possible long-term post-closure water treatment until no mining-related waters need treatment prior to discharge to the Clark Fork River or ground waters.	The objective of this mitigation is to lessen the potential impacts that may result to ground water associated from underground mining. The KNF can require this mitigation under 36 CFR 228.8b and h.	These items are necessary for long-term compliance with the Montana Water Quality Act (75-5-101 et seq. MCA). The mitigation is authorized by 82-4-336(10) and (12), MCA

[2] The additional detail for this mitigation regarding underground water monitoring was added per input from EPA, October 17, 2001.

[3] The additional detail for this mitigation regarding underground water monitoring was added per input from EPA, December 13, 2001.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a. *Post-operational adit water will be treated and discharged to Clark Fork River until it meets ground water quality standards or permit limits without treatment. Depending upon what impacts, if any, happened to the wilderness lakes and what the monitoring of rock mechanics and hydrology indicated about potential seepage from water stored in the mine, mine adits may be plugged at the mine workings and the mine portals sealed or the mine water may be pumped from the mine or allowed to drain through the portal seals and the drainage will be captured and piped to the water treatment plan for perpetual water treatment. This will be determined by the agencies prior mine closure. (See also item 23(a-b) above.)	The objective of this mitigation is to lessen the potential impacts that may result to ground water associated from underground mining. The KNF can require this mitigation under 36 CFR 228.8b and h.	This mitigation is necessary for compliance with the Water Quality Act (75-5-101 et seq. MCA). The mitigation is authorized by 82-4-336(10) and (12), MCA.
b. Tailings seepage will be collected and treated and discharged to the Clark Fork River until it meet ground water standards and permit limits without treatment. Once that is achieved, and then the collection system will be removed and reclaimed.	The objective of this mitigation is to lessen the potential impacts that may result to ground water in and around the proposed paste facility site. The KNF can require this mitigation under 36 CFR 228.8b and h.	This mitigation is necessary for compliance with the Water Quality Act (75-5-101 et seq. MCA). This mitigation is required by 82-4-336(12), 82-4-351, 75-5-303, and 75-5-605, MCA.
59. *All monitoring wells at the paste facility will have to be constructed to serve as pump-back wells.*[8] *No pumps will be installed at the time of construction, but the wells will be capable of handling the necessary pumps.*	The objective of this mitigation is to protect ground water resources. KNF can only require this mitigation on NFS lands. The authority for this mitigation is 36 CFR 228.8(b) and (h).	N/A
60. Additional pump-back wells will be installed as needed at edge of ground water mixing zone if monitoring shows non-compliance with MPDES permit limits as outlined in Alternative V description in Chapter 2 of the FEIS (see Alternative III for more details about conceptual pump-back well locations and design criteria). Other contingency measures may be implemented if approved prior to implementation.	The objective of this mitigation is to lessen the potential impacts that may result to ground water in and around the proposed paste facility site. The KNF can require this mitigation under 36 CFR 228.8(b) and (h).	This is proposed in the applicant's Water Management Plan for Alternative V. (75-5-101 et seq. MCA). This mitigation is authorized by 82-4-336(10) and (12), MCA.
Wetlands		
61. Sterling will need to comply with all stipulations required by the COE in its approval of Sterling's 404(b)(1) permit for the mine. Items identified in the FEIS that will need to be incorporated into the Wetland's mitigation plan include but are not limited to the following items:	The objective of this mitigation is to lessen the over all potential lost of wetland habitat. The KNF can require this mitigation under 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

[4] This modification of the pump-back well construction was added per input from EPA, October 17, 2001.

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a. Sterling needs to add contingency measures to its Wetland Mitigation Plan for dealing with wetland impacts in the wilderness if subsidence or mine operations affects water levels in the wilderness lakes. This should be coordinated with the water resources monitoring and aquatics/fisheries mitigation and monitoring plans and approved by the COE.	The objective of this mitigation is to lessen the overall potential lost of wetland habitat. The KNF can require this mitigation under 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
b. An aquatic life mitigation plan for wilderness lakes will be prepared in conjunction with the wetlands mitigation plan.	This mitigation plan is needed in the unlikely event that mining and/or subsidence will affect wilderness lakes and streams by draining water and thus affecting aquatic life. The authority for this mitigation is 36 CFR 228.8(a), (e), and (h).	This mitigation plan is needed in the unlikely event that mining and/or subsidence will affect wilderness lakes and streams by draining water and thus affecting aquatic. The authority for this mitigation is 82-4-351 and 75-5-303, MCA.
<u>Wildlife</u>		
62. A more detailed wildlife mitigation plan beyond that described for Alternative II will be developed as described in the Alternative V description in Chapter 2 of the FEIS (pages 2-149 to 150) and will include the following:	The objective of this mitigation is to ensure that the most current information is utilized between the ROD and actual implementation of the project for the protection of wildlife resources. The authority for this mitigation is 36 CFR 228.8(f) and (h).	N/A. Sterling has consented to apply some of these stipulations to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
a. *Sterling will investigate the possibility of creating bat habitat in evaluation adit and/or wilderness ventilation adit at mine closure. (See also item 24.)	N/A. The objective of this recommended mitigation is to review options on enhancement of bat habitat. . The authority for this mitigation is 36 CFR 228.8(f) and (h).	N/A
b. Sterling will use criteria for selecting the air-intake adit that will minimize impacts to mountain goat habitat. (See also item 3.)	The objective of this mitigation is to lessen the potential impacts to mountain goats. The authority for this is 36 CFR 228(e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
c. Sterling will construct wildlife crossing structures along FDR No. 150 to prevent road impacts to fishers.	The objective is to lessen the potential impacts to fishers. The authority for this mitigation is 36 CFR 228.8(f) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
63. Harlequin duck mitigation will be incorporated into the wildlife mitigation plan and will include but are not limited to the following items as described in the Alternative V description in Chapter 2 of the FEIS:	This mitigation is necessary to avoid reducing or eliminating the small harlequin duck population in the Rock Creek drainage. The authority for this mitigation is 36 CFR 228.8(f) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a.	Road construction and reconstruction of FDR No. 150 and 150B and hauling of mine waste rock to the paste facility site will only occur between September 30 and March 31 to avoid the harlequin duck breeding season.	This mitigation will help reduce the amount of traffic and the sound of heavy trucks and construction along the creek during the critical breeding and rearing seasons. The authority to require this mitigation is 36 CFR 228.8(e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
b.	FDR No. 150 will be constructed/reconstructed with designated turnouts and signed for parking-emergency use only. Forest Service approval of the road design will be needed prior to construction.	This mitigation will help reduce the number of people stopping and parking along the road and then walking down to Rock Creek and possibly disturbing nesting or breeding pairs of harlequin ducks. The authority to require this mitigation is 36 CFR 228.8(e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
c.	Access to the paste production plant on 150B from junction with FDR No. 150 will be limited to mine staff and the agencies.	This mitigation will minimize the number of people in close proximity to the stream who might disturb breeding and nesting harlequin ducks. The authority to require this mitigation is 36 CFR 228.8(e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
d.	Vegetation will be retained and planted between FDR No. 150 and Rock Creek to screen the road from the creek (see item 32b). Screening will be attached to the bridges to screen traffic from the creek.	This mitigation will help provide additional screen to lessen potential impacts to nesting harlequin ducks. The authority to require this mitigation is 36 CFR 228.8(e).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
e.	Sterling will not allow camping on their lands within 100 feet of Rock Creek in Section 10 during the harlequin duck breeding season of April 1 through July 31.	N/A. This mitigation is a recommendation only as KNF has no authority on private lands. This mitigation will minimize the number of people in close proximity to the stream who might disturb breeding and nesting harlequin ducks. However, Sterling has consented to apply this stipulation to the plan of operations.	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
f.	Mine workers and visitors will be bused from the parking lot in lower Rock Creek area (see item 43a above) to reduce the amount of traffic of FDR No. 150.	This mitigation is especially critical to reduce noise impacts to harlequin ducks during their breeding and rearing seasons and to other wildlife including grizzly bears. It reduces over all use on traffic between the mine and Highway 200 and lessens the potential for road fatalities of wildlife. The authority to require this mitigation is 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

Mitigation		USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
64.	*General Permit Requirements		
a.	*All appropriate final design plans must be submitted to and reviewed and approved by the agencies prior to construction of the evaluation adit and the mine.	The objective of this mitigation is to confirm that all plans are appropriately designed to avoid and minimize impacts to streams. The authority is 36 CFR 228.8.	The objective of this mitigation is to confirm that all plans are appropriately designed to avoid and minimize impacts to streams. This mitigation is authorized by 82-4-332 and 82-4-335, MCA.
b.	*All reclamation, grading, and revegetation plans must be submitted to and reviewed and approved by the agencies prior to construction of the evaluation adit and the mine.	The objective of this mitigation is to minimize the potential impact from disturbed areas by ensuring a higher rate of successful reclamation and by re-creating appropriate wildlife habitat. These plans must be in place to ensure reclamation can be achieved. The authority for this mitigation is 36 CFR 228.8.	The objective of this mitigation is to minimize the potential impact from disturbed areas by ensuring a higher rate of successful reclamation and by re-creating appropriate wildlife habitat. These plans must be in place to ensure reclamation can be achieved. This mitigation is authorized by 82-4-332 and 82-4-335, MCA.
c.	*All replacement pages for the exploration license and the operating permit/plan of operations must be submitted to and reviewed and approved by the agencies prior to construction of the evaluation adit and the mine respectively.	This mitigation is necessary to ensure that all required changes are made to the plan of operations before construction commences. The authority for this mitigation is 36 CFR 228.8.	This mitigation is necessary to ensure that all required changes are made to the plan of operations before construction commences. This mitigation is authorized by 82-4-332 and 82-4-335, MCA.
d.	*Any plans required by the air quality permit must be submitted to and reviewed and approved by the agencies prior to construction of the evaluation adit and the mine unless otherwise specified in that permit.	This mitigation is necessary to ensure that all required changes are made to required air quality permit-related plans before construction commences. The authority for this mitigation is 36 CFR 228.8.	This mitigation is necessary to ensure that all required changes are made to required air quality permit-related plans before construction commences. This mitigation is authorized by ARM 17.8.710(3) and 17.8.733(1)(b).
e.	*Any plans required by the MPDES permit must be submitted to and reviewed and approved by the agencies prior to construction of the evaluation adit and the mine unless otherwise specified in that permit.	This mitigation is necessary to ensure that all required changes are made to all required MPDES permit-related plans before construction commences. The authority for this mitigation is 36 CFR 228.8.	This mitigation is necessary to ensure that all required changes are made to all required MPDES permit-related plans before construction commences. This mitigation is authorized by 75-5-605, MCA.
f.	◄The operator shall comply with all applicable Federal and State fire laws and regulations and shall take all reasonable measures to prevent and suppress fires on the area of operations and shall require employees, contractors and subcontractors to do likewise with in the permit boundary	The purpose of this requirement is to protect National Forest Lands from wildland and man caused fire. The authority is 36 CFR 228.11	N/A
g.	If, after five years from initiating construction on the evaluation adit and the remaining portion of the project has not proceeded, or any cessation of mine development or operation, for reasons other than litigation, KNF will consult with the operator, DEQ, FWP, EPA, FWS and other interested agencies on interim or final reclamation plans to be implemented as outlined in Alternative V this ROD, and	The objective of this mitigation is to assure disturbed lands are reclaimed in a timely manner. The authority for this mitigation is 36 CFR 228.8	N/A

Mitigation	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
the timeframes for implementation.		

C. Monitoring Plans

Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
65. Acid Rock Drainage and Metal Leaching Monitoring Plan		
a. *Sterling will expand its geochemical testing program and monitoring plan to include testing of Rock Creek Project ore and waste rock (as well as that from the Troy Mine) prior to and during operations including acid-base accounting, kinetic leaching tests, and a response plan for collection and treatment of contaminated water.	The objective of this mitigation is to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The purpose of the mitigation is to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. This mitigation is necessary to confirm analysis in the FEIS and provide the basis for potential modifications to the plan of operations. The authority for this mitigation is 82-4-336 (10) and (12), MCA, and ARM 17.24.115(1)(d).
b. *Analysis of lab and bulk samples of tailings created from extracted ore during evaluation adit construction will be compared to the Troy tailings. Some samples amended with cement or other additives will also be tested. Tests will be conducted to determine if additives are necessary to modify the potential geochemical behavior to avoid adverse leachate to surface or ground waters. The agencies and Technical Panel will review the results and make the final determination if additives will be required and the method of application.	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. The authority for this mitigation is 36 CFR 228.8(b), (c), (e), and (h).	This mitigation is necessary to ensure that acid rock drainage or the leaching of metals at a more neutral pH does not develop at this mine and to develop contingencies to implement if it should develop during mining or reclamation. This mitigation is necessary to confirm analysis in the FEIS and provide the basis for potential modifications to the plan of operations. The authority for this mitigation is 82-4-336 (10) and (12), MCA, and ARM 17.24.115(1)(d).
66. *Sterling will develop an Evaluation Adit Data Evaluation Plan that will include requirements 17, 19, and 33. This plan will require review of data collected from the evaluation adit before construction of the mine can begin. If any of the data is substantially different from that used in the analysis of the FEIS and/or if the impacts will be substantially different or greater than disclosed in the FEIS, then the plan of operations and reclamation plan will need to be modified to reduce the impacts to the level disclosed in the EIS. If that is required and/or if the impacts cannot be reduced, then a revised plan of operations will be subject to additional MEPA/NEPA analysis as required by MMRA and USDA Forest Service regulations.	This requirement is necessary to address continuing public concerns about the adequacy of baseline data and will act to verify the agencies' analyses, regarding the potential for ARD, metal leaching, water quality and quantity. The objective of this plan is to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The authority to require this monitoring plan is 36 CFR 228.7(a) and 228.8.	This requirement is necessary to address continuing public concerns about the adequacy of baseline data and will act to verify the agencies' analyses. This monitoring is necessary in order to ensure that the permitted project will adequately protect surface and ground water resources and adjacent lands (from subsidence). The authority for this mitigation is 82-4-303(4)(d), 82-4-336(10 and (12), 82-4-351, 75-5-303, and 75-5-605, MCA, and ARM 17.24.115(1)(g) and 17.24.103(1)(c).

Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
67. *Sterling will develop a more detailed aquatics and fisheries monitoring plan.	The objective of this mitigation is to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The primary reason for monitoring aquatic biota is to determine if mine project activities cause impacts to aquatic resources. It also helps determine if BMPs and other mitigation are working. It documents the presence of aquatic life in the stream, it helps determine if aquatic life standards are successful at protecting aquatic life, and it detects effects of nutrient and metals loading to a stream. The authority to require monitoring plans is 36 CFR 228.7(a) and 228.8(b) and (e), and the Endangered Species Act.	The primary reason for monitoring aquatic biota is to determine if mine project activities cause impacts to aquatic resources. It also helps determine if BMPs and other mitigation are working, it documents the presences of aquatic life in the stream. It helps determine if aquatic life standards are successful at protecting aquatic life, and it detects effects of nutrient loading to a stream. This monitoring is required to determine that beneficial uses of surface waters is being retained and maintained (ARM 17.24.102(6)). It also provides the means to identify procedures to prevent unnecessary damage to flora and fauna in or adjacent to the permit area (82-4-303(14)(d), MCA) and to ensure protection of existing uses (82-4-351, 75-5-303, and 75-5-605, MCA).
68. Sterling will develop a Cultural Resources Monitoring Plan. Monitoring will occur throughout construction to ensure that any cultural sites disturbed will be identified immediately and handled appropriately.	The objective is to avoid or minimize potential impacts to undiscovered cultural sites. The authority for this mitigation is the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
69. *Sterling will develop a more detailed wildlife monitoring plan to monitor neotropical migrant birds, mountain goats, and sensitive wildlife species (including harlequin ducks) or Sterling will provide funding to appropriate federal and state agencies for related monitoring programs in the Rock Creek drainage and surrounding areas.	Wildlife monitoring will help identify what impacts the mine will have on wildlife and will also increase knowledge about some species habitat requirements and behavior. Coordination with federal and state agencies (primarily FWS and MFWP) will help avoid duplicate efforts and perhaps allow more or more in-depth monitoring to be accomplished. The authority to require this monitoring is 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a. **Sterling will contribute funding to that portion of the KNF's forest wide monitoring program for harlequin that covers Rock Creek. Protective measures will be required of Sterling to reduce or minimize those impacts if found to be outside the range of disclosure in the FEIS.*	The objective of this mitigation is to assess the impacts to harlequin ducks associated with the project. Protective measures will be required of Sterling to reduce or minimize those impacts if found to be outside the range of disclosure in the FEIS. The authority to require this mitigation is 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
70. Sterling will develop a more detailed long-term reclamation monitoring plan as outlined in Appendix K of the FEIS.	This plan will address reclamation/soil stability during mine life as well as up to 20 years after mine closure. This is necessary in order to ensure that all erosion sources from project-disturbed lands are identified and that appropriate measures are taken quickly to protect surface water resources and beneficial uses. The objective of this plan is to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. KNF can only enforce this on NFS lands. The authority to require this monitoring plan is 36 CFR 228.8(c), (f), and (g).	This plan will address reclamation/soil stability during mine life as well as up to 20 years after mine closure. Monitoring is necessary to maximize the potential for successful reclamation and revegetation and to ensure that all erosion sources from project-disturbed lands are identified and that appropriate measures are taken quickly to protect surface water resources and beneficial uses. Monitoring is required to ensure compliance with ARM 17.24.115 and 17.24.118 and to ensure the post-mining land use has stability and utility comparable to that of the pre-mining landscape (82-4-336(9)(a), MCA). Monitoring for erosion sources is authorized under 82-4-303(14)(f), 82-4-336(10), 82-4-351, and 75-5-605, MCA.
71. Sterling will develop a monitoring plan for monitoring the vegetation at springs and seeps in areas that potentially could be impacted as a result of mine activity.	The objective of this monitoring plan is to avoid potential short- and long-term loss of wetland plant species as a result of water quality or quantity changes and to ensure the most current information and technology between the ROD and implementation of the project is used in the plan. KNF can only enforce this on NFS lands. The authority to require this monitoring is 36 CFR 228.8(e) and (h).	This will in conjunction with water monitoring help identify impacts to springs and seeps either by reducing/increasing the flow or reducing water quality. The authority for this mitigation is 82-4-303(14)(d), 82-4-351, 75-5-303, and 75-5-605, MCA.

Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
72. Sterling will develop a more detailed wetlands reclamation monitoring plan using standardized wetland assessment techniques to determine success of reestablishing function and values and monitor impacts as outlined in the FEIS. The plan shall be reviewed and approved by the agencies and the COE.	The objective of this monitoring plan is to insure that the required wetland replacement acres are properly functioning as wetlands and ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The enforcement of this requirement will be conducted by COE. The authority for KNF to require this monitoring is 36 CFR 228.8(e) and (h).	N/A. Sterling has consented to apply this stipulation to the hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
73. *Sterling will need to expand its water resources monitoring plan as outlined in the revised Appendix K in the ROD and in the MPDES permit in the FEIS. Monitoring will be done at all permitted discharge outfalls, in the underground mine (including ponded water within the workings), and at existing domestic water supply wells downgradient of the tailings paste facility. *Monitoring will continue for at least 20 years after mine water meets ground water standards*[4].	This monitoring is necessary in order to ensure that the permitted project is adequately protecting surface and ground water resources and ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. Additional baseline data and early identification of problems or suspicious trends will allow Sterling and the agencies the time to more fully respond to the problem or to prevent the problem from reaching the point where it becomes a permit violation. The enforcement of this requirement is conducted by DEQ. The authority for KNF to require this monitoring is 36 CFR 228.8(b), (e) and (h).	Monitoring water resources is needed to quantify any measurable impacts caused by mine construction and operation, evaluate the accuracy of impacts described in the EIS, and to determine whether alteration of project operations or facility design or development of additional mitigation are required to correct unanticipated impacts or to prevent regulatory violations. This monitoring is necessary in order to ensure that the permitted project is adequately protecting surface and ground water resources. Early identification of problems or suspicious trends will allow Sterling and the agencies the time to more fully respond to the problem or to prevent the problem from reaching the point where it becomes a permit violation. This monitoring is necessary to comply with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA.

[4] This additional requirement for water monitoring was added per input from EPA, October 17, 2001, to address how long monitoring will occur after mine closure to allow for identification of impacts that could not show up in the short-term.

	Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
a.	*A remedial action plan included in the water resources monitoring plan will be developed for the Rock Creek Project. This plan will be based on the potential remediation of various possible degradation scenarios. In conjunction with this the Spill contingency plan will be updated and finalized.	The objective of this plan is to protect water resources and to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The authority for this mitigation is 36 CFR 228.8(b).	Contingency or remedial action plans for the most likely scenarios need to be developed and included with the water resources monitoring plan. Authority for this monitoring is 82-4-335(4)(m), 82-4-336(10) and (12), 82-4-351, 75-5-302, 75-5-602, and 75-5-605, MCA.
b.	*Sterling will acquire additional water quality and flow monitoring and hydrogeologic characterization during evaluation adit construction and continue to collect such data during mine construction and operation as outlined in Appendix K of the FEIS.	This necessary to verify assumptions used in the FEIS analysis and to determine if changes to facility plans or additional mitigation are needed to maintain the level of water quality-related impacts at or below what is predicted in the FEIS. The authority for this mitigation is 36 CFR 228.8(b).	This mitigation necessary to verify assumptions used in the FEIS analysis and to determine if changes to facility plans or additional mitigation are needed to maintain the level of water quality-related impacts at or below what is predicted in the FEIS and meet standards. Authority for this monitoring is 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA, and ARM 17.24.103(1)(c).
c.	*An additional springs and seeps survey will be conducted during evaluation adit construction.	The objective of this survey is to protect water resources and to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used for monitoring. The authority for this mitigation is 36 CFR 228.8(b).	This mitigation is needed to make sure all springs and seeps are identified and baseline data collected in order to determine through monitoring if the mine is affecting these surface waters by reducing/increasing flows or changing water quality. Authority for this monitoring is 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA, and ARM 17.24.103(1)(c).
d.	*Sterling will work with DEQ and KNF to develop an MOA that will describe the process of selecting and funding a third-party contractor in amounts equal to Sterling's costs for the required water quality monitoring. All Sterling's required water-quality monitoring will be accomplished through implementation of this agreement.	Sterling has agreed to this mitigation in order to address the public's concerns as to the frequency and accuracy of water quality monitoring required of Sterling Mining. KNF has no authority to require Sterling to follow through with a MOA on water monitoring.	Sterling has agreed to this mitigation in order to address the public's concerns as to the frequency and accuracy of water quality monitoring required of Sterling as allowed under 75-1-201(5)(b), MCA.

	Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
74.	*Continued collection of mine drainage and tailings seepage water quality data from the Troy Mine will be required for comparison purposes to help determine if there could be potential unanticipated long-term water quality impacts at Rock Creek.	The objective of this monitoring is to maintain long-term baseline data in order to evaluate changes in surface and ground water as a result of mining activity. The authority for KNF to require this monitoring is 36 CFR 228.8(b), (e), and (h).	Monitoring is required to insure that mining does not affect surface or ground waters. Troy is the basis for the analysis at Rock Creek and continues to be a good analogy for what can be expected to happen at Rock Creek during and after mining. This monitoring is necessary to comply with 82-4-336(10) and (12) MCA, and ARM 17.24.103(1)(c).
75.	*The rock mechanics and hydrogeologic sampling, testing and monitoring program will be expanded and conducted during evaluation adit construction and mine construction and operation as outlined in Appendix K of the FEIS.	Necessary to confirm analyses in the FEIS and to determine if any changes need to be made to deal with the remote risk of ARD. Monitoring will insure that ARD could be identified and dealt with as early as possible. The authority to require this mitigation is 36 CFR 228.8(c).	This monitoring program is necessary to confirm analyses in the FEIS and to determine if any changes need to be made to deal with the remote risk of ARD. Monitoring will insure that ARD could be identified and dealt with as early as possible. This mitigation is authorized by 82-4-336(10) and (12) and ARM 17.24.115(1)(d) and 17.24.103(1)(c).
76.	*A subsidence control and monitoring plan will be developed and will include an underground mine plan review by the agencies prior to entering areas of potential subsidence.	The objective of this mitigation is to ensure wilderness characteristics are preserved and the risk of impacts to wilderness lakes is minimized. The objective of this plan is to protect surface and water resources and to ensure the most current information and technology obtained between issuance of the ROD and implementation of the project is used in the plan. The authority for this mitigation is 36 CFR 228.8(b) and (d) and 228.15.	This plan addresses standard mining practices needed to ensure adequate rock bolting, etc. for stability purposes. Subsidence risk must remain minimal as wilderness lakes could be affected by massive enough subsidence. This mitigation is necessary to ensure compliance with 82-4-336(10) and (12), 82-4-351, 75-5-303, and 75-5-605, MCA, and ARM 17.24.103(1)(c).
77.	*Sterling will work with FWP and FWS to monitor fish passage through the mixing zone and above the diffuser. If necessary, data will be used to determine if changes to the diffuser are necessary to allow passage of bull trout from Cabinet Gorge to Noxon dam where efforts are being made to capture the fish and move them into Noxon Reservoir.	The objective of the mitigation is to avoid or minimize adverse impacts to threaten and endangered species. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA. Sterling may need to apply for a change to the MPDES permit and the approved mixing zone in order to minimize impacts to bull trout.

	Monitoring Plans	USFS Objectives and Authority for Requiring Mitigation	DEQ Objectives and Authority for Requiring Mitigation
78.	*Sterling would develop a transportation monitoring plan that would document the amount of mine-related traffic on project roads, total traffic on major public roads in the project area, and the effectiveness of road closures as described in the Biological Assessment and Biological Opinion in the FEIS.	The objective of the mitigation is to avoid or minimize adverse impacts to threaten and endangered species. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA.
79.	*Sterling would develop a threatened, endangered, and proposed species monitoring plan for terrestrial species as outlined in the revised Appendix K in the ROD and the Biological Assessment and Biological Opinion in the FEIS.	The objective of the mitigation is to avoid or minimize adverse impacts to threaten and endangered species. The authority is 36 CFR 228.8(b), (d), and (h).	N/A. Sterling has consented to apply this stipulation to the exploration license and hard rock operating permit as allowed by 75-1-201(5)(b), MCA.

ATTACHMENT 2

REVISED APPENDIX K: AGENCIES' REVISED CONCEPTUAL MONITORING PLANS

INTRODUCTION

This is Appendix K from the FEIS as modified from changes required by this ROD. The additional changes to the appendix are in *italics*.

Sterling would develop final monitoring plans for approval by the Agencies prior to project startup. All plans if applicable, would need to identify trigger or alert levels, which, when reached, would require Sterling to implement a corrective action plan. Corrective action plans for the most likely scenarios also need to be developed and approved prior to project startup.

Reporting

All monitoring would require an annual report unless otherwise specified. The format and requirement needs for reporting would be reviewed and finalized by the Agencies. Reports will be submitted to other review agencies as identified by Kootenai National Forest (KNF) and Montana DEQ.

After submittal of a monitoring report, the Agencies may call a meeting with all other relevant agencies to review the monitoring plan and results, and to evaluate possible modifications to the plan or permitted operations.

AIR QUALITY MONITORING PLAN

Ambient air quality monitoring would be required as a condition of the air quality permit for the project. This most likely would include three to four particulate monitoring sites in the vicinity of the plant and tailings areas and a meteorological (wind speed and direction) monitoring system. All monitoring must be performed according to state and federal quality assurance procedures.

Performance testing (measurement of the particulate emission rate) on the wet scrubber controlling emissions from the secondary crusher would also be required to verify compliance with the applicable emission standard (0.05 grams per dry standard cubic meter). Following the initial tests, operational parameters of the scrubber would be monitored on an ongoing basis. These parameters include scrubbing liquid flow rate and the change in pressure of the gas stream through the scrubber.

DEQ's Air and Waste Management Bureau personnel would perform on-site inspections of the operation on a random basis on a frequency of at least once per year. Air monitoring reports would be submitted and reviewed on a quarterly basis. The overall effectiveness of the proposed air pollution control measures, with emphasis on the adequacy of wind erosion prevention at the tailings storage facility, would be evaluated in this way on an ongoing basis. Standard quality assurance/quality control procedures for air monitoring programs would be implemented as a condition of the air quality permit.

ACID ROCK DRAINAGE AND METALS LEACHING PLAN

The purpose of the Acid Rock Drainage and Metals Leaching Plan is:

- to provide a geochemical characterization plan that effectively satisfies goals outlined below,

- to provide safeguards from soil, surface and ground water contamination due to potential acid rock drainage (ARD)/metal leaching (ML)[1] effects until a representative geochemical data base of ore, waste rock and tailings is established during progression of the evaluation adit and mine development adits,
- to appropriately mitigate all potential poor quality waste rock, and
- to provide contingency alternatives for potential adverse scenarios involving ore, waste rock, and tailings geochemical behavior.

The goal of this plan is to obtain a representative database of ARD and ML static and kinetic testing characteristics of all potentially unique geologic units encountered (including tailings) in the Rock Creek Project evaluation and mine development adits. Mine rock handling procedures and prediction of drainage water quality would be derived from database trends. Comparison confidence to the Troy (Spar Lake) Mine for prediction purposes would be further defined through continued geochemical testing for waste rock and tailings at the Troy site. Potentially acid generating (PAG), acid generating (AG) and/or ML materials at the Rock Creek site would be conservatively contained until static and kinetic testing gives appropriate confidence these materials will not contaminate soil and waters. Mitigation are proposed that address long term protection of these resources from reactive waste rock, ore and tailings. Contingency plans are provided for unforeseen emergency situations regarding contamination from waste rock, ore and tailings. The development of this plan would require reviewer approval by the agencies in the form of an agency technical panel or a third party reviewer.

The objective of this plan is to provide appropriate long term protection of resources from contamination during and after the Rock Creek Project operations. The plan consists of eight components. They are:

- Rock Characterization Program
- Evaluation Adit Testing and Monitoring
- Underground Adit and Mine Construction, Development, and Operations Testing and Monitoring
- Paste Tailings Storage Facility Testing and Monitoring
- Evaluation Adit Ore and Waste Rock Mitigation
- Paste Tailings Mitigation
- Contingencies
- Reporting

Rock Characterization Program

The rock characterization program would allow classification of potentially unique geologic units for rock handling procedures. The components of this program are described below. As statistical confidence was developed through the sampling program, relaxation of the sampling frequency for specific tests and subsequent handling procedures may be possible. Verification with static and kinetic monitoring of rock geochemical behavior would always be a minimal requirement throughout operations. Technical changes in the overall mine plan may be required to reflect emerging geochemical data trends as statistical confidence was gained through database development.

[1] ML is described in Chapter 3 text as potential metal mobility in near neutral pH environments.

Waste rock characterization would be based on the "Mine Rock Guidelines for the Design and Control of Drainage Water Quality" (Report No. 93301) (Steffen, Robertson and Kirsten, Inc. 1992)[2]. The characterization program allows classification of geologic units either by lithology or by alteration zones in proximity to the ore deposit. The agencies expect initially (near evaluation adit and mine adits portals) that lithology would guide the selection of rock handling units. As the orebody is approached, alteration halos may dominate as geologic units classified for handling. Mine rock classification would identify geologic units requiring varying handling procedures based on the level of ability to leach metals or generate an acid environment. Mine rock handling procedures would be determined from the combined evaluation of static and kinetic geochemical testing results.

Static test information can indicate potential, or preliminary estimates, of a rock or tailings sample's ability to leach metals or generate acid. Acid generation processes are dependent on a number of factors including a time and rate dependency, which are not addressed in static testing. Interpretation of static tests would involve consideration of multiple test results and site specific information. Appropriate static tests, as described by the Mine Rock Guidelines (1992), would be:

- Mineralogic evaluation (degree of alteration, mineralization type and occurrence)
- Whole rock (EPA 3050)
- Acid Base Accounting or ABA (including total sulfur content and paste pH)
- Leach testing

Acid Base Accounting defines the balance between the potentially acid generating and potentially acid consuming minerals in a sample as determined by lab testing.

Whole rock (EPA3050) and mineralogic analyses would also be required to provide a statistically defensible sample population to characterize spatial and litho logic trends. Due to the highly unstable and acid generating potential of the mineral pyrrohotite, particular attention would be given to identification and quantity of this mineral in ore, waste rock and tailings.

Short-term leach tests can determine the readily soluble component of a sample. Arsenic, antimony, barium, chromium, copper, lead, manganese, and zinc were identified by Klohn-Crippen (1998) as appropriate constituents to monitor in leach testing. Nitrates from use of blasting agents would also be monitored. Additional monitoring needs would be identified by routine whole rock analysis (EPA 3050). Drainage water quality from tested material cannot be quantitatively determined from leach testing due to the lack of temporal information. Suggestive metal loadings may be developed from leach tests as more site specific information is established.

For further description of static test analysis procedures and sampling protocol, see the Mine Rock Guidelines (1992). Sampling frequency for each of the tests would vary depending on characteristics of each unique geologic unit. Sampling frequency should satisfactorily describe statistical distributions of relevant geochemical parameters. It would be necessary for Sterling to develop test turnaround time into their excavation plans. Sterling may choose to core sample rock ahead of the blast and excavation schedule to obtain sample results on an accelerated basis.

Kinetic tests supplement and verify interpretations of static tests. Kinetic tests are complex procedures that allow determinations (under certain test conditions) of specific reaction rates of acid

[2] The draft and supplemental EISs for the Rock Creek Mine Project refer to the British Columbia Acid Mine Drainage Task Force Report (1989) as a guideline for ARD and ML issues. These documents are essentially similar and were prepared by the same consulting firm. The 1992 Guidelines provide more detail as technical understanding of ARD and ML issues evolved.

generation, neutralization and dissolution of metals. Kinetic tests also allow prediction of drainage chemistry and resultant downstream loadings in the above geochemical environments. This information is crucial to the design of an effective mine rock handling procedure and proper ARD/ML control technology.

Kinetic tests of representative samples from potentially unique geologic units, particularly those that are PAG /AG and ML (including tailings from the orebody), would begin immediately as they are encountered in the mining process. Test design would be subject to agency approval and would be required to progress indefinitely until site specific test lengths, based on mineralogic evaluation of test material, is established.

Evaluation Adit Testing and Monitoring

Non-acid generating (NAG)/ non-ML waste rock (as determined by static testing) would be used to build the evaluation adit portal pad. Runoff capture for this structure is described in the Chapter 2, Alternative II description, since this rock will have no kinetic testing verification.

Ore from the evaluation adit would be placed in an approved dump area that provides for drainage capture until project progression is determined.

Unique geologic units encountered in the evaluation adit would require kinetic testing to begin upon excavation in order to have sufficient data to make any necessary design and plan changes. Agency approval of the data sufficiency would be required before the project could proceed to the mine development phase.

Underground Adit and Mine Construction, Development, and Operations Testing and Monitoring

Geochemical representation and adequate kinetic evaluation for potentially unique geologic units to be encountered in the mine development/production adits prior to mine construction and in the mine during operation would be required to determine project advancement.

If the project proceeds to development of the twin mine access (development and production) adits, all ore from the evaluation adit would be removed from the portal storage area. The ore would then require transport through the evaluation adit once the mine intercepted the evaluation adit and out the mine development/production adits to the mill. Mine development adit project construction could cause the water table to be lowered. Evaluation waste rock, interpreted from static and kinetic testing to potentially cause adverse impacts to water quality, would be required to be transported through the evaluation adit for storage in a flooded portion of the mine workings to prevent oxidation from occurring thus minimizing potential acid rock drainage. These flooded areas would have to be maintained and grouted or sealed to prevent ground water seepage.

NAG/non-ML waste rock determined from static and kinetic testing would be used to build the mill pad, paste storage facility embankment and used as crushed rock for finger drains beneath the paste storage facility. This rock may be transported from the evaluation adit, or excavated from the mine development adits and mine workings as needed.

The evaluation adit may not penetrate all rock types encountered in the development adit due to different angle of approach for each adit. The specific rock types not penetrated by the evaluation adit would require methods such as lateral/angle core drilling for sampling access. Failure to either test or develop appropriate mitigation for this waste may cause delay in the project.

If waste rock determined to cause adverse impacts to short-term and long-term water quality was encountered in the development production adits before appropriate underground storage was available, temporary storage in a lined, seepage contained dump storage facility may be necessary.

Paste Tailings Storage facility Testing and Monitoring

Paste tailings would be tested for paste pH, conductivity, and ABA (includes total sulfur). Leach testing and kinetic testing of the tailings would also be required. Testing design and frequency would be subject to agency approval.

Evaluation Adit Ore and Waste Rock Mitigation

Mitigation of potential adverse effects on short-term and long-term water quality from evaluation adit ore and waste rock would be dependent on project progression. Interpretation from static and existing kinetic data would attempt to quantify which geologic units, if any, would cause adverse impact.

If Sterling decided to shutdown the project at the completion of the evaluation adit excavation, additional mitigation options would be considered. Subaqueous disposal of some waste rock would be possible in the evaluation adit without project progression. Backfill preference would be given to ore and AG/PAG and ML mine waste rock as determined from static and kinetic testing. It is estimated that one half of the volume of the ore removed would fit back into the evaluation adit. The remaining ore would require proper encapsulation, capping and possible leachate capture and treatment. Encapsulation may be practicable at the portal site if initial waste rock from the evaluation adit (proposed for building the portal pad) meets NAG /non-ML definition. Methods such as blending PAG with NAG or the use of liming amendment for small but significant ARD uncertainty may also be practicable. The need for encapsulation would be determined based on testing results and Sterling would need to submit a plan for encapsulation, capping, and possible leachate capture and treatment to the agencies for review if any of these measures are determined to be necessary.

If mine development proceeds past the evaluation adit, all PAG/AG and or ML mine rock would be disposed underground beneath the fluctuating zone of the water table. All NAG/non-ML waste rock not used for construction and all unsuitable waste rock would be disposed of underground. If backfilling was not feasible for all NAG/ non-ML rock, it would be stored in an approved waste dump area within the tailings storage facility footprint with storm water controls and an appropriate cap.

The amount of metals loading contributed from mine support pillars and other exposed rock is difficult to estimate and requires site specific information not available at this time. Sterling would submit a proposal that addresses Sterling's approach to achieving no significant impacts to ground and surface water quality from water stored in the mined out workings. Sterling would obtain agency approval of this proposal in order to proceed with mine development and production.

Paste Tailings Mitigation

Sterling would be required to produce representative tailings from evaluation adit ore that must undergo static and kinetic testing. Evaluation adit tailings testing would need to verify no surface or ground water impacts greater than those disclosed in Chapter 4 of the FEIS in order for the construction of the mine development adits to progress into the orebody. Lab and bench scale testing of the tailings with buffering and/or strengthening additives (cement, fly ash) would be conducted to determine if and when needed which product would be the most beneficial to use. The development of this additive testing

would be designed by the Technical Panel prior to implementation based on geochemical data collected from the evaluation adit. If greater impacts from the test results are indicated, then changes would need to be made to the paste process to modify the paste tailings makeup and reduce the impacts. Changes to the paste storage facility design (such as installing a liner) or the addition of cement may be necessary if predictions suggest an impact that could not otherwise be mitigated. All testing and designs would be reviewed by the Technical Review Panel for concurrence on implementation of any new design or mitigation changes to the plan of operation as a result of the testing.

The addition of cement to paste tailings would be considered as a mitigation measure dependent initially on the results of data collected on processed ore excavated from the evaluation adit. The agencies require this evaluation to occur concurrent with or prior to submittal of a detailed design of the paste impoundment (prior to implementation of a full-scale paste production program). There would be at least two to three and one-half years of mine development adit construction before the mine began to produce ore rock that would be processed and generate tailings. Further tailings geochemical testing would occur as ore is encountered in the evaluation adit and the mine and would continue for verification purposes throughout life of mine. This data would be used to modify the possible cement requirement over time as confidence in the data increases.

The paste tailings storage facility would receive a 2-foot soil cover at closure. This cover would address erosion and disturbance requirements of MMRA 82-4-336-7. If geochemical testing showed the need for a more protective cap/cover, Sterling would be required to submit a design for agency review and approval.

Contingencies

It is conceivable that a temporary or permanent shutdown of operations could occur from permit compliance situations requiring enforcement and violation abatement actions, such as failure to adhere to mine rock sampling and testing protocol, or improper implementation of approved mitigation where needed. It is also possible geochemical testing results could invoke at least temporary project cessation if unanticipated mitigation needs requiring agency approval were not in place. For example, if the potential for acid generation, as determined by lab testing, increased drastically from that stated in the Klohn-Crippen (1998) review, approved mitigation must be in place for project advancement. Similarly, if unanticipated drainage flows or drainage quality did not have appropriate agency approved mitigation in place or ready to be implemented, project cessation may be an option. Once mitigation measures were in place operations could resume.

Rock testing geochemical trigger values would be determined during the evaluation of kinetic testing data. Depending on the method of kinetic testing selected and the objectives and scope of the testing, interpretation and extrapolation of test results would vary. Predicted drainage water quality controls for potentially unique geologic units and chemical processes (dissolution of readily soluble constituents vs. oxidation and metal leaching) would direct disposal and mitigation/contingency options, including project shutdown. These predictions would be site specific and dependent on the length of the test. There are also specific trigger values for metals and nitrogen written into the Water Resources Monitoring Plan in this Appendix and the MPDES permit in Appendix D.

If premature or temporary closure occurred during mine development /production adit excavation, thereby decreasing the capacity for underground disposal, all PAG/AG and ML waste rock would be encapsulated within the mill site or paste tailings storage facility site or another agency approved dump site. Currently there are no approved waste rock dumps under Alternative V besides the proposed waste

rock dump at the evaluation adit. Disposal at this site would require lining, drainage collection and treatment. An agency approved cap design would also be required.

It is highly unlikely, based on geologic understanding of the rock units encountered, that mine waste rock used for construction (mill pad, paste tailings storage facility embankment and crushed rock for blanket and finger drains beneath the paste tailings storage facility) would develop unpredicted ARD or ML characteristics over the long term. Nevertheless, should this geochemical condition occur, collection and treatment of waste rock leachate and runoff at these sites may be required in addition to an appropriate cap/cover at closure.

Reporting

For the evaluation adit development, all static testing results (which would include waste rock tonnage estimates for each geologic unit), would be reported quarterly. As statistical confidence was developed through the sampling program, relaxation of reporting requirements may be possible, as stated earlier for sampling frequency.

Kinetic testing results would be reported quarterly until the Agencies agreed to reduce the frequency. Solution analyses for metals must be carried out over the kinetic testing period and reported quarterly during all kinetic tests.

Testing results and QA/QC (similar to those described below in the Water Resources Monitoring Plan) for static and kinetic tests would be included in each annual report. Annual reports are public information although approval of the annual reports is under agency purview.

WATER RESOURCES MONITORING PLAN

This plan provides the conceptual framework necessary for development of a water resources monitoring program for the Rock Creek Mine Project. Sterling submitted its own version of a water resources monitoring plan, however, the Agencies believe that several important elements were missing from this plan.

Only a final Agency-approved monitoring plan would be implemented. Additional monitoring requirements are also specified in the MPDES permit Fact Sheet/Statement of Basis for the various outfalls (see Appendix D). The final approved plan would contain specific information on sample location, chemical parameters for analysis, laboratory detection limits, frequency of data collection, and reporting requirements. The water resources monitoring program would begin during the first quarter of construction of the evaluation adit, and would be maintained during the life of the project as well as after reclamation for a period of time to be specified by the Agencies

The goals of the water resource monitoring are:

- to quantify any measurable environmental impacts accompanying construction, operation, or reclamation of the Rock Creek Mine project;
- to evaluate the accuracy of impacts described in the EIS; and
- to determine whether alterations of project operations or additional mitigation will be required to correct any unanticipated impacts encountered, or to prevent future violations of regulatory requirements.

A comprehensive monitoring system network would be established to evaluate potential impacts associated with the underground mine, mill, utility corridor, water treatment facility, and tailings storage facility. Data would be collected and evaluated in detail using standard statistical analyses to determine if differences exist between:

- an upstream (or upgradient) reference station and the corresponding downstream (or downgradient) station;
- sampling intervals (continuous, weekly, monthly, quarterly, annually);
- high and low flow events.

Operational data would also be compared to data collected during baseline conditions to document changes in water quality.

This conceptual monitoring plan is divided into several elements:

- hydrologic investigations during evaluation adit construction
- surface water monitoring
- ground water monitoring
- facility water balance and chemistry
- analytical parameters and methods
- a quality assurance and quality control program
- a remedial action plan
- reporting

These elements are discussed in detail below.

Hydrologic Investigations During Evaluation Adit Construction

The primary hydrologic issues of concern regarding assumptions used in the FEIS are inflow rates to the underground workings, seepage rates out of flooded underground workings, potential for effects on springs, lakes, or other surface waters, and the chemistry of water to be stored in the mine and/or discharged from the mine. These issues would be further investigated during evaluation adit development as described below.

The evaluation adit would be a decline passing through barren (waste) rock above the ore horizon, then following the ore zone for some distance near the Copper Lake fault. Water would constantly have to be pumped away from the working face of the decline during its development in order to keep the adit dry. Pumping (inflow) rates would be continually monitored and regularly reported. Chemistry of this water would also be routinely tested. Inflow rate data would be compared with the exploration adit inflow projections included in the FEIS. If there are substantial deviations from predicted inflows, the mine inflow estimates would be revised accordingly, and if appropriate, water management and treatment requirements for the life of the mine would be adjusted.

All discrete zones of inflow to the adit (presumably water would enter where the adit crosses zones of fractured bedrock) would be mapped and inflow rates would be documented. Field measurements of each inflow (pH, hydrostatic pressure, and specific conductance) would also be documented. Additional water chemistry data (the same common ions and metals required by the MPDES permit for discharge into the Clark Fork River) would be collected from selected seeps, both from segments of the adit penetrating barren rock as well as ore. These data would be compared to predicted mine water chemistry (based upon sampling of the similar Troy mine) and if significantly

different, loading evaluations from mine discharges and resultant environmental impacts would be reexamined. Areas of fractured rock not producing inflows to the adit would also be documented. Tests (e.g., bulkheading and flooding) may be performed in such areas to determine whether seepage out of the mine workings may occur. Piezometers would be installed in the Copper Lake fault and under Cliff Lake and Copper Lake and monitored for static head.

Underground monitoring wells would be installed to monitor for leakage in any area where water would be stored. The hydrostatic head for the impounded water would need to be maintained to prevent or minimize leakage to the surface or the system must be lined, sealed, or grouted to prevent the same. The number of monitoring wells and depth would be based on the size of the storage area, volume of water potentially to be stored and the fracture permeability of the rock and structural integrity of the rock. This information and the requested number of monitoring wells would be submitted to the agencies for review prior to Sterling being able to store water underground.

After completion of sampling and testing within the evaluation adit, dewatering would be discontinued. The rate of rise of water within the adit would be monitored weekly and compared with the known volume of the underground openings to determine the rate in gallons per minute at which the adit is flooding. Deviations from the previously documented adit inflow rates would be determined, and whether or not some of the mine water is leaking to surrounding ground water (and at what rates and locations), would be estimated. Chemistry of the reservoir forming within the flooding adit would also be tracked monthly.

Prior to initiation of production-phase mine development, water in the flooded evaluation adit would be pumped to the treatment plant and the adit would be reopened. Whether or not the water level in the adit reaches steady state prior to draining depends upon several factors, including inflow rates, regional ground water table elevation, and duration of time between the exploration and development phases of the project.

Concurrent with initiation of evaluation adit construction would be a phase of renewed surface water baseline data collection. Extensive sampling has been conducted to date within the Clark Fork River, lower Rock Creek, and its west fork. The new phase would include previously monitored sites, sites that might be impacted by evaluation adit activities, and new sites (springs and seeps) near the orebody that would need to be added as they are identified. These new sites would be selected following a new spring and seep survey, subject to approval by the agencies, and would likely include sites located within tributaries to the East Fork of Rock Creek, Copper Gulch, and the East Fork of Bull River. Monitoring frequency would be selected so as to assure compilation of a statistically adequate database prior to initiation of mining of the orebody. Baseline water balance data would be collected on wilderness lakes. Monitoring of lake levels and a water budget for Cliff, Copper, St. Paul, Rock, and Moran Basin would begin at this time also.

During evaluation adit construction, Sterling would also need to verify the location of potentially affected downgradient domestic wells and water supplies (within the area identified in the EIS) with the Montana Department of Natural Resources and Conservation (DNRC) in order to determine if any new wells or water sources had been filed with DNRC or if any wells had been misidentified and had information regarding them corrected. Any new domestic wells or water sources or misidentified wells would need to be sampled to provide baseline data prior to mine construction, if they had not already been sampled. Water samples would be analyzed for the same parameters as required for monitoring during operation.

Surface Water Monitoring

Surface water quality samples would be collected and analyzed during the construction, operation, and reclamation phases of the proposed project at a frequency that evaluates high and low flow conditions as well as seasonal trends. Water samples would also be collected during temporary facility shutdowns or mine closure. Surface water stations would be located on the east and west forks of Rock Creek, the main stem of Rock Creek, Miller Gulch, the Clark Fork River and other locations as determined by the Agencies. Prior to the construction of the development adit, a survey would be conducted to locate new springs or seeps and verify baseline locations. Any springs found that potentially could be compacted by the progressing development would be sampled and included in the other sample sites as noted above, and sampled at the same frequency. If seeps or springs develop in the Cabinet Mountain Wilderness (CMW) as a result of the proposed mining operation or operation of the proposed underground storage reservoir, these discharges, if located, would be monitored for flow and water quality and would be subject to any applicable Montana water quality regulations. See DEQ technical report on file with the Agencies (MT DEQ 2001a) for most likely locations for mine seepage in the CMW. Sampling locations would be coordinated with the aquatic-monitoring program. The surface water monitoring program, including the location of all stations evaluated during the baseline data collection program, would be finalized based on Agency review and approval. The rationale and requirements for monitoring surface water resources at specific stations during the construction, operation, and reclamation phases of the proposed project would be discussed in Sterling's final water resources monitoring plan.

Monitoring of lake levels and water budget at Cliff, Copper, St. Paul, Moran Basin, and Rock lakes would also be part of the surface water-monitoring program. This plan would be coordinated with the aquatics monitoring plan and wetlands monitoring and mitigation plans. Details of lake monitoring methodology are described in a technical report (MT DEQ 2001a). A high elevation weather station would be maintained for use in lake water-balance studies.

Ground Water Monitoring

Ground water monitoring data would be collected on a quarterly basis during construction, operation, and reclamation phases, as well as during temporary facility shutdowns. Ground water would be monitored in the underground mine, via the underground monitoring wells. As stated above, upgradient and downgradient of the mill, upgradient and downgradient of the proposed tailings storage facility, and from the tailings storage facility perimeter pump-back well system. Underground monitoring of hydraulic conditions in the bedrock aquifer would be intensified as designated buffer zones are approached. In addition, flow and quality of springs and seeps would be monitored, with particular emphasis on those sources of water that provide recharge to Rock Creek and the East Fork Bull River. If elevated metals are seen through sampling of the post mining pool of water or the mine water reservoir during mining that could reach surface springs and seeps, then Sterling and the agencies would consider adding limestone or soda ash to the pooled water to help remove the metals from the system.

Monitoring well and perimeter pump-back well locations and sampling frequency would be reviewed and finalized after consultation with the Agencies. *All monitoring wells located along the perimeter and down gradient from the paste facility will be installed to serve as potential pump-back wells.* Water quality and water level data from monitoring wells, static water level data from surface piezometers, and hydrostatic pressure data from underground piezometers would be collected. Static water level data from piezometers located along the perimeter of the tailings storage facility would be critical to evaluate potential seepage impacts to ground water or surface water resources. Ground water

from all existing domestic water supply wells downgradient of the proposed tailings storage facility would also be collected and analyzed.

Split samples from monitoring and domestic wells would be periodically collected and analyzed by DEQ to verify Sterling's data. Split samples from domestic wells would be offered to owners. The Agencies would consider the actual facility water balance data, estimates of seepage, and results of the ongoing ground water monitoring program in determining how long monitoring of private domestic water supply wells should continue. At a minimum, ground water quality sampling and analysis would continue at least until bond release.

In addition, ground water quality sampling would be conducted at specified monitoring wells prior to construction of the proposed tailings storage facility to document water quality conditions in the tailings storage facility footprint downgradient of the decommissioned Noxon sanitary landfill. Samples would be analyzed for physical parameters, nutrients, common ions, metals, volatile organic compounds and semi-volatile organic compounds.

Sterling would be responsible for water monitoring for the life of the evaluation adit and for 5 years beyond the time frame that the agencies have determined that the water within the adit meets ground water standards and water treatment is now longer needed. Water monitoring for any portion of the development adits would be the same as for the evaluation adits if the mine is never developed. Water monitoring of mine development area would continue for 20 years after the water was determined to meet ground water standards.

Facility Water Balance and Chemistry

A detailed facility water balance and analysis of water and wastewater chemistry would be maintained, the details of which would be specified in the final water resources monitoring plan. The purpose of the facility water balance would be to provide an assessment of the inflow, outflow, and general water or waste water chemistry associated with the underground mine, water treatment facility, and tailings storage facility. Monitoring information would be used to modify, as necessary, operational water handling, and to develop a post-mining water management plan. As part of this monitoring, the following aspects of the project water balance would be measured:

- the volume of excess water stored underground
- mine reservoir water quality
- mine adit discharge and water quality
- the amount of tailings slurried or deposited as a paste
- the amount and source(s) of fresh makeup water to the mill
- the amount of reclaimed tailings water returned to the mill
- the water quality of tailings decant water
- the amount and quality of water pumped from the seepage collection ponds
- treatment facility influent flow and water quality
- flow rate and quality of water discharged to the Clark Fork River
- the amount and source of water used for dust suppression and irrigation
- pan evaporation and precipitation data at the tailings storage facility site

Parameters and Analytical Methods

At a minimum, the parameters evaluated in the EIS would be retained for analysis in the water resources monitoring program. All water samples would be analyzed using procedures with the lowest

possible laboratory analytical detection limits, and using procedures described in 40 CFR 136, EPA-600/4-79-020, or methods shown to be equivalent. Collection, storage, and preservation of water samples would be in accordance with EPA procedures (EPA-600/4-4-82-029). Grab samples would be collected from streams and ground water samples would be obtained with a bailer or submersible pump. Samples would be cooled immediately after collection. Adding nitric acid in the field to lower the pH to less than 2.0 would preserve metals in water samples. Ground water samples for metals analysis would be filtered through a 0.45-micron filter to allow measurement of dissolved constituents. All field procedures would be consistent with procedures in the U.S. Geological Survey's National Handbook of Recommended Methods for Water-Data Acquisition.

These parameters would initially be retained within the monitoring program. Subsequent to review of data collected during the initial years of the project, continued testing for the full parameter list may be restricted to analyses of mine and tailing deposit effluent before and after treatment. It is likely that other monitoring sites would be routinely analyzed only for contaminants likely to be released by the mining operation, including at a minimum physical parameters and common ions, nutrients (including ammonia, nitrate, and phosphate), and the following metals: copper, lead, zinc, antimony, and manganese. Other metals may be retained in the water quality monitoring program, depending on actual chemistry of mine and tailings water. Effluent from the mine and water recovered from the tailings would be required to be analyzed for the full parameter list, and for both dissolved and total recoverable metals.

Quality Assurance/Quality Control Program

Quality assurance (QA) assures the integrity and reliability of monitoring and measurement data. Quality control (QC) is the application of procedures to evaluate data acquisition techniques and analyses according to established criteria. QC procedures define whether sampling and analytical techniques are in or out of control with reference to applied standards and control limits.

A specific QA/QC program would be approved by the Agencies to guarantee the quality and source of all data collected. This program would include sample documentation, as well as sample control and data validation.

The documentation and sample control portion of the QA/QC plan would be designed to document and track samples from the time of collection through reporting of analytical results. Elements in this portion of the plan include sample identification protocol, the use of standardized field forms to record all field data and activities, and the use of chain-of-custody sample tracking and analysis request forms.

The purpose of data validation would be to ensure that data collected during the monitoring phase would be of known and acceptable quality. Quality control samples would include blind field standards, field cross-contamination blanks, and replicate samples.

Monitoring Alert Levels and Contingency/Corrective Action Plan

As part of this water resources monitoring plan, a monitoring alert levels and contingency/corrective action plan would be developed for the Rock Creek Project. Elements of the plan would include, but not be limited to the following:

- Adit water monitoring and contingencies for possible long-term post-closure adit water treatment;

- Geochemical assessment of waste rock and contingencies for possible production of leachate;
- Long-term monitoring and contingencies for possible uncontrolled discharge of drainage of contaminated water from sumps, waste rock used for construction, paste tailings deposit, process and paste tailings storage ponds, adit leaks and adit plug failures, seepage from the underground mine workings; and
- Long-term monitoring of wilderness lakes in the vicinity of the orebody.

In conjunction with this plan Sterling's Spill Contingency Plan would be finalized and included contingencies for the most likely spill and leak scenarios at the mine, mill, water treatment plant, paste plant, and rail loadout facility.

Remedial Action Plan

As part of this water resource monitoring plan, a remedial action plan would be developed for the Rock Creek project. Objectives of the remedial action plan would be:

- to define remedial action criteria and statistically based methods for determining whether significant impacts to surface or ground water resources occur during the project's construction, operation, and reclamation phases;
- to identify key players and their respective roles and responsibilities for implementing the remedial action plan;
- to identify, illustrate, and schedule the decision-making process associated with remedial actions; and
- to prepare a list of potential remedial action alternatives for various degradation scenarios.

Reporting

Sterling would prepare quarterly and annual reports to summarize information and data obtained during implementation of the Rock Creek Mine water monitoring program. The report would include data tabulations, analysis of trends, statistical computations, maps, cross sections, and diagrams needed to clearly describe hydrologic conditions. Sterling would also submit computerized data and analyses in a format acceptable to the Agencies*. All lab test results from water quality monitoring would be submitted to the agencies, including Idaho DEQ upon completion by the lab.*

ROCK MECHANICS MONITORING PLAN

The rock mechanics monitoring plan as envisioned, has a dual purpose: (1) to acquire data pertinent to the site and use this data in mine planning, and; (2) to monitor the surrounding physical environment's response to mining in order to prevent environmental damage to the surface environment, to surface water and to ground water.

Sterling would develop this plan in conjunction with the Agencies, and the plan's details and implementation would be subject to Agency approval. The rock mechanics monitoring plan would be submitted to the Agencies prior to construction of the evaluation adit.

The goals of the monitoring plan are:

- To collect site specific data on the host environment.

- To confirm assumptions made by Sterling concerning physical parameters of the host rock.
- To assist in mine planning (e.g., room and pillar size and layout, areas of artificial support, location of monitoring devices, size of buffer zones, etc.)
- To provide data to Sterling and to the Agencies which would be used in the assessment of potential environmental damage due to mining.
- To provide data to assist in determining whether to alter the mine plan to prevent environmental damage.

The scope of this monitoring plan would evolve as the complexities related to construction and mining increase. Initially, the monitoring plan would concentrate on data collection during the evaluation adit phase. In time, as mine development proceeds, the focus of the monitoring plan would be on environmental monitoring in response to mining.

Evaluation Adit Phase

During the development of the evaluation adit, data collection to establish baseline conditions and to confirm physical parameters for the surrounding rock would be the principal objectives. Surface monitoring stations would also be established prior to adit development. These would be installed prior to any mining disturbance, and would be monitored using either conventional land based geodetic measuring systems, or global positioning devices (GPS). Surface monuments would be strategically placed near surface features that may be more susceptible to mine related activities. Areas around Cliff Lake and Copper Lake would have monitoring stations, as well as areas where the ore horizon is particularly thick or near to the surface.

Laboratory and In-Situ Testing

Laboratory testing on representative samples collected during the evaluation adit phase would confirm physical parameters of the local host rock. Tests and documentation of material properties would include, but are not limited to: specific gravity, Young's Modulus, Poisson's ratio, cohesion, angle of internal friction, uniaxial compressive strength, jointing, and other structural features. This data would be used to develop analytical models for the Rock Creek orebody that in turn would assist in mine design and layout. If mining proceeds beyond the evaluation adit phase, Sterling would continue to collect and test samples as the mine advances to confirm material properties as new areas are developed. The frequency of sampling may be determined by either changes in lithology or based on a certain number of samples per volume of material extracted.

In situ monitoring devices would also be installed during the evaluation adit development phase. These may include but are not limited to strain gauges, extensometers and micoseismic monitoring devices. These instruments collect data relating to the how the surrounding rock responds to mining and the excavation of cavities underground. As mining progresses, Sterling would continue to install and monitor in situ devices as part of their overall environmental monitoring program. The placement of these devices would be determined through consultation with the Agencies and their representatives. Areas of known or suspected instability, such as near geologic faults, may get a more concentrated array of devices. The frequency of monitoring would also be resolved with Agency counsel once the adit is underway, however it is difficult to predict both placement and frequency prior to development.

Active Mining Phase

During active mining, surface and in situ monitoring would be ongoing. Deviations from baseline conditions may be indicative of adverse ground reactions to mining. If such conditions occur, the Rock Mechanics Monitoring Plan would have as part of its program, steps and mitigation to retard and stop any deleterious effects. Possible mitigation may include the installation of supplemental supports such as rock bolts, grouting, backfilling the affected area, prohibiting mining in the affected area, or changing the room and pillar sizes to provide more underground support.

The evaluation adit phase would provide ample opportunity to refine the mine plan based on real data so that when active mining does commence, adequate sizing and spacing of pillars and rooms would have occurred. Drilling in advance of new development would intersect unfavorable ground conditions such as faults or extensive jointing, both of which could promote underground instability or ground water drainage stresses on overlying lakes, streams, and wetlands. Mining would not occur in areas where adverse ground conditions could lead to surface subsidence or effects on the wilderness lakes or hydrofracture at outcrop zones (MT DEQ 2001a). The monitoring employed during active mining would provide advance warning of deteriorating ground conditions in response to mining.

The operator or a third party would be responsible for monitoring device installation and data collection. Currently, much of the monitoring equipment is so advanced that mining companies often leave the rock mechanics programs to specialty firms, or at least have a third-party consultant oversee the installation and collection of data. Quality assurance and quality control protocols would be reviewed and authorized by the Agencies to maintain strict regulatory compliance and standards of practice. Sterling would submit the results of the monitoring to the Agencies as part of the monitoring plan. These reports may be submitted on an annual, semiannual or quarterly basis depending on what phase of development the mine is undergoing.

EVALUATION ADIT DATA EVALUATION PLAN

This plan would be developed to provide the agencies with data that could not be obtained prior to construction of the evaluation adit. Data from the evaluation adit would be used to verify the hydrologic, geochemical, and rock mechanics data used in the analyses described in the FEIS. It would also be used to modify facility designs and the mine plan to keep impacts at or below the level described for Alternative V, or whatever alternative the Agencies permitted if a decision to permit was made.

This plan consists of three components. The first is implementation of the evaluation adit portions of the Acid Rock Drainage and Metals Leaching Plan described above. This plan would provide the geological and geochemical data needed to insure that non-acid generating and non-metals leaching material was used for facility construction. The second plan would require the collection of hydrologic data during evaluation adit construction as described in the Water Resources Monitoring Plan above. This data would be used to better define where ground water is coming from, how much is being produced, and what the quality is to ensure the water treatment system operates as predicted and produces a discharge that would comply with MPDES permit limits (see Appendix D). A better understanding of the impacts of withdrawal of ground water on springs, seeps, and streams could be also obtained as well as the possible impacts the underground reservoir in the mine might have on those same springs, seeps, and streams. The Rock Mechanics Monitoring plan described above contains a description of the third component of the Evaluation Adit Data Evaluation Plan. The rock mechanics data from the evaluation adit would be used to modify the initial underground mine plan to prevent the occurrence of subsidence. All evaluation adit data would be supplemented by data collected during mine construction and operation that would be used to further modify and refine facility designs and operations.

If any data were substantially different from that anticipated and used in the analyses in the FEIS, all appropriate facility designs and mine plans would need to be modified and approved by the agencies to ensure that the impacts would be no greater than as disclosed in the FEIS. The modifications would be requested and processed as defined in the Metal Mine Reclamation Act (MMRA) (sections 82-4-337(4 through 7) MCA). If the changes to the permit were considered to be a major amendment, then the amendment would be subject to additional MEPA/NEPA analysis and public participation. The analysis may be disclosed in either an Environmental Assessment or an Environmental Impact Statement depending upon whether or not there was the potential for significant impacts as a result of implementing the change. Either of these documents would tier to the FEIS for the Rock Creek Mine Project. If the significant impacts could not be mitigated to or below the level of the impacts displayed in the FEIS, then an additional EIS would be required. The project could not proceed beyond the evaluation adit construction phase without approval from the Agencies on the facility designs and mine operation plans as modified due to the results and analysis of evaluation adit construction data.

WILDLIFE MONITORING PROGRAM

Monitoring plans would be developed for several wildlife subjects based on the conceptual plans provided below. Monitoring plans would vary depending upon the species or subject being monitored.

In some cases, monitoring would occur on subjects for which insufficient baseline data exist to fully estimate potential impacts or changes. Monitoring would identify the status of these subjects during or after mining activities but the data would not be compared with inadequate pre-mine data.

Currently, the Forest Service and Montana FWP are developing or implementing monitoring plans or studies for some species or subjects. Where feasible and appropriate, Sterling would contribute funding to these efforts in place of initiating a separate and redundant monitoring activity.

The goal of the wildlife monitoring program is to determine project-related impacts on existing wildlife populations. If impacts were identified, then appropriate remedial action plans would be developed and implemented. This monitoring program would be started during the first quarter of evaluation adit construction and would consist of monitoring and reporting for the following elements:

- neotropical migrant bird;
- mountain goat;
- sensitive animal species; and
- road closure.

Neotropical Migrant Bird Monitoring

This plan would coordinate with current programs in place or initiated by state and federal agencies and private organizations. The goal of this monitoring would be to gain additional information about neotropical migrant birds, population trends, species composition changes, and their responses to mine-related impacts.

Sterling can assist in funding the KNF's ongoing monitoring or conduct their own surveys as approved by KNF on neotropical migrant birds. Funding would be proportional to the number of transects surveyed across the region for the year in question. At least one transect needs to be set up within the project area. An estimated cost of one transect is $1,000 to $2000 (in fiscal year 2000 dollars) for each year a transect is run, this cost includes analysis. These transects are monitored on a schedule determined by the Forest Service's Regional Office, but at least every two to five years. Reports are

produced annually by the Regional Office. Information collected, whether through an independent third party or by KNF, will be incorporated into the Regional report.

Mountain Goat Monitoring

Mountain goats would be monitored for their responses to mine-related impacts. Limited baseline data would hinder comparisons of pre-mine status with mine-life or post-mine status. However, information gained would be useful in determining population trends, habitat use, and to some extent mine-related impacts. The monitoring plan would integrate aspects of a mountain goat monitoring plan/study that has already been developed by Montana FWP. The plan would need to specify the sampling and analysis methods to be used and would be reviewed and approved by the Agencies *if conducted by a third party consultant for Sterling.*

Mountain goat monitoring for this project would require three annual surveys for the life of the mine unless the agencies in consultation with Montana Department of Fish, Wildlife and Parks (FWP) determined that less annual surveys are sufficient. The three surveys would be based on one occurring in the summer, with a duration of two weeks and including the eastern side of the CMW. The other two surveys would be aerial, one in the fall and one in the winter. These aerial surveys could be conducted simultaneously with the wolverine surveys.

Currently, FWP conducts one aerial survey every other year; these required surveys would be done on the same protocol as the FWP surveys. Sterling could either fund FWP for the additional surveys or conduct independent surveys. The information collected would be reported to FWP and the agencies. The annual report would include information on number, age and gender of animals located and their precise location to UTM or GPS coordinates. Reports would be submitted to FWP and KNF for use in determining the adequacy of the extra law enforcement provided by Sterling and if mitigation measures are functioning properly for mountain goats.

Sensitive Animal Species Monitoring

A forest-wide monitoring program for sensitive species including harlequin ducks is currently being implemented by KNF. Sterling would contribute funding to this existing effort *or could conduct its own third party monitoring as approved by the agencies*. The goal of this monitoring item would be to gain more information about sensitive species, habitat use, and mine-related impacts.

Monitoring of harlequin ducks can be accomplished in two fashions. One, Sterling would contribute funding to KNF's existing effort plus the following items or could conduct its own third party monitoring as approved by the agencies. Information collected would be reported to the agencies for review on an annual basis. Monitoring would continue for the life of the mine or until the agencies in cooperation with FWP and FWS determined that monitoring intervals can be modified. Monitoring for harlequin ducks for this project involves three parts.

(a) Water quality monitoring of Rock Creek. The monitoring required under the water quality monitoring plan for this project would meet the requirements for assessment of water quality impacts to the harlequin duck.

(b) Monitoring of the harlequin ducks on four main tributaries of the Lower Clark Fork River that the ducks are known to have breeding sites on Rock Creek, Marten Creek Swamp Creek and Vermilion River. The protocols would follow those as used by Montana Natural Heritage Program (MTNHP) harlequin duck monitoring program.

(c) A Power and Sensitivity Analysis is required on the data collected through the monitoring. The Power analysis is used to determine the effectiveness of the proposed monitoring scheme and to identify significant population changes from natural stochastic fluctuations. The Sensitivity analysis is used to determine population growth rates from data already available and from monitoring.

Monitoring for wolverine involves one annual survey over mine life of snowmobile and other human presence of denning habitat within the CMW each denning season (February – April). An aerial survey is recommended to increase coverage and reduce ground disturbance. Monitoring flight may be combined wit the mountain goat winter survey. The primary objective of monitoring denning habitat is to determine if wolverines are being forced to abandon suitable denning sites due to ground base human activity related to the project and to determine possible management actions.

Road Closure Monitoring

Road closures would be monitored for their effectiveness in excluding motorized access. This would include assessing KNF administrative and unauthorized road use and the ultimate effectiveness of closure. This monitoring plan would take into account road closures proposed for grizzly bear mitigation as well as existing road closures. The plan would be developed in coordination with KNF.

AQUATICS/FISHERIES MONITORING PLAN

A detailed monitoring plan is available in the project file at DEQ (dated November 18, 1994). The following is a summary of the highlights of that plan.

The primary reason for monitoring aquatic biota is to determine if mine project activities cause impacts to aquatic resources. Aquatic macroinvertebrates[3] are one of the most reliable organisms to monitor for water quality because they are almost always present in a stream under a wide range of conditions, from clean to polluted. In contrast, fish are more difficult to monitor on a regular basis because they are not found in all drainages, can be transient within a reach, excluded from areas by physical barriers (e.g., waterfalls), and generally have more limited habitat requirements. Aquatic monitoring serves the following additional functions:

- determines whether BMPs and other mitigation are working (e.g., is sediment being effectively controlled from roadway activities).
- documents the presence of aquatic macroinvertebrates and periphyton[4] in the stream reflecting the short- and long-term quality of the water and sediments. In contrast, water samples, collected only at a specific time, may miss potential pollution events between sampling. Certain species can tolerate polluted conditions (e.g., metals, fine sediments) while others only exist in clean waters.
- determines whether aquatic life standards are successful at protecting the resident aquatic life.
- detects (periphyton monitoring) effects of nutrient loading (e.g., nitrate residues from blasting agents) to a stream.

[3]Aquatic organisms, such as insects or worms, that inhabits stream bottoms.

[4]Algae attached to submerged surfaces such as rocks or logs.

Aquatics and fisheries monitoring would be required to determine if impacts occur to these resources. Sterling would need to monitor benthic macroinvertebrates, fine sediments, periphyton, fish populations, and metals accumulations in fish tissues. The timing and location of aquatic biological monitoring should be coordinated with the surface water quality monitoring program (Klemm et al. 1990). Monitoring would begin during the first quarter of evaluation adit construction and continue through post mining reclamation.

Sterling would compare data collected from the monitoring stations to that collected during preconstruction baseline studies. In addition, data collected from potential impact sampling stations also would be compared to upstream reference stations. The monitoring plan may be modified by the agencies in response to the information collected to reflect concerns specific to the construction, operation, and post operational time periods.

In the event of a temporary mine closure, monitoring would continue unless the agencies agreed to reduce or suspend monitoring requirements.

Preconstruction Baseline Studies

The purpose of the baseline program is to sufficiently describe the aquatic community that existed prior to mine development and compare the baseline data to construction and operations data. Without an adequate baseline, it is difficult to determine whether changes in an aquatic community are caused by mine disturbances or by natural occurrences (i.e., seasons). The aquatics baseline data collected within the Rock Creek Mine project area from 1985-1988 appears to be inadequate for the following reasons:

- reference sites would not be comparable to potential impact sites;
- seasonal data for some sites are incomplete;
- some baseline sites were not sampled consistently because of flow problems;
- the alternative mill site location at the confluence of the east and west forks of Rock Creek could require selection of additional sites (for Alternative IV or V); and
- additional surveys are needed to better understand bull trout populations and the amount and condition of spawning habitat.

Prior to the beginning of the proposed project, an updated baseline *data set* and monitoring program would be developed and implemented with approval by the Agencies. This program would incorporate the components described below.

Benthic Macroinvertebrates

Sterling would maintain detailed maps and photographs of each sampling site so that the sites can be accurately relocated each year. In addition, permanent markers would be installed at each study site.

Quantitative macroinvertebrate data would be collected three times per year at approximately ten sampling stations. Sampling stations would be selected to represent a range of impacted and un-impacted conditions. In order to reduce variability, sampling areas should be restricted to those of a similar physical nature as much as possible (Klemm et al. 1990). It may be necessary to locate a suitable reference station outside the Rock Creek drainage. Samples would be taken in a quantity and manner approved by the Agencies. If possible, sampling would be done in the same or similar manner as the baseline samples.

Data analysis techniques would include, but are not limited to, the following:

- standing crop
- taxa richness
- percent dominant taxon
- ratio of functional feeding groups
- Shannon-Weaver diversity index
- equitability (Lloyd and Bhelardi 1964)
- community similarity index
- pollution tolerance indices
- EPT/C (total mayflies, stoneflies, and caddisflies divided by total chironomids)
- EPT abundance and richness

Data would be compiled by season and comparisons would be made between potential impact sites and reference sites. Data would also be compared with baseline data.

In addition, bioassays would be conducted with water samples taken from locations to be specified by the Agencies. Likely sampling locations are the mine adit waste water, tailings storage facility seepage water, and Rock Creek water downstream of the mill site. Test animals would be selected by the Agencies prior to the start of monitoring.

Fine Sediments

Fine sediment loading of spawning gravels in Rock Creek would be estimated using at least two different sediment analysis techniques[5] at a variety of sampling stations within the drainage. Sampling techniques, times, and locations were to be approved by the Agencies prior to the start of monitoring.

Periphyton

Monitoring would be done at the same times and locations as the benthic macroinvertebrates sampling, unless otherwise specified by the Agencies. Sample collection, processing, and analysis techniques (Protocol II, control site protocol) as described in Bahls (1993) would be used.

Fish Populations

Fish populations in Rock Creek would be monitored at 2-year intervals at a variety of stream reaches representing impacted and un-impacted conditions. Baseline sampling sites should be included in the monitoring plan sites. Population densities of each fish species would be estimated, where adequate sample sizes permit with snorkeling data, using the Seber-LeCren multiple pass method or comparable method to make population estimates.

Bioaccumulation of Metals in Fish Tissue

Fish would be collected from main stem Rock Creek and the east and west forks of Rock Creek for metals analysis. Tissue samples from collected fish would be analyzed to determine concentrations of zinc, copper, mercury, cadmium, and lead, which would then be compared to baseline concentrations. Baseline concentrations (from 1985) exist for zinc, copper, and mercury, but not for cadmium and lead. Data collected during the first quarter of adit construction would serve as baseline for cadmium and lead.

[5]Recommended methods include substrate score and McNeil Core substrate sampling methods.

Test procedures and analysis would be the same as those used for baseline testing, unless changed by the Agencies. Sampling would be done annually for 5 years and then every 3 years until reclamation was complete, unless otherwise required by the Agencies. If metal concentrations in fish tissue became elevated to a level of concern, an ecological risk assessment would be conducted at the discretion of the Agencies.

Bull Trout in the Clark Fork River

Sterling would work with FWP and FWS to monitor the effects of the mine discharge from the diffuser on bull trout between Noxon Dam and the confluence of Rock Creek and the Clark Fork River. This would be necessary to determine if changes need to be made in diffuser design or requirements within the MPDES permit (mixing zone, effluent limits, etc.) to maintain migration of bull trout across the diffuser.

Spills and Accidents

In the event of an accidental discharge of toxic or hazardous materials or sediments, supplemental monitoring maybe required by the Agencies if there is a reasonable possibility that the environment could be adversely affected. Sterling would be required to immediately report all such accidental discharges to the permitting Agencies. The type, frequency, and location of monitoring would be contingent on the circumstances of the accident. Mitigation and recommended monitoring for several likely spill or accident scenarios would be developed as part of Sterling's Spill Contingency Plan prior to mine operation. This would facilitate the process should a spill or accidental discharge of toxic or hazardous material occur.

Quality Assurance/Quality Control

To provide QA/QC for these studies, Sterling would maintain a permanent taxonomic reference collection that contained all benthic species and representative samples of all dominant and indicator taxa of periphyton[6] collected from project area streams. Taxa identification in this collection must be documented and confirmed by taxonomic experts who must be selected in concurrence with the Agencies. This reference collection would be maintained by Sterling through the period of post operational monitoring. Following this period, the collection should be transferred to a depository selected by the Agencies for permanent scientific reference.

Reporting

Sterling would submit an annual aquatic monitoring report that contained summaries of all aquatic monitoring data collected during the previous year. Each report must also discuss trends in plant and animal population patterns and evaluate changes and trends in terrestrial and aquatic habitat quality, based on all data collected to date for the project. Recommendations in these reports could include modification to increase monitoring efficiency or to improve the quality of the data.

SPRINGS AND SEEPS VEGETATION MONITORING PLAN

The following guidelines would be used to develop a monitoring plan for potential vegetation changes as a result of changes in water quality or flow from mine development.

[6]All non-diatom taxa would be preserved in vials and representative permanent slide mounts made for diatom taxa.

1. Initiate a survey to identify, document, monitor and evaluate wetland plant communities in non-surface disturbance areas (i.e., high/mid elevation springs and seeps) prior to the construction of the development adits. These wetland plant communities should be identified and monitored for their persistence in relation to ground water diversions associated with mining activities. Surveyed areas, should incorporate the identification of facultative and obligate wetland plants and associated hydrophilic sensitive, threatened and endangered plant species. This information would be related to and coincide with the water quality quantity sampling of springs as discussed in the Water Quality Monitoring Plan, Chapter 4.
2. A professional botanist/plant ecologist would design survey methodology and protocols.
3. Initial surveys should be semi-permanent and contain site photo points and GPS site locations.
4. Initial surveys should contain basic site descriptors, hydrophilic plant species (facultative and/or obligate) and their relative frequency.
5. One or two indicator hydrophilic plants (obligate) and their relative frequency should be chosen from the initial survey information - trigger plants.
6. A botanist/plant ecologist would gauge observable increases and should use trigger plants and associated rapid observational percentage/frequency information or decreases in obligate plant species.
7. Trigger plants will serve as a basic "trigger" to begin additional monitoring in a particular site. Other water quantity and quality information will be used to facilitate or strengthen monitoring decisions.
8. If a change in flow or water quality is noted outside the baseline data for an individual site or set of sites, then a re-evaluation of those potentially affected plant communities would be conducted and documented for comparison against initial survey information. If water quality or flow remains within baseline parameters, then on a five-year cycle a survey in areas of current development would be conducted and compared to the initial survey.
9. If, as a result of the proposed action, trigger plant percentages are declining to a level where population numbers may affect reproduction of the species for that site, then the agencies may require an additional monitoring effort for the following year. Dependent on a combination of biological variables and/or the severity of plant indicator decline, the agencies can insist on a more in-depth monitoring effort. If a "trigger" plant declines two years in a row, then additional monitoring may be required for the following year.

An annual report to the agencies will be filed by Sterling detailing the results of the surveys and requirements of this monitoring. The report will include an updated map plotting all springs and seeps for each year of survey. The plotted locations will include a GPS position location to be used for long term monitoring. The maps will be cumulative over the years for spring and seeps locations for the purposes of monitoring long term affects.

RECLAMATION MONITORING PLAN

This plan provides the conceptual framework necessary for development of a reclamation monitoring program for the Rock Creek Mine Project. Sterling had included a revegetation and a soils and erosion control monitoring plan in its application, however, the Agencies believe that those plans needed to be expanded to reduce the risk of sedimentation and revegetation failure (see Chapter 2 and Appendix J).

The final plan would contain specific information on vegetation removal and deposition, soil salvage and handling, sampling methods, frequency of sampling, chemical parameters and analysis methods for any soil testing, and reporting. The reclamation monitoring program would begin as soon as construction activities were initiated and would continue until the Agencies released the reclamation bond.

The overall reclamation goal is to achieve short- and long-term stability and utility of the disturbed lands. The conceptual reclamation monitoring plan contains several elements:

- monitoring soil salvage, handling, segregation, quantity, and quality;
- soil erosion and construction monitoring; and
- revegetation monitoring.

Monitoring of Soil Salvage and Handling

Monitoring would take place throughout mine life during soil salvaging and replacement to ensure that adequate reclamation materials were salvaged, stored and respread according to a revised and expanded soil salvage and handling plan. Soil depths would be verified using standard USDA methods.

Soil salvage activities would be monitored to verify depth and suitability (primarily rock content) of each lift. Monitoring would also verify that each lift was stored in appropriate locations. Soil replacement activities would be monitored to verify that lifts were replaced in the proper sequence and with sufficient depths. A 100 x 100-foot grid would be established on reshaped landforms at final reclamation of disturbances. After soil replacement, the grid would be resurveyed to verify proper total soil replacement depths. The average of all sample points per reclaimed unit must meet the soil replacement depth identified for each disturbance area. In addition, no sample point on the grid should have less than 50 percent of the required replacement depth.

Stored soil would be tested before respreading to identify what, if any deficiencies or limitations in soil physical and chemical properties existed that may affect plant growth. Appropriate fertilizer, liming, organic matter, and other amendments would be determined.

Soil Erosion and Construction Monitoring

This component of the reclamation monitoring plan has two phases: monitoring of active construction and long-term maintenance monitoring. In general, monitoring would be done to identify areas where slumps, rills, gullies, and sheet wash were occurring. Any erosion problems identified would be immediately corrected.

Sterling would conduct annual audits of best management practices (BMPs) implemented during construction of roads and other project facilities. This monitoring would be ongoing throughout road and mine construction and into the operational period for the tailings storage area. If deviations from BMPs were found, Sterling would immediately correct the practice as well as resource damage that had occurred. In addition, sediment source surveys would be conducted in the Rock Creek and Bull River drainages. Sterling would be responsible for mitigating sediment sources on NFS lands in the Rock Creek drainage equivalent 400 tons of sediment per year.

Routine long-term maintenance monitoring would be conducted during spring and fall and after heavy storm events. This monitoring would focus on reclaimed and disturbed areas. If necessary,

immediate erosion control measures would be applied such as reseeding, mulching and other appropriate BMPs.

Revegetation Monitoring

Revegetation would be monitored annually during the growing season to identify areas where vegetation was failing and determine the cause. Revegetation monitoring should be conducted in conjunction with the routine soil maintenance monitoring. Systematic visual inspections would be conducted to identify areas that have inadequate cover, poor seedling growth, damage, or poor nutrition.

If problem areas were identified, Sterling would need to identify the cause. If the cause appeared to be related to soil infertility or toxicity, then a soil testing program would need to be implemented for the problem area. Soil chemistry tests would be conducted to ascertain macro- and micronutrient status, pH, cation exchange capacity, and potential toxicity and heavy metal problems. Problems could also be caused by inadequate watering or inappropriate species or varieties being planted. Appropriate remedial actions would be taken to correct the problem.

Revegetation success of tree seedlings would be critical to mitigate the visual impacts of project facilities. A sampling design for monitoring tree stocking would be specified in the plan and approved by the Agencies. Other parameters such as ground cover, production or biomass, and plant density could be proposed by Sterling to quantitatively evaluate the revegetation success of grasses, shrubs and forbs. Tree establishment surveys are recommended at years 1, 3, and 5 after planting.

Post-closure monitoring of trees should be conducted for up to 20 years after mining to determine if visual mitigation has been achieved. Frequency and amount of monitoring would be approved by the Agencies.

Reporting

An annual report would describe any reclamation problems that were identified and remedial measures taken.

PLANT SPECIES OF SPECIAL CONCERN MONITORING PLAN

Monitoring pertains to all lands within the permit boundary for threatened and endangered plants but only to Forest Service lands within the permit boundary for sensitive plants. Additional on-site verification studies would be performed during development of final facility designs to precisely locate any additional KNF sensitive plant populations as well as populations of Montana Natural Heritage Program (MNHP) plant species of special concern for avoidance. Whenever the KNF sensitive species list was updated, the Kootenai Forest Botanist would alert Sterling with the updated list. Sterling would be responsible for ensuring that various plant surveys are revisited and conform to KNF program standards within the project area to determine whether or not newly listed species as well as any new MNHP plant species of special concern had been identified. *Reporting timeframes for the resurveys would be determined at the time KNF informs Sterling of the updates.*

THREATENED, ENDANGERED, and PROPOSED TERRESTRIAL SPECIES MONITORING PLAN

This document outlines the basic monitoring elements to be designed in detail by the participating agencies and project proponent. The monitoring elements are connected to required mitigation items

from the T&E mitigation plan, which is found in the Biological Assessment. Monitoring will be conducted by Sterling and the agencies as indicated below.

Reporting Interval

The results of all monitoring efforts will be reported annually, unless specified otherwise. An annual monitoring report will be written and given to the deciding officials by February 15th of each year.

Monitoring Elements (Sterling's responsibility)

- Following proponent development and agency approval of the mine transportation plan, the proponent will monitor the effectiveness of reducing mine related traffic by bussing employees to the mill site. Proponent will provide traffic counts (summarized by month) and traffic type (to the extent possible - commercial, employee personal, bus, company vehicle, agency, non-mine related traffic). Agency will review to determine if mine related traffic levels are above projected levels. Adjustments to traffic levels may be determined following completion of construction phase, but prior to full operation. (Based on mitigation item A-1)

- Proponent will provide an annual summary of the number and species of all dead animals found. Proponent will report the death of a listed or proposed species immediately! Agency will use random trips to assure this is occurring. (Based on mitigation item A-3)

- Timely service of bear proof containers at all Mine facility sites (Mitigation item A-7) will be monitored. Problems in timely service will be corrected immediately.

- Results of seed application will be monitored to assure compliance with Mitigation item A-8. Preferred bear foods found in the seed mix and resulting plants will be removed immediately by the proponent.

- Monitoring of mitigation item A-9 (no firearms) will be done by the proponent and results reported to the agencies.

- Random checks to assure feeding of wildlife (mitigation item A-10) is not occurring will be done by the proponent and the annual report to agencies will document the number of violations.

- Proponent will provide assurance to the agencies that all employees complete training on living in bear country on an annual basis (mitigation item A-12). Assurance can be a current (dated) list of employees along with an attendance sheet bearing employees original signatures.

- All road closures implemented as part of the mitigation plan (item C-1) will be monitored by the proponent to assure that closures are effective. The question to be answered by the monitoring is: Are roads actually closed or not, based on use levels during various seasons? Seasons are: spring (April 1 - June 15); Summer (June 16 - September 15); Fall (September 16- November 30); and winter (December 1 - March 31). Annual report will show the total number of counts on traffic passing by each road closure being monitored, and provide an interpretation on the number of round trips those counts represent by season.

- Proponent will monitor recreational use levels on the Rock Lake and St. Paul trails (mitigation item C-3). Trail counters and other methods will be used to determine if use levels reach the "high" category as defined by the Interagency Grizzly Bear Committee.

Monitoring Elements (Agency responsibility)

- Traction mixture used during winter operations will be monitored by Forest Service to assure salt is not used. (Based on mitigation item A-2)

- Forest Service will monitor compliance with the food storage order (mitigation item C-2).

- Grizzly bear movement across fracture zones (FDR # 154, FDR # 220 and E.F. Rock Creek Trail) will be monitored by the FWS using radio telemetry methods. Results from this monitoring will be included in the annual "Cabinet/Yaak Grizzly Bear Recovery Area Research and Monitoring Progress Report". (Based on mitigation item E-3)

- KNF will monitor the proponent's efforts to remove animals killed by vehicles traveling along routes used for the evaluation, construction, and operation of the mine. This will be done with random trips along those routes. When animals are found that were not removed in the time frames specified in the mitigation plan, Forest Service will immediately notify proponent.

- Construction of power lines according to criteria specified in the mitigation plan (item A-4) will be monitored by the agencies to assure compliance. Compliance will be recorded in the annual monitoring report until power line construction is completed.

CULTURAL RESOURCE MONITORING PLAN

Monitoring would be required during any land disturbing activity that has potential to adversely impact unidentified sites. The areas to be monitored for Alternative V are identified in Figure 4-9. Monitoring must be completed by a qualified archaeologist meeting the Secretary's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716) and all four tribes would be afforded an opportunity to monitor the activity. If a site is discovered during project implementation, activity would stop until the site is formally recorded and evaluated for eligibility to the National Register of Historic Places.

Should a historic site (non-aboriginal) be discovered on private lands during project implementation, that activity would stop and the on-site archaeologist would notify the Montana State Historic Preservation Officer. Should a prehistoric site (aboriginally- affiliated) be discovered on private lands during project implementation, activity would immediately stop and the on-site archaeologist would notify the Kootenai National Forest, the Montana State Historic Preservation Officer and the four tribes.

If an historic or prehistoric site were discovered on federal lands during project implementation, activity would immediately stop and the on-site archaeologist would notify the Kootenai National Forest, the Montana State Historic Preservation Officer. *In addition, if the site is prehistoric, the four tribes would also be notified.* All sites would be formerly recorded and evaluated for eligibility to the National Register of Historic Places".

Evaluation should consider traditional tribal history. Should a site be determined to be eligible (in consultation with Tribes and formal review of the Montana State Historic Preservation Office (SHPO), consideration of effects of continuing with the project activities should be characterized (36 CFR 800.5). A determination of adverse effect should result in the design of mitigation measures. Mitigation measures will be described in a plan for site protection or data recovery. Mitigation plans require consultation with Tribes, and formal review by the MTSHPO and the Advisory Council on Historic Preservation, resulting in a Memorandum of Understanding. Failure to stop work and notify the proper authorities may result in criminal and civil penalty as prescribed by state and federal law. A determination of adverse effect would result in the design of mitigation measures. *If a site is found, Sterling's surface disturbance activities around the site cannot commence until the site is formally recorded, eligibility resolved, a determination of effect is completed, a mitigation plan is approved by the agencies, and the mitigation measures are implemented.*

A Memorandum of Understanding (MOU) would be drafted to outline a protocol to follow when aboriginally affiliated cultural materials are encountered during monitoring. The MOU would include a specific process for site evaluation, data collection, and curation of artifacts. This protocol must be in-place prior to surface disturbing activities as identified for monitoring areas in Figure 4-9.

In Montana, when human remains are found on non-federal lands, the Montana State Burial Law comes into effect. First the local coroner is called and then the State Burial Board. The State Burial Board is made up of tribal representatives, representatives of the MTSHPO, the State Coroners Association, physical anthropologists and archaeologists.

In the event that human remains are discovered on federal lands during monitoring, the Native American Graves Protection and Repatriation Act and its implementing regulations take effect. All land disturbing activity must stop until the following steps are taken. The federal process for meeting the intent of NAGPRA (Public Law 101-601 November 16, 1990) and it's implementing regulations (43 CFR 10) for inadvertent discoveries of human remains, funery objects, sacred objects and/or objects of cultural patrimony on federal land includes the following:

1. The KNF archaeologist or a designated representative would send a certified receipt notification of the inadvertent discovery to all four Tribal Officials, including the type of remains found, the status of law enforcement involvement, and the location of the discovery. This would take place no later than 3 working days after discovery (43 CFR 10.4(d)(i)). They will also telephone each Tribal Official immediately, but no later than 3 working days after discovery (43 CFR 10.4(d)(iii)).

2. The KNF Archaeologist or a designated representative will follow-up with a letter of consultation 10.5(b) (3) (iv) to each designated Tribal NAGPRA Specialist detailing:
   (a) A time and place for further consultation [43 CFR 10.5(b)(iv)(2)].
   (b) A list of tribes that have been notified [43 CFR 10.5(c)(1)].
   (c) Intent to forward any additional documentation [43 CFR 10.5(c)(2)].

3. The Tribal NAGPRA Specialist will coordinate the identification of all lineal descendants and will keep a list of who has been contacted [43 CFR 10.5(d)(2)].

4. The Tribal NAGPRA specialist will document the specific information used to determine custody (geographical, kinship, biological, archaeological, linguistic, folklore, oral tradition, historical) [43 CFR 10.5(e)(2)]. First priority for custody will be given first to

the lineal descendant [43 CFR 10.6(a)(1)] and then to the Tribe with the closest cultural affiliation [43 CFR 10.6(a)(2)(ii)].

5. The KNF Archaeologist will prepare reports [43 CFR 10.5(d) 8)] to include:
   (a) location of discovery
   (b) description of discovery
   (c) dates, times, and nature of consultation with the Tribes
   (d) analysis reports
   (e) archaeological records
   (f) treatment and storage of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered
   (g) the custody and disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony

6. The KNF will publish a notice of the proposed disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony at least two times at least one week apart in the Federal Register and tribal papers [43 CFR 10.6(c)]. The notice will provide information as to the nature and affiliation of the human remains, funerary objects, sacred objects, or objects of cultural patrimony, and will solicit further claims to custody.

Consultation with each Tribe will determine procedures on a case-by-case basis according to [43 CFR 10.5(d)(3-9)].

1. Planned treatment, care and handling of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered.

2. Planned archeological recording of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered.

3. Planned analysis of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered.

4. The kind of traditional treatment to be afforded by the Tribes for human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered.

TAILINGS PASTE FACILITY AND TAILINGS SLURRY LINE CONSTRUCTION AND OPERATION MONITORING PLAN

The intent of the construction monitoring plan for the tailings paste facility and associated tailings slurry lines would be to establish standard of care construction implementation, testing, and reporting guidelines. The plan would outline construction QA/QC protocols to ensure that any constructed facility was being constructed to the design and performance standards set forth in the application and the design documents. Prior to construction Sterling would submit a construction monitoring plan to the Agencies for approval. The construction monitoring plan for the tailings paste facility and the tailings slurry line is divided into four discrete time segments. The four time segments are as follows:

- Final Design Phase: Agency review and approval of final designs for tailing paste facility, paste plant, tailings slurry lines, and emergency dump ponds.

- Pre-production Construction Phase: Standard inspection and quality control procedures would be implemented with periodic interim construction reports submitted at 2-month intervals during construction of toe buttresses. A final construction report would be submitted prior to operation. This report would contain as-built drawings.
- Operational Phase: Monitoring would continue throughout project life and would include routine inspections and reports of facility geometry, material specification, embankment drainage, and foundation pore pressure, and observational performance.
- Interim Facility Shutdown: In the unlikely event of a shutdown, the tailings facility monitoring plan would be continued.

WATER TREATMENT PLANT CONSTRUCTION AND OPERATION MONITORING PLANS

The intent of the water treatment construction and operation monitoring plan is to establish QA/QC practices and operational standards for the water treatment plant and associated activities. The operating plan will include operating protocols, water quality treatment standards, and contingency plans for system upset or malfunction. These plans would be submitted to the Agencies for approval prior to plant construction.

MINE, MILL AND ASSOCIATED FACILITIES CONSTRUCTION AND OPERATION MONITORING PLANS

All mine and mill facilities will have construction and operation monitoring plans. These plans will outline standard of care construction practices for these facilities, and will include information of testing, monitoring, and reporting. The site location of certain facilities may encroach on sensitive habitat, and construction practices will be clearly defined in regards to building in these areas so as to minimize impacts.

The intent of the operation monitoring plans is to establish protocols for the operation of all facilities to ensure standardized performance. The operating plans will address daily operations, contingency plans, system upsets and performance criteria. The plans will be submitted to the Agencies for approval prior to construction.

ATTACHMENT 3

MONITORING REPORT REQUIREMENTS

Monitoring Report Requirements

1. Agency Monitoring

Agency staff from DEQ and KNF will conduct compliance inspections at the Rock Creek Mine under the authority of the Metal Mine Reclamation Act and the Federal Land Management and Policy Act. Comprehensive mine-wide inspections will consist of physical on-site examination of disturbance areas, verification sampling at water quality monitoring points, and geochemical sampling of mine products, construction materials, and reclamation materials. Annual examination of revegetation conditions will be conducted. Inspections more frequent than quarterly may be conducted during periods of intense activity in localized portions of the mine or where compliance problems have been noted and corrective measures are being implemented. Additional compliance inspections pursuant to the Montana Water Quality Act and the Clean Air Act of Montana will also be conducted. The results of these inspections will be documented in agency files and available to the public upon request.

2. Operator Monitoring Reports

The purpose of monitoring is to demonstrate compliance with the terms and conditions of the approved reclamation plans, detect problems or unanticipated events early, and provide a basis for directing remediation of problems. The following is a list of monitoring reports that have either been committed to by Sterling in its proposals or are based on Alternative V as modified by the Record of Decision. All reports are to be submitted to both DEQ and KNF. These reports will be available to the public upon request.

a. Annual Operating and Reclamation Status Report. This is an annual report required by the Metal Mine Reclamation Act (82-4-339, MCA, and ARM 17.24.118). This report describes the overall mining and reclamation status. This report is to include Sterling tracking the status and progress in meeting all agency-imposed stipulations and conditions.

b. Annual Reclamation Performance Report. Monitoring of soil loss rate and remediation activities, precipitation infiltration, and revegetation conditions will be conducted concurrent with operations and reclamation. Sterling shall submit an annual report that will describe any reclamation problems that were identified and remedial measures taken. There are three main components covered in this report.

(1) Soil salvage activities will be monitored to verify depth and suitability of each lift and that each lift is stored in appropriate locations. Soil replacement depths will be monitored to verify replacement depths and tested to identify any physical or chemical problems that might affect plant growth.

(2) Sterling would conduct annual monitoring of BMPs during road and mine construction and during construction and operation of the tailings paste facility to identify areas where slumps, rills, gulls, gullies, and sheet wash is occurring. Any erosion problems identified will be immediately corrected. Routine long-term maintenance monitoring would be conducted during spring and fall and after heavy storm events and will focus on reclaimed and disturbed areas.

(3) Revegetation will be monitored annually during the growing season to identify areas where vegetation is failing and to determine the cause. Tree establishment surveys are recommended at years 1, 3, and 5 after planting and every 5 years thereafter unless otherwise determined by the agencies. Post-closure monitoring of trees will be conducted for up to 20 years after mining to determine if visual mitigation has been achieved.

c. Acid Rock Drainage and Metals Leaching Monitoring Reports (Geochemical Characterization Monitoring). For the evaluation adit development, all static testing results (which will include waste rock tonnage estimates for each geologic unit) will be reported quarterly. As statistical confidence is developed through the sampling program, relaxation of reporting requirements may be possible during mine construction and operation.

Kinetic testing results will be reported quarterly until the agencies agree to reduce the frequency. Solution analyses for metals must be carried out over the kinetic testing period and reported quarterly during all kinetic tests.

Testing results and QA/QC (similar to those described for the Water Resources Monitoring Plan) for static and kinetic tests will be included in each annual report.

d. Air Quality Permit Report. Sterling shall supply DEQ with annual production information for all emission points required by the department in the annual emissions inventory request.

Production information will be gathered on a calendar-year basis and submitted to DEQ by the date required in the emissions inventory request. Information shall be in units as required by the department.

In addition, Sterling shall submit the following information annually to DEQ by March 1 of each year. This information is required for the annual emission inventory as well as to verify compliance with permit limitations.

(1) Amount of ore and waste handled;
(2) Amount of diesel used (surface and underground separately);
(3) Amount of propane used;
(4) Amount of explosives used;
(5) An estimate of vehicle miles traveled on on-site access roads;
(6) Amount of disturbed acreage (including tailings area); and
(7) Other emission related information DEQ may request (ARM 17.8.710)

e. Aquatics and Fisheries Monitoring Plan Report. Sterling will submit an annual aquatic monitoring report that contains summaries of all aquatic monitoring data collected during the previous year. Each report must also discuss trends in plant and animal population patterns and evaluate changes in terrestrial and aquatic habitat quality, based on all data collected to date for the project as outlined in Appendix K of the FEIS. Recommendations in these reports could include modification to increase monitoring efficiency or to improve the quality of the data. The annual report will include but is not limited to the following items:

(1) Quantitative macroinvertebrate and periphyton data will be collected three times per year at approximately 10 monitoring stations.
(2) Fine sediment loading of spawning gravels in Rock Creek will be estimated annually using at least two analysis techniques at a variety of sampling stations.
(3) Fish populations in Rock Creek will be monitored at 2-year intervals at a variety of stream reaches representing impacted and un-impacted conditions.

(4) Fish will be collected from the main stem and the east and west forks of Rock Creek for metals analysis. Sampling will be done annually for 5 years and then every 3 years until reclamation is complete, unless otherwise required by the agencies.

(5) All fish kills will be monitored and reported within 24 hours to DEQ and KNF.

f. Cultural Resources Monitoring Report. An annual report that describes monitoring activities for the year will be submitted to the agencies. If a site is found, the site form, determination of effect, and mitigation plan will be submitted to the to the appropriate state and/or federal agencies within 30 days of completion of the site recordation field work.

g. Engineering Construction and Operational Quality Assurance Reports for Tailings Paste Facility and Paste Plant, the Mill Site, the Wastewater Treatment Facility, the Rail Loadout, and the Pipelines. Interim construction reports will be submitted monthly during construction of the key buttresses of the paste facility. A final construction report will be submitted prior to operation and will contain as-built drawings. During mine operation monitoring will include routine inspections and biannual reports of facility geometry, material specification, tailings seepage, foundation pore pressure, and observational performance. As-built reports will be submitted for all other facilities prior to operation of the facilities. Operational monitoring of all other facilities will be appropriate for the facility being involved.

h. Evaluation Adit Data Evaluation Report. After the evaluation adit is completed by Sterling, a report must be filed containing an analysis of data collected through the Acid Rock Drainage and Metal Leaching Monitoring Plan, the Rock Mechanics Monitoring Plan, and the Water Resources Monitoring Plan as outlined in Appendix K of the FEIS. Recommendations for any changes to the approved plan of operations, reclamation plan, mitigation plans, and monitoring plans should be included.

i. Hard Rock Impact Board Quarterly Survey Reports. ASARCO will conduct quarterly monitoring surveys of all employees during the impact period. The impact period is assumed to start 6 months prior commencement of mine construction and last through the completion of all tax prepayments (through year 6 of mine operation) and tax crediting (from year 7 for approximately 5 years (20 percent per year)). The survey will identify the residence for each worker at the mine, the family size of the worker, how long the worker had been a resident of the area, and where his/her children (if any) were attending school. The results of each survey will be mailed to all identified potentially affected local governmental units identified in the impact plan and the Hard-Rock Mining Impact Board.

j. Plant Species of Special Concern Monitoring Report. Reports will include data collected during on-site verification studies performed during final design development to precisely locate KNF sensitive plant populations and populations of MNHP plant species of special concern identified in the FEIS, as well as when any new sensitive plant species lists are updated. The monitoring report should also identify any changes that may be needed to avoid disturbance of these plants. Reports should be submitted prior to facility design review by the agencies and again prior to surface disturbance for those facilities to re-verify population locations.

k. Rock Mechanics Monitoring Report. Quality assurance and quality control protocols will be reviewed and authorized by the agencies to maintain strict regulatory compliance and standards of practice. Sterling will submit the results of the monitoring to the agencies as part of the monitoring plan. These reports may be submitted on an annual, semiannual, or quarterly basis depending on what phase of development the mine is undergoing. An initial schedule for frequency of reporting will be developed as part of the initial Rock Mechanics Monitoring Plan for to be submitted by Sterling prior to mine development. A proposed monitoring plan for the evaluation adit will be submitted to the agencies prior to starting adit construction and monitoring results must be submitted at 6-month intervals until the evaluation adit is completed.

l. Springs and Seeps Vegetation Monitoring Report. An annual report providing data required by the Springs and Seeps Vegetation Monitoring Plan will be filed with the agencies.

m. Threatened and Endangered Species Monitoring Report. The results of all monitoring efforts will be reported annually and submitted by February 15 of each year. The following elements are included:

(1) Transportation Monitoring Report or summary of that report;
(2) The number of vehicular killed deer, elk, and other species on project-related roads. After 5 years of full operation, KNF in consultation with the FWS will reevaluate the mortality risk to these animals to determine the need to continue remove and monitor the number of road-killed animals;
(3) Sterling will also monitor and report within 24 hours all grizzly bear, bald eagle, wolf, or lynx mortalities within the permit areas;
(4) Timely service of bear-proof containers at all mine facility sites;
(5) Results of seed application to locate and remove preferred bear foods (clovers, etc.) and documentation of any necessary plant removals;
(6) Number of wildlife feeding violations;
(7) Documentation of required annual employee training on living in bear country;
(8) Effectiveness of road closures required by Biological Opinion;
(9) Results of monitoring recreational use levels on Rock Lake and St. Paul trails; and
(10) Summary and statement of compliance with all requirements of the Threatened and Endangered Species Mitigation Plan (Attachment 4) and requirements in the Biological Opinion.

n. Transportation Monitoring Report.[10] Sterling will report total vehicle count per road (summarized by month) and traffic type (to the extent possible) for FDR Nos.150 above and below mill site, 150B, and 2741 above and below the evaluation adit access road to determine average daily traffic. The report should also define any necessary changes to the traffic management plan. This report may be included with the annual Threatened and Endangered Species Monitoring Report.

o. Water Resources Monitoring Plan Report. Sterling will prepare quarterly and annual reports to summarize information and data obtained during implementation of the Rock Creek water monitoring program. The report will include data tabulations, analysis of

[10] The detail on the Transportation Monitoring Plan is not included in the FEIS but the agencies determined some monitoring was necessary in order to monitor the effectiveness of the traffic management plan.

trends, statistical computations, maps, cross sections, and diagrams needed to clearly describe hydrologic conditions. Sterling will also submit computerized data and analyses in a format acceptable to the Agencies. *All company and third-party laboratory results should be submitted to the agencies upon completion of lab testing to track trends between reporting periods.*[11]

p. MPDES Permit Monitoring Reports. There are separate monitoring report requirements for each outfall. They are more fully defined in the MPDES permit and statement of basis in Appendix D of the FEIS.

(1) Monitoring of the discharge from the water treatment plant to the Clark Fork River under the MPDES permit ranges from continuous, to twice a day, to 2 or 3 times a week, to weekly, to semi-annually, to annually depending upon the parameter as defined in the permit for Outfall 001. The Discharge Monitoring Report shall be submitted monthly.

(2) Ground water monitoring wells are to be sampled monthly and/or quarterly depending upon the parameter as defined in the permit. Beginning the first calendar quarter after the effective date of the MPDES permit, Sterling shall submit a quarterly report describing the activities undertaken relative to ground water monitoring for Outfall 002, Paste Storage Facility. The report shall be submitted to the department and postmarked not later than the 28th day of the month following the calendar quarter.

(3) Sterling shall report all discharge events from Outfall 003, Paste Storage Facility Storm Water Detention Pond Overflow, by separate letter submitted with the DMR, listing the time the discharge began, the duration of the discharge, the form of precipitation, and sampling history. Flow rate is sampled continuously while other parameters specified in the permit are sampled daily for the duration of the discharge.

(4) In the event of a discharge event from Outfall 004, Mill Area Underdrain Containment and Storm Water Retention Pond, a grab sample must be taken within the first 30 minutes; if that is not possible, then a grab sample will be taken within the first hour and an explanation of why the earlier sample could not be taken must be provided. Sterling shall report all discharge events from Outfall 004 by separate letter submitted with the DMR, listing the time the discharge began, the duration of the discharge, the form of precipitation, and sampling history. Flow rate will be sampled continuously while other parameters specified in the permit will be sampled daily for the duration of the discharge.

(5) Discharges from Outfall 005, Domestic Sewage, Internal Outfall will be monitored continuously for flow rate when a discharge occurs. The other 5 parameters will be measured or calculated on a weekly or monthly basis. All data for this outfall is to be reported in the DMR. If no discharge occurs during the entire monitoring period, it shall be stated on the DMR form that no discharge or overflow occurred.

q. Wetlands Mitigation Site Monitoring Reports. Within 6 weeks of completion of each wetland mitigation site, a report will be submitted to the appropriate agencies describing the as-built status of each mitigation site. The report will contain topographic maps and will identify the location and types of planting and any other installation of mitigation features. Wetland mitigation sites will be monitored annually for 5 years after

[11] The additional requirement of submitting laboratory data prior to formal monitoring reports was added after input from EPA, October 17, 2001.

construction to evaluate the success of the establishment of wetland functions and values. Thereafter, monitoring will be conducted every 2 years through the end of mining unless it is mutually agreed with the regulatory agencies that final success criteria have been met. These annual reports will include monitoring results including wetland hydrology, performance criteria, soils fertility and stability, and vegetation establishment and will be submitted to the COE for their review and approval. This monitoring plan is included in Sterling's Wetland Mitigation Plan in Appendix L.

r. Wildlife Monitoring Reports. An annual report will be filed with the agencies stating that the appropriate information has been gathered and/or funded, as defined by the individual monitoring programs, and submitted to the appropriate agencies (FWP, FWS, USFS). Reports will also incorporate any correspondence from those agencies regarding impact trends, the need to modify mitigation plans and/or monitoring reports, or other pertinent information. The following elements will be covered:

(1) neotropical migrant birds;
(2) mountain goats;
(3) wolverines;
(4) sensitive animal species--harlequin ducks are the only sensitive animal species initially identified to be monitored;
(5) road and trail closures (may be included with Threatened and Endangered Species Monitoring Report).

ATTACHMENT 4

Clarification Terrestrial Threatened And Endangered Species Mitigation Plan

TERRESTRIAL THREATENED and ENDANGERED SPECIES MITIGATION PLAN
for the
PROPOSED STERLING ROCK CREEK MINE

This mitigation plan displays the specific items identified that are required to reduce, eliminate, or provide substitution for environmental consequences to species federally listed as threatened or endangered. It covers implementing alternative five as displayed in the final environmental impact statement for the STERLING Rock Creek Mine project and supports requirements from the U.S. Fish and Wildlife Service Biological Opinion. This mitigation plan will be implemented by STERLING and appropriate state and federal agencies. Timing of completion of this plan is tied to three phases of mine activity (evaluation adit – requires letter to proceed, construction – requires letter to proceed, operation – requires letter to proceed, estimated to start 5 years after construction starts).

A. To reduce mortality risk (avoid incidental take) to Threatened and Endangered species STERLING will comply with the following, under the direction of the Forest:

1. Develop a transportation plan designed to minimize mine related vehicular traffic, traveling between state highway 200 and the mill site, and minimize parking availability at the plant site. Busing employees to the mill site will be a part of the plan. Forest Service approval required. The plan will be in place prior to starting the evaluation adit.

2. NOT use salt when sanding during winter plowing operations to reduce attracting big game, which can result in vehicles killing them. That in turn could draw bald eagles, wolves and grizzly to the road corridor and increase mortality.

3. Daily remove vehicular killed deer and elk from road rights-of-way within the permit area and along roadways used for access or hauling ore (FDR 150, 150A and new roads built for the project). Road kills would be moved at least 50 feet beyond the right-of-way clearing or as far as necessary to be out of sight from the road. During construction and the first three years of full operation, STERLING would monitor the number of big game animals killed on these roads and report findings annually. They would also monitor and report (within 24 hours) all grizzly bear, bald eagle, lynx, wolf and black bear mortalities within the permit area. If a T&E species mortality occurs, and the grizzly bear specialists or law enforcement officer feel it is necessary to avoid grizzly bear or other T&E species mortality, STERLING would be required to haul the road kill to a dumping location approved by Montana Fish, Wildlife and Parks (MFWP).

4. Construct power lines following criteria outlined by Olendorff, Miller and Lehman (1981) to reduce potential for electrocution of bald eagles.

5. Fund a local MFWP grizzly bear management specialist (with focus on public information and education) position to aid in grizzly bear conservation for the life of the mine. This would have been the same position required in the Record of Decision for the Montanore Project (9/93), not an additional one. Since the Montanore project is not proceeding, STERLING will be responsible to fully fund the position. Funding would be provided prior to starting the evaluation adit to cover the first 3 years. The position would be stationed in the lower Clark Fork valley. The purposes are to reduce mortality risk through (1) education of the public on the law and penalty for violation (illegal killing of T&E species); (2) education of hunters on bear identification to reduce accidental killing of grizzly and (3) educate the public on biological needs of the grizzly so that an understanding exists that reduces "social jeopardy" and 4) educates the public on storage of human and pet (animal)

food in bear habitat to prevent and correct sanitation problems. The position description and an initial list of work items will be developed jointly by the agencies (including but not limited to Forest Service, U.S. Fish and Wildlife Service (here after "the Service"), Montana Fish, Wildlife and Parks) and Sterling representatives.

6. Fund a local MFWP law enforcement position for the life of the mine. This would have been the same position required in the Record of Decision for the Montanore Project (9/93), not an additional one. Since the Montanore project is not proceeding, STERLING will be responsible to fully fund the position. Funding would be provided prior to starting the evaluation adit to cover the first 3 years. The position would be stationed in the lower Clark Fork valley. The position description and an initial list of work items will be developed jointly by the agencies (including but not limited to Forest Service, the Service, Montana Fish, Wildlife and Parks) and Sterling representatives.

The Forest shall ensure that the law enforcement and information and education positions (grizzly bear personnel) required in the revised mitigation plan comply with the following:

a. Positions shall be located in the Clark Fork River side of the ecosystem.

b. Grizzly bear personnel shall be new positions with Montana Fish Wildlife and Parks.

c. Funding intended for the grizzly bear personnel positions will not be used to support already existing positions with Montana Fish Wildlife and Parks.

d. Duties for the law enforcement position shall be designed as a State grade 14 and will be primarily directed at wildlife issues in the southern Cabinet Mountains of the CYE.

e. Duties for the information/education position shall be designed as a grizzly bear management specialist State grade 14 and will be specifically tied to bear activities in the southern Cabinet Mountains of the CYE.

f. Grizzly bear personnel shall be fully-funded for the life of the mine through the reclamation period and including shut-down periods to provide for long-term consistency, the establishment of relationships with the resident public, familiarity with issues and potential problems in the area, and to address the large number of people who may remain in the area even in the event of temporary mine shut-downs.

g. Grizzly bear personnel will be operational, with all supportive equipment, vehicles and gear, prior to the letter to proceed on the evaluation adit.

h. Establish and maintain (through coordination with the two grizzly bear personnel) a mandatory reporting system to ensure that the Sterling Mining Company and U.S. Forest Service employees are required to immediately report any black bear or grizzly bear incidents, observations or mortalities to both grizzly bear personnel to ensure that pre-emptive management, hazing, or removal of food attractants would occur to avoid further risks of habituation, mortality or displacement of grizzly bears. The reporting system would also be coordinated with the Service grizzly bear management specialist in Libby and would provide a mechanism to collect reliable information from the public on such incidents, although such reporting could not be required.

7. Use bear-resistant containers to hold attractants at all Rock Creek facilities. Remove contents in a timely manner (weekly unless a problem develops or grizzly bear personnel recommend a more

frequent schedule). Containers will be in place at each mine facility site prior to starting any work on each site.

8. Avoid the use of clovers or other plants attractive to black or grizzly bears in the seed mix used on open roadways or any facility associated with the Rock Creek Mine (except as rehabilitation on closed roads or mitigation habitat where attracting bears would be encouraged).

9. Prohibit employees from carrying firearms within the permit area, except for security officers and other designated personnel. Identify consequences for violations in the an employment contract so employees will be aware of consequences prior to beginning their employment.

10. Prohibit employees from feeding wildlife (including dropping food stuffs from lunches etc.) to avoid attracting bears or other wildlife into conflicts with people and encouraging habituation. Identify consequences for violations in an employment contract so employees will be aware of consequences prior to beginning their employment.

11. Fund the acquisition of bear resistant garbage containers to be placed in all developed campgrounds within Bear Management Units 1, 2, 3, 4, 5, 6, 7, 8 and 9 (pack in/pack out sites will not require garbage containers). *The Forest shall ensure that Sterling Mining Company provide bear resistant garbage receptacles for all U.S. Forest Service campgrounds an facilities where garbage facilities are normally provided within the Cabinet portion of the CYE recovery zone (in BMUs 1-9). This includes those in MS-3 habitat, which often serve as the greatest risk to habituate bears and increase risk of bear removal through defense of life or property incidents or management action.*

12. Require mine employees (including all management staff) to attend training related to living and working in grizzly bear habitat prior to starting work and on an annual basis thereafter or as scheduled by the grizzly bear management personnel.

B. To maintain habitat effectiveness for Threatened and Endangered species, STERLING will, under the direction of the Forest:

1. Secure or protect (through conservation easement, including road closures, or acquisition in fee with conveyance of fee or perpetual conservation easement to the Forest Service) from development (including but not limited to housing, motorized access) and use (timber harvest, grazing, mining) replacement habitat to compensate for acres lost by physical alterations, or acres with reduced habitat availability due to disturbance. Replacement acres for Alternative Five are: 2350. The "in kind" replacement acres must provide 2.61 early (6133.5 total), 1.61 late (3783.5 total) for an overall 2.11 habitat unit value (4958.5 total overall HUs). Replacement habitat will be provided using the following schedule:

Activity Area	Replacement Acres	Timing
Evaluation Adit	53	Prior to Eval. Adit
Tailings & AF	806	Prior to Construction
Mill & AF	248	Prior to Construction
Ventilation Adit	10	Prior to Construction
New Roads	102	Prior to Construction
Existing Roads (Reconstruction)	565	Prior to Construction
Existing Roads (Increased Influence)	566	Prior to Operations
Total Alternative 5	2350	Prior to Operations

AF = Associated Features

This schedule will have all replacement habitat (except ventilation adit) in place prior to starting full operations (end of year 5). Replacement habitat to the ventilation adit will be in place prior to construction, if the adit becomes necessary.

Either fee title or conservation easements are acceptable. Conservation easements will be in perpetuity and transferred to the Forest Service. If fee lands are retained in private (non-Forest Service ownership) a conservation easement protecting the land in perpetuity must be conveyed to the Forest Service. Fee title lands may be considered for donation or land exchange with the Forest Service. Costs of processing land exchanges, and preparing and accepting conservation easement by the Forest Service for these acres will be funded by Sterling. Land exchanges would be for equal valued lands as determined by a federal land appraisal. Any exchange must be beneficial to the Forest Service. First choice for replacement habitat is within the disturbed BMUs (4,5,6). If adequate replacement acres are not available in those BMUs then acres may be found in other BMUs (7 & 8) within the southern portion of the Cabinet Mountains. See the Replacement Habitat Assessment for acceptable lands to consider **(Not available to public until replacement habitat mitigation completed).**

Forst Service and US Fish and Wildlife Service will have final approval of mitigation acres and associated conservation easements prior to closing and recording.

The Forest shall ensure that the 2350 acres of mitigation properties be managed for grizzly bear habitat in perpetuity. Properties acquired in fee by Sterling Mining Company must either be transferred to the U.S. Forest Service or must be protected by perpetual conservation easement transferred to the U.S. Forest Service. Easement properties acquired by Sterling must be transferred to the U.S. Forest Service. The 2350 acres of mitigation properties must meet the following requirements:

a) Mitigation properties shall be pre-approved by the Service to meet one or more of the following:

i *restore or improve bear security habitat (HE and core) in the Southern Cabinet Mountains, particularly in the constricted north-south grizzly bear movement corridor;*

ii *improve habitat conditions related to established access standards (open motorized route density, total motorized route density) in BMUs 4,5, and 6,*

iii *reduce existing threats of development, food attractants or mortality risks in the Southern Cabinets,*

iv *reduce potential threats of development, food attractants or mortality risks in the Southern Cabinets,*

v *protect seasonally important habitats, with an primary emphasis on spring, and secondary emphasis on fall habitats*

vi *would maintain or increase MS-1 habitat (including the potential of acquiring and converting MS-3 properties or lands adjacent to the CYE recovery zone that have high mortality risks to MS-1 if those risks could be eliminated under Federal ownership).*

b) Fee-title properties or transfers (trades) of NFS lands must meet standards, requirements and legal processes for Federal acquisition or trade, including, but not limited to:

i *approval by the Office of General Counsel,*

ii *be a Warranty Deed conveyance*

iii *comply with Department of Justice standards,*

iv *be free of hazardous materials, or develop an agreement among MOU signers as to appropriate remedy prior to acquisition*

v *include all surface and sub-surface rights including rights-of-ways, mineral claims, and/or other easements, unless otherwise approved by the Service*

vi *be acquired in priority order. Lower priority acquisitions may be allowed, when approved in advance by the Service to ensure that such a property would contribute to avoiding jeopardy.*

vii meet fair market appraised value, according to U.S. Forest Service appraisal processes with the allowance that the Sterling Mining Company could contribute additional funds to facilitate unequal appraised value trades, as approved by the Management Plan if the affected parcels are approved in advance by the Service as being important to avoid jeopardy

viii *be acquired and recorded prior to the letter to proceed on the associated phase of the mine, with total acquisitions completed prior to the letter to proceed on the construction phase of the mine.*

c) Conservation easements must include language approved in the Management Plan and meet standards, requirements and legal processes for Federal acquisition or trade, including, but not limited to:

i *approval by the Office of General Counsel,*

ii *have the conservation easement be attached to the Warranty Deed*

iii *comply with Department of Justice standards,*

iv *be free of hazardous materials, or develop an agreement among MOU signers as to appropriate remedy prior to acquisition*

v *Include all surface and sub-surface rights including rights-of-ways, mineral claims, and/or other easements, unless otherwise approved by the Service*

vi *be acquired in priority order. Lower priority acquisitions may be allowed, when approved in advance by the Service to ensure that such a property would contribute to avoiding jeopardy.*

vii *meet fair market appraised value, according to U.S. Forest Service appraisal processes with the allowance that the Sterling Mining Company could contribute additional funds to facilitate unequal appraised value trades, as approved by the*

Management Plan if the affected parcels are approved in advance by the Service as being important to avoid jeopardy

viii be acquired and recorded prior to the letter to proceed on the associated phase of the mine, with all mitigation habitat acquired and recorded prior to the letter to proceed on the construction phase of the mine, excepting the mitigation habitat that may be necessary in the event the ventilation adit is required. Mitigation habitat for the ventilation adit would be acquired prior to the letter to proceed on development of the ventilation adit, should it be necessary.

The Forest shall implement access management improvements on lands acquired in the revised mitigation plan. The Service requires specific mitigation properties to be acquired to improve habitat security, core area, total motorized route density and open motorized route density and will assess other areas prior to acquisition to ensure these lands will be sufficient to avoid jeopardizing the CYE grizzly bear population. These specific areas will be withheld from public disclosure due to their sensitive nature until acquisitions have been finalized.

The Service will work with the Forest in determining how road management associated with that property can improve access standards, with the goal of managing BMU 4,5 and 6 above levels in the Access Ammendment FEIS (March 2002). The Service believes that 35 years of 24 hour disturbances as expected with Rock Creek Mine necessitate access management at a conservative level while the disturbance is ongoing. The acquisition of mitigation habitat may provide opportunities to manage access management at these levels in BMU s 4,5, and/or 6. Should mitigation property be acquired that would enable access management at these levels, the Service expects that the Forest will provide the bears using BMU's 4,5 and 6 the optimum level of access management to reduce displacement and mortality risks during the life of the mine.

2. Fund habitat enhancement, commensurate with loss of habitat effectiveness. Enhancements include, but are not limited to, prescribed fire to restore whitebark pine, road closures and obliterations. Enhancements are preferred in the affected BMUs, however if opportunities are not available, then work may be done in BMUs in the southern portion of the Cabinet Mountains. Generally enhancements would occur in relation to replacement habitat acres. Enhancements associated with replacement acres will occur in a timely manner as agreed to by the agencies.

BMU	% H.E. Change	Acres H.E. Mitigation
4	+ 1.0	0
5	- 1.1	348
6	- 0.3	136

C. To reduce mortality risk, maintain habitat effectiveness, reduce incidental take and avoid jeopardy for Threatened and Endangered species the Kootenai National Forest, with STERLING funds, will:

1. Close the following roads prior to the start of construction phase (see maps):

Road Number	Road Name	Closure Miles	Closure Period	Closure Method
2285	Orr Creek	1.61	Yearlong	Barrier
2741X	unnamed	0.18	Yearlong	Barrier
2741A	unnamed	0.51	Yearlong	Barrier
150	Rock Creek	2.92	Yearlong	Gate *

* 2.5 miles gated (south end), 0.42 miles obliterated (north end) - see map

2. Implement a mandatory food storage order for Bear Management Units 4, 5 and 6 prior to allowing Sterling to start the evaluation adit.

3. Monitor use on the Rock Lake and St Paul Lake trails to assure use levels do not exceed "high use" as defined by the IGBC. A recreational use management plan will be developed to assure high use does not occur. The plan will be implemented when monitoring indicates high use has occurred during one bear season. The plan will be prepared within 3 years of the signature date on the Record of Decision and must be signed by the involved agencies (Forest Service, US Fish & Wildlife Service).

D. To address habitat constriction that reduces the potential to achieve CYE grizzly bear recovery goals (by impacting individuals in the Cabinet Mountains) and to avoid Jeopardy, STERLING will:

1. Secure or protect (through conservation easement, including road closures) or acquisition in fee with conveyance of fee or perpetual conservation easement to the Forest Service from development (including but not limited to housing, motorized access) and use (timber harvest, grazing, mining) 100 acres of replacement habitat that will enhance the north to south habitat corridor in the Cabinet Mountains. These lands are in addition to those identified under mitigation item B-1. All acres of replacement habitat for the constriction impact will be secured prior to starting the evaluation adit. See the Corridor Replacement Habitat Assessment for acceptable lands to consider **(Not available to public until corridor replacement habitat mitigation completed)** Fee title lands within the corridor would be placed in public ownership either through donation or land exchange. Costs of processing land exchanges, and preparing and accepting conservation easement by the Forest Service for these acres will be funded by Sterling. Land exchanges would be for equal valued lands as determined by a federal land appraisal. Any exchange must be beneficial to the Forest Service. All land interest conveyed to the Forest Service must be acceptable and approved by the Office of General Counsel. Fee title land must be conveyed by Warranty Deed in accordance with Department of Justice standards. All property, or interest in property, shall be inspected for hazardous substances in accordance with law, regulation and policy. If hazardous substance are found an agreement needs to be reached on removal and remedial action.

The Forest shall ensure that, the 100 acres of mitigation habitat required to enhance the north-south corridor in the Cabinet Mountains:

a. the fee title or perpetual conservation easement to the 100 acres of mitigation property, be acquired by or transferred to the U.S. Forest Service;

b. include the specific properties identified by the Service to avoid jeopardy (which will be released to the public when acquisition has been completed and recorded);

c. be pre-approved by the Service as properties that will avoid jeopardy, and, once approved, will be acquired and recorded prior to the letter to proceed on the evaluation adit;

d. be managed as grizzly bear security habitat (core) throughout the life of the mine, including the reclamation period and any temporary or extended shutdown periods, and thereafter managed in a manner consistent with grizzly bear conservation requirements;

e. maintain or improve existing baseline core requirements (or other goals affiliated with Alternative E of the FEIS for Access Amendment on the Forest, Lolo and Panhandle National Forests, USDA 2002b); and

f. have any habitat enhancement activities needed to improve the mitigation properties, such as road closures or restoration, be planned and funded prior to the letter to proceed on the associated phase of the mine. Implementation will occur as soon as feasible (e.g. upon completion of any required NEPA process).

E. To assure compliance with the T&E species mitigation plan, and effectiveness of the management plan STERLING will:

1. Establish a trust fund and/or post a bond, prior to initiating any activities, to cover the mitigation plan implementation costs. The amount in the fund or posted in a bond will be commensurate with projected work and associated required mitigation items (see table below). Initial cost estimates; in year 2000 dollars are about $7.66 million over the life of the mine. Actual amount will be adjusted for inflation.

Estimated Deposit Summary:

Year	Deposit/Bond
1	$ 1,282,300
5	$ 2,128,200
15	$ 4,250,000

2. Participate in the development of and be a signer on a Memorandum of Understanding (MOU) that

The Forest shall develop with the Service, FWP, Sterling Mining Company and other parties deemed appropriate by the Forest. The MOU must be completed prior to the Forest issuing Sterling Mining Company the letter to proceed with the evaluation adit. The MOU shall establish roles, responsibilities and time lines of an Oversight Committee comprised of members of the Forest, Montana Department of Fish, Wildlife and Parks, Sterling Mining Company, the Service, and other parties deemed appropriate by the parties named.

The Oversight Committee shall be responsible for the development of a Comprehensive Grizzly Bear Management Plan and its implementation. The Comprehensive Grizzly Bear Management Plan shall focus on the Cabinet portion of the CYE and would fully include all provisions of the Forest's mitigation plan for grizzly bears, except where superceded by the Service's Biological Opinion. It would also

include provisions for adaptive management. The plan would be developed in detail by the parties and agreed to in writing by the Fish and Wildlife Service to assure that human access to grizzly bear habitat, grizzly bear habitat quality, grizzly bear mortality, and habitat fragmentation issues shall be addressed to the extent that jeopardy would be avoided.

The Oversight Committee, led by the Forest, shall over the 35-year life of the mine:

a) assume responsibility for coordinating various aspects of the Management Plan;

b) assume responsibility for maintaining effective communication among all Committee members, stake holders, and interested public;

c) integrate the principles of adaptive management; collect, disseminate where needed, and review new information on grizzly bears, the results of implementation of the Comprehensive Grizzly Bear Management Plan over time, and other information related to CYE grizzly bears. If information or relevant data indicate appropriate, ensure the needed analysis and development of recommendations for changes or additions to the mitigation plan over the 35 year life of the mine, if such action is needed to ensure the proposed action is not likely to jeopardize the CYE grizzly bear population. The Service would review proposed revisions to the Comprehensive Grizzly Bear Management Plan under appropriate section 7 provisions, if required.

The Service shall be a full partner in the development of the MOU and subsequent Comprehensive Grizzly Bear Management Plan, and must agree to the plan in writing, to assure that the plan would serve to avoid jeopardy.

The MOU shall be completed prior to the letter to proceed on the evaluation adit and require the Forest to:

1) Ensure the Management Plan is completed prior to the construction phase of the mine.

2) Establish time frames for mitigation and implementation of other management to occur prior to the letter to proceed on the phase of the mine associated with that mitigation or management activity.

3) Ensure adequate funding, from Sterling, to implement the revised mitigation plan according to the time frames.

4) Comply with legal guidelines or processes in as timely manner as possible in order to meet the mitigation plan and/or Comprehensive Grizzly Bear Management Plan implementation schedule.

5) Ensure that the mitigation properties and Comprehensive Grizzly Bear Management Plan be approved by the Service to avoid jeopardy to the CYE grizzly bear population according to the schedule(s) described in section B of this mitigation plan. All mitigation properties not specifically mentioned shall have undergone all necessary procedures for procurement including recordation, prior to the letter to proceed on the associated phase of the mine.

6) Establish language and legal procedures to ensure that mitigation properties acquired through fee title, land transfer or conservation easement:

a. are perpetual;
b. meet federal policies and regulations regarding such realty actions;
c. have Service approval that they would avoid jeopardy;

d. would be implemented and recorded in advance of the phase of the mine with which they are associated;
e. would increase or at least maintain a no net loss of MS-1 CYE habitat;
f. would be adequately funded such that enforcement of easement terms is assured;
g. would be selected on a priority basis with biologically justifiable rationale approved by the Service to choose lower priority properties;
h. would ensure management in support of grizzly bear survival and recovery if in public ownership.

The Comprehensive Grizzly Bear Management Plan shall include this mitigation plan, except where the mitigation plan has been superceded by the Service's Biological Opinion. In addition, processes shall be established to ensure that access management, prevention of habituation, educational opportunities, reporting and monitoring, enforcement of easements, and management actions are being adequately implemented. Further, the Comprehensive Grizzly Bear Management Plan will establish processes to revise management, access, education or habitat enhancement strategies as new research or policies, such as revised IGBC guidelines.

3. Contribute funding to support radio telemetry monitoring of bear movements in the Southern Cabinet Mountains to confirm the effectiveness of mitigation measures implemented to provide a secure north to south movement corridor. The Forest shall ensure that adequate funding, provided by Sterling, is available to monitor bear movements and use of the Southern Cabinet Mountains to confirm the effective implementation of mitigation measures. Information gained would be useful in determining whether the mitigation plan is working as intended. If not, the information would help in developing new management strategies that would be incorporated in the Biological Opinion through appropriate ammendments. Funding would supplement ongoing research and monitoring activities in the CYE, would be conducted or coordinated by the Service's grizzly bear researcher in Libby or his equivalent and would focus on grizzly bears in the Cabinet Mountains. Funding would include money for the following (but not limited to): trapping, hair sampling and analysis, radio collars, flight time, monitoring, and data analysis, including all equipment and support materials needed for such monitoring. The Forest shall ensure that funding, provided by Sterling, is available on an annual basis, two months in advance of the fiscal year (October) of the year it is to be used for the life of the mine. Details of the monitoring activities and budget would be outlined in the Management Plan. Funding would be provided prior to the letter to proceed on the evaluation adit and would continue throughout the life of the mine through the reclamation phase.

ATTACHMENT 5

RECLAMATION BONDING CALCULATION FORMS

Evaluation Adit Construction and Reclamation
Mine Construction, Operation, and Reclamation

STERLING MINING COMPANY **Date: 12/04/2001**
ROCK CREEK PROJECT **Status: Draft**
EVALUATION ADIT RECLAMATION BOND COST ESTIMATE

COST SUMMARY

	Reclamation Item	Description	Estimated Cost ($)				Reference/Notes
A.	**Evaluation Adit**						
	Portal Closure	18' x 18' portal	$250,000				
	Portal Apron & Waste Dump ($) =	59,000 tons of waste	$118,074				
	Road/Access Reclamation ($) =	FDR 2741	$5,000				
	Infra-structure Removal ($) =	Site facilities	$51,237				
	Water Line Removal ($) =	8.5 miles	$28,745				
	Waste Disposal ($) =		$10,000				
	Miscellaneous ($) =		$25,000				
	Sub-Total Evaluation Adit =			$488,056			
B.	**Support (Water Treatment) Facilities**						
	Water Treatment for 1 Year ($) =	Adit and RO	$154,000				
	Facilities Demolition ($) =	Site facilities	$72,237				
	Waste Disposal ($) =		$5,000				
	Diffuser Removal ($) =	Clark Fork River	$5,000				
	Site Reclamation ($) =	1.3 acres	$10,000				
	Sub-Total Support Facilities =			$246,237			
C.	**Other**						
	Monitoring Plan Programs ($) =	as per FEIS	$625,000				
	Reclamation Maintenance ($) =	post-closure	$91,080				
	Interim Site Management ($/yr) =	3rd party mgmt.	$178,125				
	Project & Construction Management ($) =	3rd party mgmt.	$170,313				
	Sub-Total Other Costs =			$1,064,518			
	Sub-Total Direct Costs =				$1,798,811		
	Indirect Costs						
	Mobilization @ 5% =		$89,941				
	Agency Administration @ 10% =		$179,881				
	Design & Engineering @ 5% =		$89,941				
	Contingencies @ 15% =		$269,822				
	Sub-Total Indirect Costs =				$629,584		
						$2,428,394	
	Inflation @ 3% per year for 2 years =					$147,889	
	TOTAL ESTIMATED RECLAMATION COST =						**$2,576,000**

ASSUMPTIONS FOR CALCULATIONS

Water Flow to Biotreatment (gpm)		Reference/Notes
Year 5 =	304	
EXPLORATION ADIT		
Disturbance Area (ac) =	8.3	(FEIS, 2001)
Tons of waste (t) =	59,000	(FEIS, 2001)
Tons of stockpiled ore (t) =	118,000	(FEIS, 2001)
Total tons (t) =	178,000	
Density (loose, pcf) =	105	
Cubic Yards =	125,573	
Soil Stockpile (cy) =	8,758	(FEIS, 2001)
Average Replacement Depth (in) =	12	(FEIS, 2001)
Office/shop:	40'x80'	(FEIS, 2001)
Fuel tank:	20,000 gallon	(FEIS, 2001)
Storage pond (lined):	30,000 gallon	(FEIS, 2001)
Surface water ditches (ft) =	700	(MDEQ,2001)
Exploration Adit Support Facilities		
Disturbance Area (ac) =	1.3	(FEIS, 2001)
Soil Stockpile (cy) =	4,195	
Replacement Depth (in) =	24	(FEIS, 2001)
Office:	12'x60'	(FEIS, 2001)
Change House:	24'x60'	(FEIS, 2001)
Garage & Warehouse (slab-on-grade)	50'x70'	(FEIS, 2001)
Parking lot		(FEIS, 2001)
500 gal fuel tank		(FEIS, 2001)
Exploration Adit Water Treatment		
Water Line, 6" poly (mi) =	8	(FEIS, 2001)
Treatment:	Filtration, skimmer, passive biotreatment & ion exchange	(FEIS, 2001)
180 gpm pilot scale bio-treatment		(FEIS, 2001)
RO Back-up		(FEIS, 2001)
Discharge to Clark Fork (diffuser in river)		(FEIS, 2001)

A. EVALUATION ADIT

1) PORTAL CLOSURE			Reference/Notes
Portal Closure (ls) =		$250,000	(From Troy Unit, 2000)
2) PORTAL APRON & WASTE DUMP			
Regrading			
Waste dump tonnage (t) =	59,000		
Waste dump volume (cy) =	42,150		
Angle of Repose slope regraded to 2:1			
Estimated regrade cost =		$24,224	(DOZSIM, 2000)
Dump Top Ripping			
Assume dump top dimensions = 500' x 150'			
Ripping depth (ft) =	2		
Estimated volume to be ripped (cy) =	5,555		
Estimated D8 ripping production @ 75% efficiency (cy) =	225		
Estimated ripping cost ($) =		$3,350	
Topsoil & Revegetation			
Use CAT 966 loader or equivalent to transport topsoil			
Use D8 dozer to spread topsoil			
Assume lime addition for dump top @ 30TCaCO3/1000T rock			(MDEQ, 2001)
Total lime addition needed (T) =	540		
Cost of lime delivered ($/T) =	$100		(MDEQ, 2001)
Total cost for lime amendment ($) =		$54,000	
Approximate disturbance area for topsoil (ac) =	5		(ASARCO, 1992 expl. adit)
Salvaged topsoil (cy) =	8,757		(ASARCO, 1992 expl. adit)
966 loader hauling @ 75% efficiency (cy/hr) =	300		
Hours required for transport (hr) =	29		
Cost for topsoil transport ($) =		$3,000	
Cost for topsoil spreading using D8 ($) =		$9,000	(DOZSIM, 2000)
Revegetation @ $2500 per ac =		$12,500	(MDEQ, 2001)
Other			
Surface drainage: 700 ft @ $10/ft =		$7,000	(Zortman. -Landusky. project, 2000)
Miscellaneous grading (ls) =		$5,000	(MDEQ, 2001)
Sub-Total Portal Apron & Waste Dump =		$118,074	

3) **INFRASTRUCTURE REMOVAL**					Reference/Notes
Buildings	40'x80' steel side shop/office complex; slab on grade 20,000 gal fuel tank, containment and appurtenances				
Demolition					
	Building demolition (assume 20' eave height) @ $0.25.cf =		$16,000		(RS Means, '99)
	Estimated off hauling of building materials (ls) =		$10,000		(MDEQ, 2001)
	Estimated disposal of building materials (ls) =		$5,000		(MDEQ, 2001)
	Concrete slab breakup (80'x40'x0.5', WWM @ $71.50/cy) =		$4,237		RS Means, '99
	Concrete slab removal (load & haul est. 90 cy) =		$2,000		RS Means, '99/MDEQ,2001
	Tank (ls) =		$5,000		RS Means, '99/MDEQ,2001
	Off load tank products, transport & disposal		$2,000		RS Means, '99/MDEQ,2001
	Tank disposal (ls) =		$2,000		RS Means, '99/MDEQ,2001
	Mine water pond removal/liner disposal (ls) =		$5,000		(MDEQ, 2001)
	Sub-total =			$51,237	
Pipeline					
	Six (6) inch water discharge pipeline				
	Estimated length of pipeline @ 8 miles (ft) =	42,240			
	Removal cycle: cut into 20' lengths; load with backhoe/loader				
	onto logging truck or similar; 5 hour round trip haul to disposal site				
	2 laborers @ $22/hr for 80 hours =		$3,520		(MDEQ, 2001)
	Loader & truck @ $145/hr combined				
	100-20'sections per load				
	21 trips total of 5 hrs/ea @ $145/hr =		$15,225		(MDEQ, 2001)
	Reclaim pipeline corridor (ls) =		$10,000		(MDEQ, 2001)
	Sub-total =			$28,745	
Access Road (FDR 2741)					
	Minor post-closure rehabilitation (ls) =		$5,000	$5,000	(MDEQ, 2001)
Waste Disposal					
	Evaluation adit site waste disposal (ls) =		$10,000	$10,000	(MDEQ, 2001)
Miscellaneous					
	Miscellaneous reclamation items (ls) =		$25,000	$25,000	(MDEQ, 2001)
	Sub-Total Infrastructure Removal =			$119,982	

B. WATER TREATMENT FACILITY

1) TREATMENT FACILITY & APPURTENANCES			Reference/Notes
Facilities	50'X70' slab-on-grade, pre-engineered garage/warehouse complex; steel sided		
	1 24'x60' trailer (change house/dry facility)		
	1 12'x60' trailer (office)		
	Water treatment pilot plant: 180 gpm biotreatment facility w/ RO backup		
Operating Assumptions			
1) Adit	Assume nitrate levels in adit above discharge standards for minimum 1 year after cessation of mining		
	Allow 2 adit pore volumes to rinse residual nitrates from adit; assume nitrate treatment necessary for 1 year		
	Estimated adit discharge at completion (gpm) =	140	(ASARCO, 1992 expl. adit)
	Estimated time for adit flooding @ 140 gpm (days) =	80	
	Approximate volume of adit water requiring treatment (gal) =	32,000,000	
	Assume 50% safety factor		
	Volume of adit water needing treatment (gal) =	48,000,000	
	Assume RO plant needed for 1 full year after cessation of mining		
	Vertical head from adit sump to portal (ft) =	660	
	Other head losses (ft) =	100	
	Six (6) inch line from mine sumt to portal holding pond		
	Sump/pump station at midway point along adit length		
	2-25 hp pumps needed to dewater mine		
	Use existing line from portal to water treatment plant		
2) Treatment Plant	Assume water treatment for nitrate reduction only; no other water quality constituents require treatment		(MDEQ, 2001)
	Assume RO plant will be used for nitrate reduction		
	Estimated volume of water requiring nitrate reduction (gal) =	48,000,000	
	Approximate influent nitrate concentration (mg/L) =	17	(FEIS, 2001)
	Necessary nitrate effluent limit at outfall 001 (mg/L) =	8.4	(FEIS, 2001)
	RO plant will run as necessary to treat 48 Mgal		
	Assume RO plant will run periodically over the course of 1 year		
	Plant infrastructure and appurtenances in place and available		
	Costs associated with nitrate treatment for O & M only		
Adit Operation			
	2-25 hp pumps (hp) =	50	
	Cost for pumping 48 Mgal ($) =	$25,000	
	Materials and supplies (ls) =	$5,000	
	Adit access/ventilation (ls) =	$10,000	
	Operation and maintenance labor =(see treatment plant labor)		
	Sub-Total =	$40,000	

Plant Operation					
	Plant infrastructure includes at a minimum: holding pond(s), surge tanks,				
	pre-treatment filters for suspended solids, high pressure pumps for RO				
	Assume 2 FTE for operation and maintenance of plant and adit programs				
	Estimated pump size for RO (hp) =		125		
	Estimated pump size for discharge to diffuser (hp) =		2.5		
	Estimated pump size for pre-filter (hp) =		1		
	O & M labor requirements @ $32,000/ea =		$64,000		
	Plant materials and supplies (ls) =		$10,000		
	Plant operating costs (principally power) =		$30,000		
	Brine disposal (via re-circulation or LAD) =		$10,000		
	Sub-Total =		$114,000		
	Total Water Treatment Operating Requirements for 1 year Post Cessation ($) =			$154,000	
Demolition					
	Pre-engineered building demolition (use adit site estimate) =		$37,237		
	Dismantle & remove temporary treatment facility (ls) =		$25,000		(MDEQ, 2001)
	Trailer disconnect and off-haul (ls) =		$5,000		(MDEQ, 2001)
	Septic and other infrastructrure disconnect/abandonment (ls) =		$5,000		(MDEQ, 2001)
	Sub-total =			$72,237	
Waste Disposal					
	Miscellaneous site waste collection and disposal (ls) =			$5,000	(MDEQ, 2001)
Diffuser Removal					
	Water discharge disconnect, removal and disposal (ls) =			$5,000	(MDEQ, 2001)
Site Grading, Topsoil & Revegetation					
	Approx. site disturbance area (ac) =	2			
	Site grading and topsoil spreading (ls) =		$5,000		(MDEQ, 2001)
	Revegetation @ $2500/ac =		$5,000		(MDEQ, 2001)
	Sub-total =			$10,000	
	Sub-Total Water Treatment Facility Operation and Reclamation =			$246,237	

C. OTHER

1) MONITORING AND RECLAMATION MAINTENANCE

Monitoring Plans

Assume only the following monitoring plans will continue upon project abandonment:
MPDES monitoring requirements (at outfall 001 only) in effect for 5 years from time of adit development cessation.
Minor ARD testing continues
Seeps and springs monitoring to continue for duration of MPDES monitoring
Assume monitoring program issued under 1 contract

Annual Monitoring Program	Analytical Cost	Labor Cost	Total Cost
Water Resources, MPDES (ls) =	$50,000	$60,000	$110,000
Acid Rock Drainage (ls) =	$10,000	$0	$10,000
Springs & Seep Monitoring (ls) =	$5,000	$0	$5,000
Total Annual Cost ($/yr) =	$65,000	$60,000	$125,000

Total 5 Year Cost ($) = $625,000

Reclamation Maintenance

Assume 3 years post-reclamation needed for reclamation maintenance. Maintenance items to include at a minimum: weed control, reseeding, erosion control and repair.

Manpower: 2-man crew
Time: 1 month per year
Equipment: 1 backhoe (1 FTE), 1-12 cy dump truck (.50 FTE)
Materials: Topsoil, rip-rap, silt fencing, geotextile, pipe, seed, etc.

Yearly Maintenance Requirements:

Manpower (2 FTE @ $25/hr/ea over 4 weeks) =	$8,000	
Equipment (Backhoe @ 1 FTE, Truck @ .5 FTE over 4 wks) =	$17,360	
Materials @ $5,000/yr =	$5,000	
Sub-Total =	$30,360	
Total 3 year reclamation maintenance ($) =		$91,080

Sub-Total Monitoring & Reclamation Maintenance = $716,080

2) INTERIM SITE MANAGEMENT

Assumptions: 1) Interim site management required for 1 year
2) Assume third party project management required for interim prior to initiation of site reclamation.
3) Duties to include but are not limited to: monitoring of equipment (e.g., pumps and pipelines), regulatory compliance tracking, site security, miscellaneous fiscal responsibilities
4) Direct cost expenses to include bur are not limited to: insurance, lease requirements, power, telephone taxes, miscellaneous materials and supplies, legal obligations.

Interim site management labor:				
1 onsite FTE @ $30,000/yr =	$30,000			
1- 0.5 FTE proj. mgr. @ $75,000/yr =	$37,500			
Supplemental labor @ $15,000/yr =	$15,000			
Sub-total =		$82,500		
25% overhead premium =		$20,625		
			$103,125	
Interim site direct cost expenses:				
Direct cost expenses (ls) =			$75,000	
Sub-Total Interim Site Management =				$178,125

3) RECLAMATION PROJECT & CONSTRUCTION MANAGEMENT

Assumptions: 1) Third party project manager required for reclamation and construction oversight
2) Duties to include but are not limited to: regulatory compliance, preparation of construction drawings and specifications, contract administration, construction oversight, site security, ongoing site management and operation (water treatment) if required.
3) Direct cost expenses for ongoing infrastructure functions to be incurred during reclamation period . Use interim direct costs.
4) Assume reclamation to be completed in 1 year.

Reclamation Project & Construction Management				
1 onsite FTE proj. Mgr @ $65,000/yr =	$65,000			
0.25 FTE supplemental labor @ $45,000/yr =	$11,250			
		$76,250		
25% overhead premium =		$19,062.50		
			$95,313	
Reclamation Direct Cost Expenses				
Direct cost expenses (ls) =			$75,000	
Sub-Total Reclamation Project & Construction Management =				$170,313

STERLING MINING COMPANY
ROCK CREEK PROJECT
ESTIMATED RECLAMATION BOND LIABILITY

A. MINE CONSTRUCTION AND OPERATION PHASE

Direct Costs:		
Mill Site		
Item #1 Mill Demolition		$500,000
Item #2 Infra-structure Removal		$150,000
Item #3 Waste Disposal		$100,000
Item #4 Site Regrading, Topsoil & Revegetation		$250,000
Item #5 Power Line Removal ($10,000/mi)		$60,000
Item #6 Miscellaneous		$100,000
Category Subtotal		***$1,160,000***
Portal Area		
Item #7 Portal Plugging[3]		$1,000,000
Item #8 Portal Apron & Waste Dump Reclamation		$300,000
Item #9 Infrastructure Removal		$150,000
Item #10 Waste Disposal		$100,000
Item #11 Miscellaneous		$100,000
Category Subtotal		***$1,650,000***
Tailings Impoundment/Tailing Paste Facility		
Item #12 Impoundment Dewatering[4]		N/A
Item #13 Embankment Regrading		$3,000,000
Item #14 Embankment Topsoil & Revegetation		$2,000,000
Item #15 Surface Water Controls		$750,000
Item #16 Paste Facility Demolition		N/A
Item #17 Paste Site Clean-up		N/A
Item #18 Pipeline Corridor Reclamation		$50,000
Item #19 Infrastructure Removal		$250,000
Item #20 Waste Disposal		$100,000
Item #21 Miscellaneous		$100,000
Category Subtotal		***$10,050,000***
Water Treatment Facility		
Item #22 Treatment Facility Demolition		$200,000
Item #23 Waste Disposal		$100,000
Item #24 Diffuser Removal		$25,000
Item #25 Site Regrading, Topsoil & Revegetation		$50,000
Category Subtotal		$375,000
Other		
Item #26 Interim Care and Maintenance		$500,000
Item #27 Monitoring and Reclamation Maintenance		$2,000,000
Item #28 Mitigation Plan Implementation		$1,500,000
Item #29 Site & Construction Management		
Category Subtotal		***$6,000,000***
COMBINED SUBTOTAL		***$19,235,250***
Indirect Costs:		
Contingencies	*15%*	$2,887,988
Mobilization	*5%*	$962,663
Project Management, Design & Engineering	*5%*	$962,663
Agency Administration	*15%*	$2,887,988
Inflation[5]	*3%*	$3,065,117
TOTAL SURFACE FACILITIES RECLAMATION BOND AMOUNT		***$30,019,669***

B. WATER TREATMENT BOND

Capital Costs:	
Design & Testing	$500,000
Facilities Construction	$3,200,000
Miscellaneous	$100,000
Category Subtotal	***$3,800,000***
Annual Operating & Maintenance[6]	
Anoxic Biotreatment System	$750,000
Reverse Osmosis System	$175,000
Monitoring	$25,000
Miscellaneous	$250,000
Category Subtotal	***$1,200,000***
TOTAL WATER TREATMENT BOND AMOUNT[7]	**$14,381,518** **$44,423,628**

Notes: N/A = not applicable (to this alternative)

1 All values based on a conceptual level of design (+/- 30%).
2 Mill site for Alts. III and IV different; demolition costs comparable.
3 Includes cost of closing air intake ventilation adit.
4 Company proposal does not include active dewatering.
5 Inflation for 5 years
6 Costs based on 750 gpm plant.
7 Present value

Summary of the estimated cost for the Terrestrial Threatened and Endangered Species Mitigation Trust Fund Account

Mitigation Item	Cost [1]	Trust Fund Deposit		
		Years 1-5	Years 5-15	Years 15-30
Information and Education Position	$2,582,500.00	$392,500.00	$730,000.00	$1,460,000.00
Law Enforcement Position	$2,582,500.00	$392,500.00	$730,000.00	$1,460,000.00
Habitat Enhancement	$121,000.00	$121,000.00	$0.00	$0.00
Road Closures	$14,250.00	$14,250.00	$0.00	$0.00
Trail Monitoring	$185,250.00	$27,750.00	$52,500.00	$105,000.00
Bear-proof Garbage Cans for Food Storage Order	$6,400.00	$3,200.00	$3,200.00	$0.00
Bear-proof County Solid Waste Transfer Station	$10,000.00	$10,000.00	$0.00	$0.00
Monitoring	$18,600.00	$18,600.00	$0.00	$0.00
Trust Fund Administration	$50,000.00	$12,500.00	$12,500.00	$25,000.00
Grizzly Bear Radio Telemetry Monitoring	$2,100,000.00	$300,000.00	$600,000.00	$1,200,000.00
TOTAL DEPOSIT	**$.00**	**$.00**	**$2,128,200.00**	**$4,250,000.00**

[a] Funds are shown in 2000 dollars

ATTACHMENT 6

ROCK CREEK PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
ERRATA

The following errors were identified after the Rock Creek Project Final Environmental Impact Statement was printed and made available for public review. These changes do not affect the analysis or the conclusions made in the decision for this project.

Rock Creek FEIS page 4-8

Table 1 below revises Table 4-2 on page 4-8 of the FEIS. The acreage change identified in Table 1 is the result of recalculation by computer of the Forest database used in the FEIS that was originally l done by hand. The new acreage calculation does not affect the analysis or conclusion contained in the Rock Creek Project FEIS.

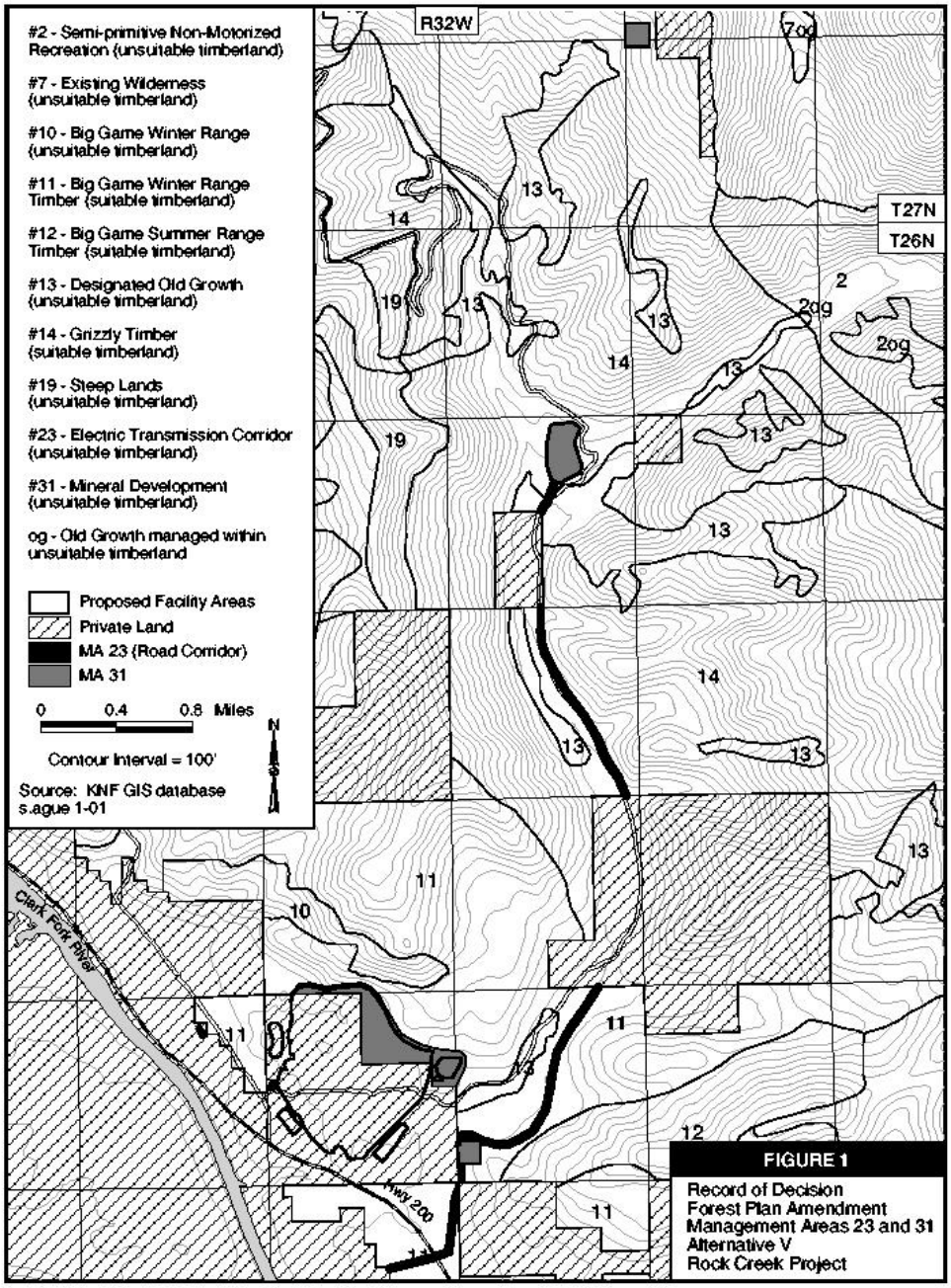
Table 1. Acres of NFS Lands to be Reallocated for Alternative V

Present Management Area	Acres Re-allocated to MA 31 - Mining		Acres Re-allocated to MA 23 - Utilities		Total Acreage Re-allocated	
	FEIS Acres	Revised Acres	FEIS Acres	Revised Acres	FEIS Acres	Revised Acres
MA 11 Big Game Winter Range	74	96	24	49	98	145
MA 14 Grizzly Habitat	34	40	14	30	48	70
MA 13 Old Growth	0	0	1	2	1	2
Total Acres to be reallocated	108	136	39	81	147	217

Rock Creek FEIS page 4-9

A printer error in Figure 4-1 on page 4-9 of the FEIS has been corrected and is as follows (Figure 1).

Figure 1


#2 - Semi-primitive Non-Motorized Recreation (unsuitable timberland)
#7 - Existing Wilderness (unsuitable timberland)
#10 - Big Game Winter Range (unsuitable timberland)
#11 - Big Game Winter Range Timber (suitable timberland)
#12 - Big Game Summer Range Timber (suitable timberland)
#13 - Designated Old Growth (unsuitable timberland)
#14 - Grizzly Timber (suitable timberland)
#19 - Steep Lands (unsuitable timberland)
#23 - Electric Transmission Corridor (unsuitable timberland)
#31 - Mineral Development (unsuitable timberland)
og - Old Growth managed within unsuitable timberland
Proposed Facility Areas
Private Land
MA 23 (Road Corridor)
MA 31
0 0.4 0.8 Miles
Contour Interval = 100'
Source: KNF GIS database
s.ague 1-01
R32W
T27N
T26N
Clark Fork River
Hwy 200
FIGURE 1
Record of Decision
Forest Plan Amendment
Management Areas 23 and 31
Alternative V
Rock Creek Project

Rock Creek FEIS Volume 3, MISC-1602 page 4

The following information was inadvertently omitted from Volume 3 of the FEIS page MISC-1602-4.

7. Will the vent adit be exhaust, intake, or both. Assuming the vent is only for intake, where are the data to show that sufficient fresh air will be maintained in the adit? (1288)

Response: The ventilation adit would be for the intake of air. The ventilation adit is being proposed in case Mine Safety and Health Administration (MSHA) requires additional ventilation some time in the future. Electric haul trucks would be used underground under Alternative V instead of the diesel trucks proposed under Alternatives II to IV in the draft EIS and low-emission diesel engines would be used on other equipment. Under Alternative V, there would be fewer diesel fumes to vent, but there is no certainty that MSHA would not require additional ventilation, so the air-intake ventilation adit is carried forward as part of the mine plan. See Chapter 2, Alternative II, Mine Plan.

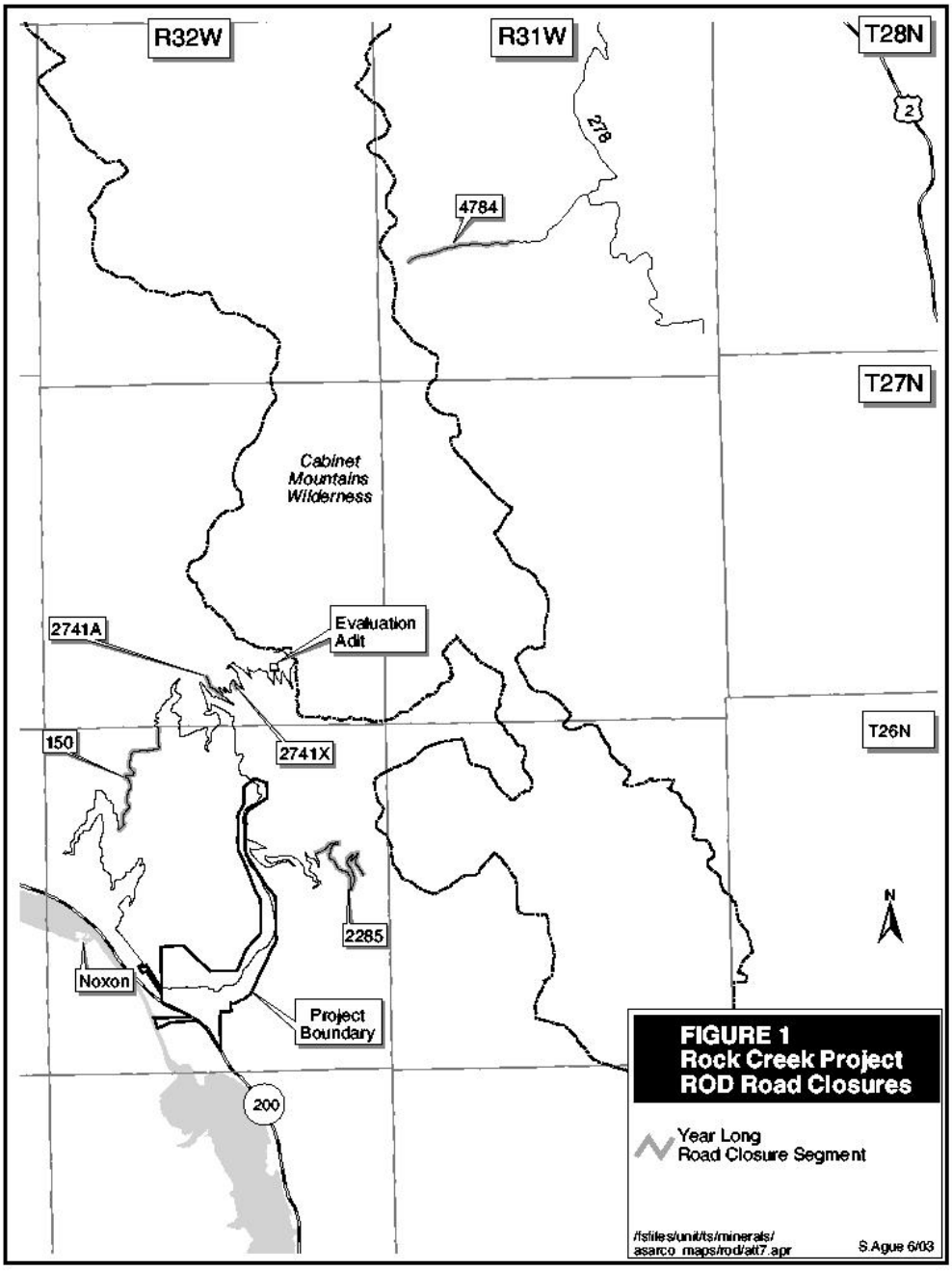
8. Finally, there is no discussion of potential threats to worker safety caused by underground storage. How will mine workings be designed to assure that mine water stored in the underground reservoir is not released to areas of active mining, potentially causing injury and/or death of mine workers? (1223)

Response: The reservoir would be located in a low spot in the mine, from which water could not flow without pumping into other mine areas.

ATTACHMENT 7

ROCK CREEK PROJECT
ROAD CLOSURE SEGMENTS

FIGURE 1


R32W
R31W
T28N
278
2
4784
T27N
Cabinet
Mountains
Wilderness
2741A
Evaluation
Adit
2741X
150
T26N
2285
N
Noxon
Project
Boundary
200
FIGURE 1
Rock Creek Project
ROD Road Closures
Year Long
Road Closure Segment
/fsfiles/unit/ts/minerals/
asarco_maps/rod/att7.apr
S.Ague 6/03