Record of Decisions
ROCK CREEK PROJECT

Visual Simulation of Tailings Paste Facility

Prepared By

Montana Department of Environmental Quality
And
U.S. Forest Service
Kootenai National Forest

December 2001

Kootenai National Forest
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Montana Department of
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P.O. Box 200901
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December 2001

Dear Reader:

Enclosed is the Kootenai National Forest (KNF) and Department of Environmental Quality's (DEQ) Record of Decision (ROD) for the Rock Creek Project, a mining project proposed by Sterling Mining Company, located in Sanders County, Montana. The Record of Decision approves Sterling's Plan of Operation consistent with Alternative V of the Final Environmental Impact Statement and as modified by the enclosed decision. The ROD describes Alternative 5, and the rationale for making the decision. Alternative V is the preferred alternative which was identified in the Final Environmental Impact Statement released in September of 2001.

This ROD is the culmination of over fourteen years of analysis, agency, tribal and public participation. To date, approximately 6,000 individuals, that includes groups, organizations, and agencies have provided comments and suggested resolution on concerns and issues regarding the project. Public review of the Supplemental Draft EIS has generated 2,250 responses, consisting of letters, form letters, cards, petitions, hearing testimony, and phone calls. This input has allowed the KNF and DEQ to develop a sound alternative for this proposal that allows the project to proceed as required by law, protects the environment, and yet addresses a majority of the publics concerns and issues.

We wish to thank the participating agencies, Tribal Governments and the public for there comments, input and reviews.

Sincerely,

Bob Castaneda

Bob Castaneda
Forest Supervisor
Kootenai National Forest

Sincerely,

Jan P Sensibaugh

Jan Sensibaugh
Director
Montana Department of Environmental Quality

Record of Decisions

ROCK CREEK PROJECT

December 2001

U.S. Forest Service
Kootenai National Forest

Montana Department of
Environmental Quality

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LIST OF ACRONYMS AND ABBREVIATION

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

RECORD OF DECISIONS
ROCK CREEK PROJECT

I. INTRODUCTION

This document contains the Montana Department of Environmental Quality's (DEQ) and the Kootenai National Forest's (KNF) Record of Decisions (ROD) for the final environmental impact statement (EIS) on Sterling Mining Company's Plan of Operations for the Rock Creek Project and the associated evaluation adit. The ROD states the agencies' decisions, their rationale for the decisions, and all alternatives considered in reaching the decisions. 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 decisions. The ROD also documents each agency's requirements that must be met by the company in order for mining permits and approvals to be granted at a future date. DEQ's decisions on Sterling's air quality permit and proposed Montana Pollution Discharge Elimination System (MPDES) permit for the Rock Creek Project are also documented. Including both agencies' RODs in this joint document allows the public to see what the overall project would look like yet clearly defines each agency's responsibilities and rationale for making their decisions.

DEQ and KNF 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 that included bull trout, a revised draft MPDES permit, and a revised 404 showing. The final EIS was released on September 14, 2001 and the Notice of Availability for the final EIS was published in the Federal Register on September 21, 2001.

The final EIS merges information and analyses from the draft EIS and the supplemental EIS. The final EIS includes responses to comments on the draft and supplemental EISs and incorporates changes based on those responses. The final EIS describes the proposed action and a number of alternatives to the proposed action. All action alternatives must 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 final EIS is on file and available at the KNF Supervisor's offices in Libby, Montana, the Cabinet Ranger District office in Trout Creek, Montana, and the DEQ and COE offices in Helena, Montana, as well as numerous local libraries in the vicinity of the proposed project. The final EIS 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 final EIS 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.

The KNF decisions will be made pursuant to the rules and regulations of 36 CFR 228 Subpart A and must meet 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), and the 1955 Multiple Use Mining Act (69 Stat. 368, as amended).

DEQ decisions have been 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 compliance with these and other related regulations can be found in the sections containing each agency's decisions.

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). 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 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.

As you read through this document, you will be presented with information that pertains to the environmental impact analysis process required by MEPA and/or NEPA. You will find information that pertains to both agencies' analysis of and decisions about this project. Then you will also find sections with agency-specific information about legal requirements and restrictions, and the rationale and decisions regarding the project and various permits and licenses.

II. BACKGROUND

On May 6, 1987, ASARCO Incorporated (ASARCO), the original applicant, submitted to DEQ, formerly Montana Department of State Lands (DSL)[1], 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, ASARCO submitted an application to KNF and DSL for the development of an evaluation adit[2] for sampling the ore body and for exhaust ventilation during mining. DEQ determined the exploration

[1]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).

[2]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. Throughout the ROD, the agencies refer to this adit as the "evaluation adit."

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 but must make separate decisions for the exploration adit and the mine permit applications.

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 were then transferred to Sterling.

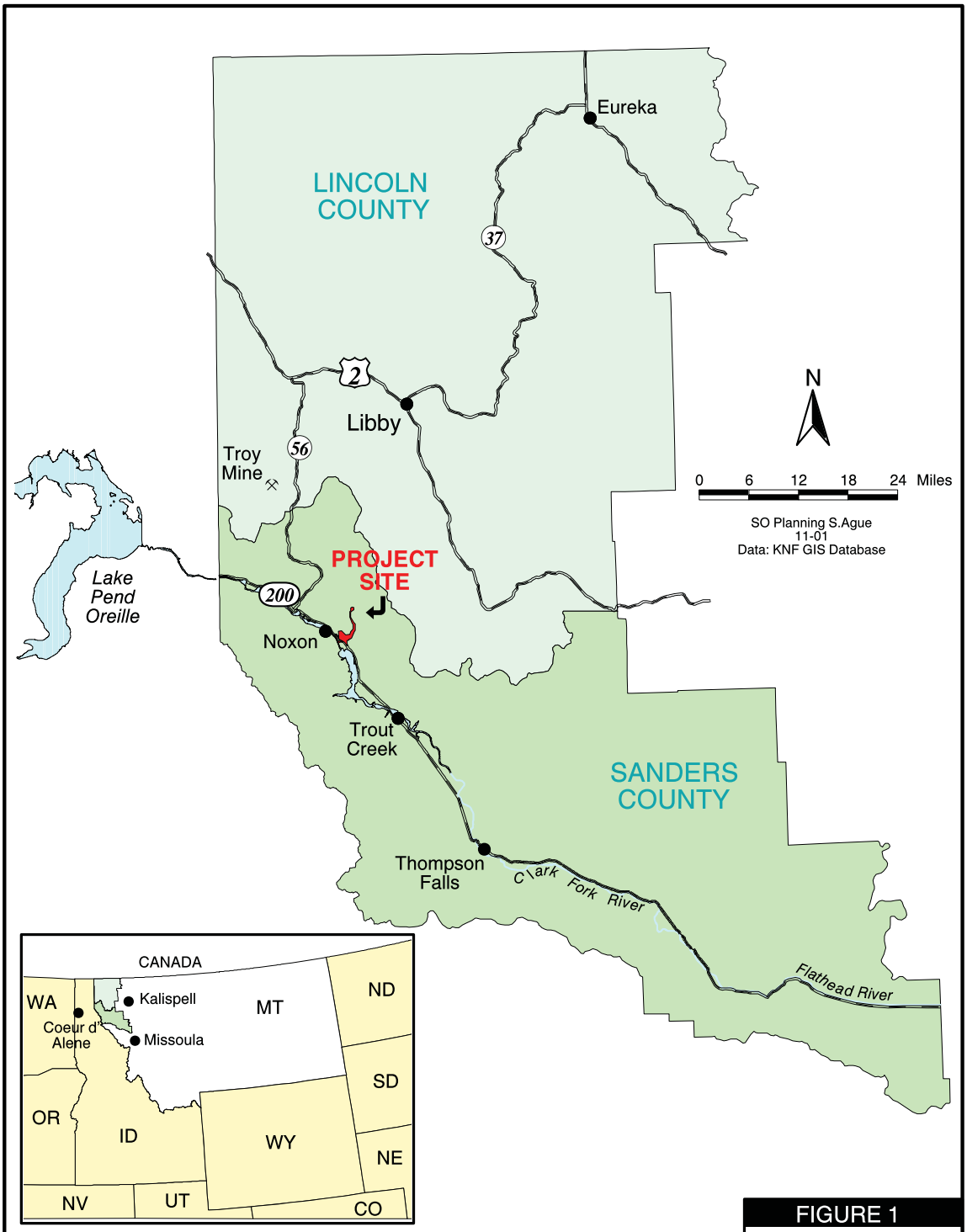
Sterling proposes to construct, operate, and reclaim all facilities including the evaluation adit, necessary to mine, remove, and transport economically mineable minerals from the Rock Creek deposit. The Rock Creek Mine will consist of an underground copper/silver mine and mill/concentrator complex in northwestern Montana with a mine life of approximately 30 to 37 years. The project is in Sanders County, Montana (see Figure 1) and will encompass 1,668 acres of which 482 acres will be disturbed. 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 would be in either 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).

III. AGENCIES' DECISION SUMMARY

We—the Director of the DEQ and the Kootenai National Forest Supervisor—must make a variety of decisions on Sterling's proposal and its associated permits. We have decided to approve Sterling's plan of operations consistent with Alternative V, as modified in this ROD. Alternative V is the most environmentally preferred action alternative. It contains modifications, mitigations, and monitoring plans that either 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 mitigations can be required by each agency hereby required as part of this ROD.

Alternative V (see Figure 2) is fully described in Chapter 2 of the final EIS. 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 mitigations and monitoring plans. Additionally, we are incorporating changes adding more detail to some mitigations or adding some new mitigations developed through consultation with other agencies and public comment since the final EIS 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 final EIS and as modified by the ROD of each agency. The ROD changes the wording in Alternative V and replaces all "should," "would," and "could" words with the words "shall," "will," and "can."



This map was generated from electronic data files (GIS coverages) which were scanned or digitized from information compiled at 1:24000 scale. The data on this map is based on the accuracy and precision of the 1:24,000 USGS quad maps, and 10-meter resolution satellite imagery which were used to generate or rectify map data. This map is to be used as a reference only, and is not intended for use in site-specific planning. The information on this map is subject to revision as field data and technical processes improve.

FIGURE 1

Record of Decision
Location Map
Rock Creek Project

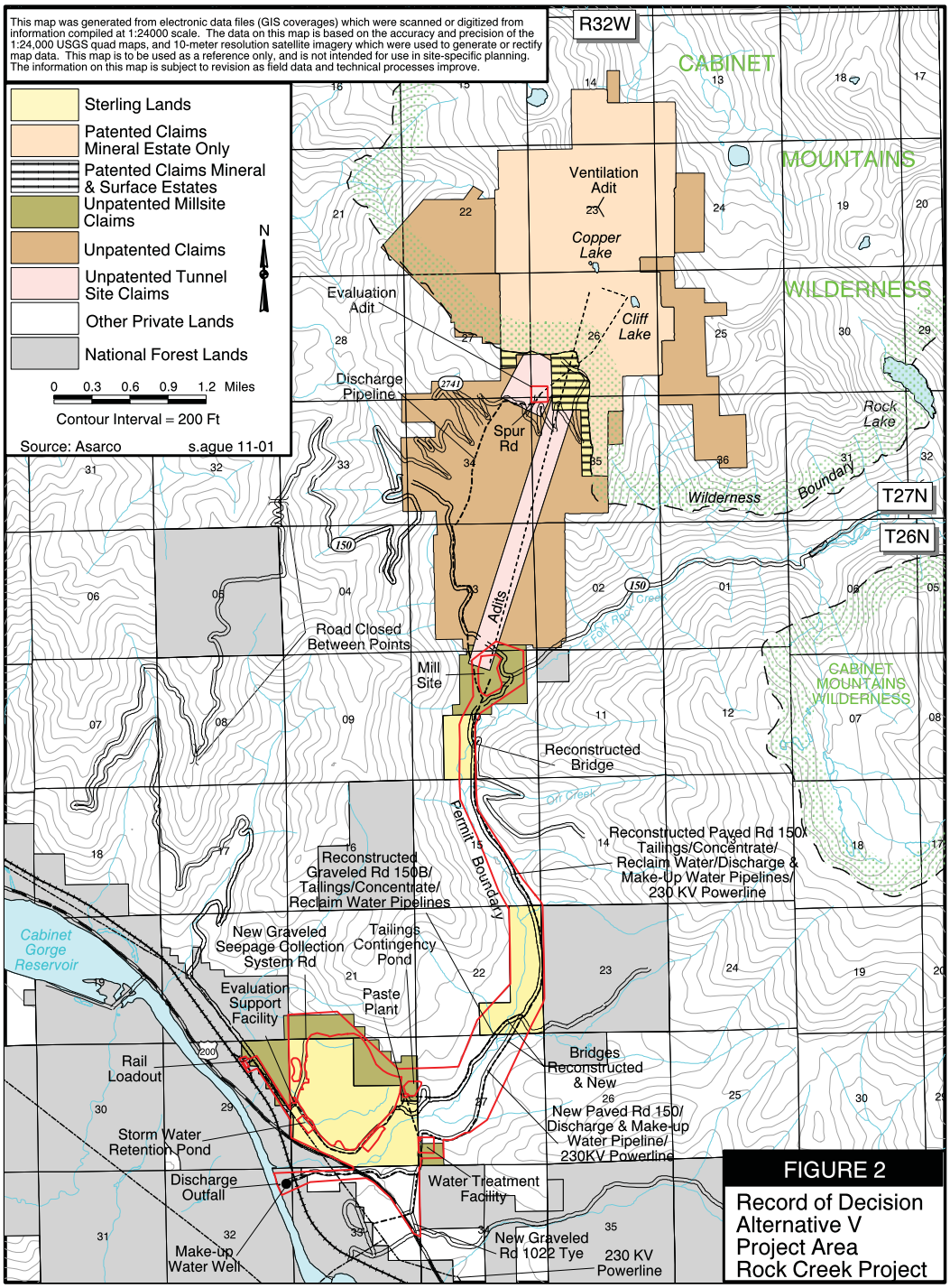


FIGURE 2

Record of Decision
Alternative V
Project Area
Rock Creek Project

Under the first phase, as defined by the Plan of Operations and in Sterling's application for a DEQ exploration license as modified by Alternative V and this ROD, 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 ore body and to gather additional data on ground water quality and flow, geochemical data, and rock mechanics data. 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.

Implementation of the first phase of the project (the evaluation adit) may begin upon the agencies' review and approval that the following items have been submitted by the company and that they are acceptable.

- Modified and/or updated Plan of Operations/exploration license application for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modified and/or updated reclamation plans for the evaluation adit consistent with Alternative V and as modified in this ROD;
- Modified and/or updated monitoring plans 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 final EIS, and as modified in this ROD; and
- Submittal of the reclamation bond for the evaluation adit.

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

- The terms, conditions and reasonable and prudent alternatives relative to the evaluation adit as established by the Biological Assessment and Biological Opinion in the final EIS, outlined in the revised Appendix K in Attachment 2, and discussed in Chapter 4, Threatened and Endangered Species.

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. The project will have surface disturbance on a total of 482 acres within a permit area of 1,560 acres, of which 52 percent are NFS lands and 48 percent are owned by Sterling and other landowners. 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. It 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.

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 at the mouth of the adit, 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.

We believe there is more than enough information in the record to support approving this entire project (both the first and second phases) in this ROD. We fully expect, based on the analyses referenced in the final EIS, that additional information generated in the future from the evaluation adit will further support the final EIS analysis of effects. However, we realize there will be even more information generated from the first phase activities. We want to minimize and manage the 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 plans for the mine consistent with Alternative V and as modified in this ROD;
- Modified and/or updated monitoring plans for the mine as outlined in the revised Appendix K in Attachment 2 of this ROD, consistent with Alternative V as described in the final EIS, and as modified in this ROD;
- The reclamation bond for mine construction and mine development;
- The agencies have conducted a technical panel review of pertinent data as outlined in the final EIS and ROD and Sterling has completed any additional studies the agencies deem necessary, including review and analysis of applicable evaluation adit data and to determine if that information is consistent with the conclusions reached in the final EIS in regards to ground water flow and quality, geochemistry, and rock mechanics; and
- Final facility design plans and mitigations to be implemented during mine construction if not submitted earlier.

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

- The terms, conditions, and reasonable and prudent alternatives relative to mine construction and operation established by the Biological Assessment and Biological Opinion in the final EIS, outlined in the revised Appendix K in Attachment 2, and discussed in Chapter 4, Threatened and Endangered Species.

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 NEPA/MEPA analysis before Sterling will be allowed to proceed with constructing the mine, mill, and all other associated facilities.

All final designs, and monitoring and mitigation plans, and data collected during evaluation adit construction will be reviewed by one or more technical panels. Final approval will reside with DEQ and KNF. 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. 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.

IV. 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 Decisions. The first stage was the initial scoping that was conducted to identify significant 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 public and other agencies and tribal representatives throughout the NEPA process. The fourth stage was a period for review after release of the final EIS.

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 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.

In addition to holding public meetings, the agencies hosted field trips for the interdisciplinary team and meetings to discuss and resolve issues and concerns for alternative development. These meetings, which were open to the public included American Indian representatives 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 USFS meetings with American Indian representatives.

Approximately 2,000 commentors responded to the draft EIS and/or draft MPDES permit and approximately 3,000 commentors responded 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, socioeconomics, and miscellaneous topics. The responses to these 16 categories of comments are included in Volumes 3 and 4 of the final EIS.

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.

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

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
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

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
Kalispell 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
Kalispell Tribe	1-26-01
Coeur d'Alene Tribe	1-26-01

Name of Tribe	Date of Communiqué
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	2-1-01
Confederated Salish & Kootenai Tribes	2-8-01
Kootenai Tribe of Idaho	3-8-01
Kalispell 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
Kalispell Tribe	5-10-01
Coeur d'Alene Tribe	6-7-01
Confederated Salish & Kootenai Tribes	6-7-01
Kalispell 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
Confederated Salish & Kootenai Tribes	8-1-01
Coeur d'Alene Tribe	9-18-01
Confederated Salish & Kootenai Tribes	9-18-01
Kootenai Tribe of Idaho	9-18-01
Kalispell Tribe	9-18-01
Kootenai Tribe of Idaho	11-26-01

V. ENVIRONMENTAL ISSUES CONSIDERED AND ADDRESSED

The agencies use issues identified from public, agency, and Tribal comments 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 final EIS.

A. ISSUES CONSIDERED IN FINAL EIS

1. 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, mitigations, 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 in Attachment 2) establishes the criteria for monitoring of these resources and the MPDES permit (Appendix D in the final EIS) 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.

2. **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) 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 final EIS (Aquatics/Fisheries, Biodiversity, Threatened and Endangered Species). Through the development of the final EIS, 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 mitigations as listed in the Biological Assessment of the final EIS. 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.

3. **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 final EIS 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 final EIS. 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.

4. **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, school, fire, public safety and other public services, local tax revenues, and public expenses.

Implementation of Alternative V will 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. Traffic safety 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.

5. **Issue 5: Effects on old growth ecosystems**

There was only one item identified for Issue 5.

> The proposed project may impact old growth stands.

The analysis in the final EIS 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.

6. **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 final EIS 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 final EIS 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. Detailed mitigation plans and specification s 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.

7. **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 service roads and Montana Highway 200.

Traffic safety 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.

8. **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.

Noise reaching the CMW is generally expected not to exceed normal ambient wilderness levels of 35 dBA, except in the area of the air-intake ventilation adit. Mitigations for forest screening, buffer zones, and the reduction in traffic will reduce the noise levels within the Rock Creek drainage. Relocation of the air intake ventilation adit and sound mitigations associated with the fans in that adit will minimize the potential for impacts to wilderness users from that facility to a decibel level of 45 dBA at 50 feet from the opening. Additional mitigations will be required to minimize the level of equipment noise. Mine facilities will present an industrial aspect to the Rock Creek drainage. Mitigations 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.

B. CHANGES IN FINAL EIS 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 final EIS.

Chapter 2. A new alternative, Alternative V, was included in the supplemental and final EISs 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. A few 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 mitigations 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, sediment, water flow in the Clark Fork River, socioeconomic conditions of Bonner, Sanders, and Lincoln counties, grizzly bears, ore and waste rock geochemistry, and surface and ground water quality. Bull trout and lynx were moved into the Threatened and Endangered Species section due to changes in status.

Chapter 4. Analyses were modified based on new data identified in Chapter 3, and the new alternative was analyzed. Some new mitigations were developed and were 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 Socioeconomics section was completely rewritten to remove any potential bias. 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 have been included as well. The analysis on acid rock drainage was expanded, and analysis of impacts to ground water in the orebody, wilderness lakes, and springs and seeps was added. Additional information regarding impacts to Native American traditional use was incorporated into the Cultural Resources section.

Appendices. The biological evaluation on bull trout was revised and reissued as a biological assessment and included in Appendix B with the revised biological assessment for terrestrial plant and animal species. 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 U.S. Fish and Wildlife Service Biological Opinion was added as Appendix E. 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. (A revised version of this appendix is included in Attachment 2 of this 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 was included in Appendix P.

C. CHANGES SUGGESTED BY EPA, OTHER AGENCIES, AND THE PUBLIC, AND AGENCIES' RESPONSE

There have been several concerns expressed through public comments at briefings held by the agencies to describe the contents of the EIS and the process of decision-making regarding the proposed project as well as in outside agency reviews of the final EIS. The paragraphs below cover those concerns and how DEQ and KNF have addressed and either included or determined not to include in this ROD.

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 Stage 1 of the proposed operation, the agencies will consult further with experts in the fields of metal leaching and acid rock drainage. However, we do not believe we need to specify those experts by name in the ROD because experts availability will change. We will 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, we 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 this ROD that Sterling add cement to the tailings paste, then determine, through the analysis of data from the evaluation adit, whether to modify that decision. The agencies do not think that requiring the addition of cement at the onset of tailings paste deposition is a prudent environmentally protective course of action. The final EIS 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 believe it is clearly less risky and 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 final EIS and other analyses in the administrative record 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 final EIS 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 testing and evaluation of waste rock and tailings and for determining what additive, if any, is appropriate. The final EIS concludes it is not necessary at this time. The agencies will make the determination based on what is reasonably required to comply with the applicable law, not on operational costs.

The agencies will reevaluate the additive issue after stage 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.

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.

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 wanted 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 following additional mitigations would minimize the risk that impacts discovered by additional geochemical testing would be a problem. The hydrostatic head for the ground water impounded in the mine workings would 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. 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. 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, metal mobility testing of paste tailings and ore rock be conducted.

6. EPA encouraged the agencies to continue to evaluate the potential for catastrophic failure due to lateral hydrofracturing. 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 final EIS, but will be made more specific in the revised Appendix K attached to this ROD. This ROD hereby requires installation of underground monitoring wells in the areas proposed for water storage during mine operation and any shut down periods. 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. 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.

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 final EIS discusses closure options, but does not specify the means of mine adit closure for Alternative V because of these issues. 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 wanted the 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. The technical hydrogeology report for the final EIS 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. The agencies believe 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, we 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 (although likely very low) 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.

9. EPA wanted the agencies to address the segregation of water within the mine. The agencies will require that Sterling 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. 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 initially on an annual basis. Monitoring may be reduced or increased, depending on what happens or does not happen, as outlined in the revised Appendix K. 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 pumpback 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 pumping back ground water, if necessary. However, neither agency can require this modification. Replacement costs for water treatment and related facilities are included in the bond calculations, just as they were included in the final EIS. 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 and 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 wanted DEQ to 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 that initially monitoring reports be prepared on a 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 in Attachment 2 and to the reporting requirements in Attachment 3.

We believe that the monitoring plans, conceptual designs of mine facilities and operations, and mitigation plans as outlined in the final EIS contain sufficient information and critical criteria on which to base our analysis for reducing, minimizing, avoiding, or mitigating potential impacts. The agencies 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.

VI. ALTERNATIVE DEVELOPMENT

A. ALTERNATIVES CONSIDERED IN DETAIL

Alternatives to the proposed action were developed to address the eight issues identified during the 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, mitigations, and monitoring plans carried forward into one or more of the agencies' alternatives described below in this ROD and in more detail in the final EIS. The five alternatives, including the no-action alternative, summarized below are described in detail in Chapter 2 of the final EIS. A comparison of the components and reclamation plans for these alternatives is presented in Tables 4 and 5.

The five alternatives considered in the final EIS and this ROD provide a range of alternatives and mitigations as required by MEPA and NEPA. The EIS 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.

1. 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 both MEPA and 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 Modifications/mitigations/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 Locations:								
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 Procedures:								
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 Mitigations	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/MITIGATIONS	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATIONS	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
Mill Site	6.5 miles up FDR No. 150 to upper end West Fork Rock Creek	Same as Alternative II	Confluence of east and west forks of Rock Creek	Same as Alternative IV
Tailings Impoundment	Rock Creek site 325 feet high, 324 acres, upstream construction	Same as Alternative II except modified centerline design w/technical review panel	Same as Alternative III	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 berms	Same as Alternative IV
Mine Adits, Length & Grade (to underground crusher)	Up Chicago Peak Rd (FDR No. 2741) 9,000' @+12.7%	Same as Alternative II	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%	Same as Alternative II	Same as Alternative II	Same as Alternative II
Evaluation Adit Waste Rock	178,000 tons, Placed downhill of adit entrance	Same as Alternative II	Same as Alternative II	Same as Alternative II
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	Same as Alternative II	Same as Alternative II plus improve 2.8 miles of FDR No. 150 above confluence mill site	Same as Alternative IV
Evaluation Adit Water Discharge Line	6" polyethylene line approx. 8.5 mi. both X-C & along Rd 150, laid on surface for 3 yrs	Same as Alternative II	Same as Alternative II	Same as Alternative II
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) Same as Alternative III	(1) Similar to Alternative III along different alignment for 1.62 miles
	(2) Const 0.88 mi. of 14' graveled road around mill	(2) Same as Alternative II except 24' wide	(2) Const 0.04 mi. of 24' paved road into mill site	(2) Same as Alternative IV
	(3) N/A	(3) Const 0.23 mi. to connect FDR No. 150 to FDR No. 1022, gravel, 14' wide	(3) Same as Alternative III	(3) Same as Alternative III
	(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) Same as Alternative III	(5) Same as Alternative III

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATIONS	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATIONS	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
	(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) Same as Alternative III	(6) Same as Alternative III
New Road Construction (Continued)	(7) N/A	(7) Const 0.25 mi. of 14' road to access rail loadout (paved)	(7) Same as Alternative III	(7) Same as Alternative IV
	(8) N/A	(8) Const 0.57 mi. of 10' road - gravel for seepage collection line	(8) N/A	(8) Same as Alternative III 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) Same as Alternative II, but 4.02 mi., paved	(1) Same as Alternative II except only to confluence mill site, 2.94 mi., paved	(1) Same as Alternative IV but 3.42 mi.
	(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) Same as Alternative III	(2) Same as Alternative III 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) Same as Alternative II but graveled	(3) Same as Alternative III	(3) Same as Alternative III
	(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**
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.

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATIONS	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATIONS	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
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	Same as Alternative II	750' long within mill site	Same as Alternative IV
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'	Same as Alternative III	Same as Alternative III
Rail Loadout Location	At Herford siding	Miller Gulch	Same as Alternative III	Same as Alternative III
Tailings Impoundment Starter Dam Borrow	735,000 cu. yards of borrow from within impoundment & 3 borrow sites (27.2 acres)	Same as Alternative II	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	Same as Alternative III	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) Same as Alternative II	(1) Same as Alternative II	(1) Same as Alternative II
(2) Support Facilities	(2) Adjacent storage; 1.3 ac; 4,193 cy	(2) Same as Alternative II	(2) Same as Alternative II	(2) Same as Alternative II
(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) Same as Alternative III	(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.
(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) Same as Alternative III	(4) Same as Alternative III
(5) Water Treatment Facility	(5) Adjacent storage; 10.0 ac; 32,269 cy	(5) Same as Alternative II	(5) Same as Alternative II	(5) Same as Alternative III
(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) Same as Alternative IV

PROJECT FACILITY OR FEATURE	ALTERNATIVE II STERLING'S PROPOSAL	ALTERNATIVE III PROPOSED PROJECT W/MITIGATIONS	ALTERNATIVE IV MODIFIED PROJECT W/MITIGATIONS	ALTERNATIVE V PASTE FACILITY & ALTERNATIVE WATER TREATMENT
(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) Same as Alternative IV
	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	Same as Alternative II	Same as Alternative II	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	Same as Alternative II	Same as Alternative II	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 Mitigations	Alternative IV Modified Project w/Mitigations	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	Same as Alternative III	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	Same as Alternative III	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	Same as Alternative III Same as Alternative III	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	Same as Alternative III	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	Same as Alternative III	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.	Same as Alternative II Final reveg with containerized locally grown and/or native S/T on stockpile sites as depleted; road cut fill slopes and pipeline corridors immediately	Same as Alternative II Same as Alternative III	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 Mitigations	Alternative IV Modified Project w/Mitigations	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	Same as Alternative IV.
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	Same as Alternative III	Same as Alternative III.
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 IV.
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.	Same as Alternative II	N/A	N/A
Post-mining topography	N/A	Top 1-2 % slope Face 1.25:1 slope	Same as Alternative II	N/A	N/A

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigations	Alternative IV Modified Project w/Mitigations	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	Same as Alternative III	Same as Alternative III.
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	Same as Alternative II	Same as Alternative III.
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.	Same as Alternative III	Same as Alternative III.
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	Same as Alternative III	Same as Alternative III.
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.	Same as Alternative III	Same as Alternative III
EVALUATION ADIT SUPPORT FACILITIES SITE					
Soil Depth	24 inches 30 inches average for alternate location	Salvage depth (24 inches)	Same as Alternative II	Same as Alternative II	Salvage 24 inches in 2 lifts (adjacent to paste facility site)
Final Reclamation		Respread depth (24 inches)	Same as Alternative II	Same as Alternative II	Respread depth - 24 inches in two lifts
Revegetation	N/A	Same as for impoundment	Same as Alternative II	Same as Alternative II	Same as paste facility
Planting plans	N/A	Same as for impoundment	Same as Alternative II	Same as Alternative II	Same as paste facility
Post-mining topography	N/A	Support facility site returned to approximate original contour	Support facility site same as Alternative II.	Same as Alternative III	alternate support facilities site reclaimed to approximate original contour.

Reclamation Feature or Component	Alternative I No Action	Alternative II Sterling's Proposal	Alternative III Project With Mitigations	Alternative IV Modified Project w/Mitigations	Alternative V Paste Facility & Alternative Water Treatment
WATER TREATMENT FACILITY					
Soil Depth (ave)	24 inches	Salvage depth 24 inches Respread depth 24 inches	Different location but otherwise same as Alternative II	Same as Alternative III	Same as Alternative III
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 III	Same as Alternative III
Planting Plans	N/A	Same as for tailings impoundment	Same as for tailings impoundment	Same as Alternative III	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 III	Same as Alternative III

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

2. 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 ore body. 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 prediscovery 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.

3. Alternative III: the Proposed Project with Modifications and Mitigations

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 mitigations were added to buffer views and reduce contrast of structures. Mitigations were 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 mitigations were 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 mitigations 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.

4. Alternative IV: Modified Rock Creek Project with Mitigations

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.

5. 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 final EIS. 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 481 acres within a permit area of 1,560 acres. 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 some buffer zones were added. All other modifications and mitigations 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 mitigations were added to address public concerns. These included burying all pipelines except at stream crossings and using double-walled pipes with leak detection sensors, pumping of concentrate from the mill to the rail loadout, busing of mine workers from parking lots in lower Rock Creek to the mill, limiting access along FDR No. 150B between the paste plant and FDR No. 150 to mine and agency staff, restricting road construction/reconstruction and hauling of waste rock to the paste facility between April 1 and July 1, developing site-specific reclamation requirements for the paste facility, the 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, and 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). Additional mitigations were added to address the terms and conditions in the biological opinion relative to bull trout and grizzly bears. Additional harlequin duck mitigations were incorporated. Monitoring of vegetation associated with springs and seeps and cultural resources monitoring were added to address some tribal concerns.

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.

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-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.

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[3] Brine generated by the reverse osmosis water treatment system would be appropriately 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.

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 final EIS in Part III 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 12 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 ore body, 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 to nine 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 downslope 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 final EIS 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)) and MEPA (17.4.617(9)). 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 mitigations to protect resources. There are numerous mitigations 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 final EIS for more detail on impacts under the various alternatives.

VII. AGENCIES DECISIONS AND RATIONALE FOR THE DECISIONS

We, the Director of the DEQ and the Kootenai National Forest Supervisor, must make a variety of decisions on Sterling's proposal and its associated permits. The decisions must comply with all applicable federal and state air and water quality regulations and other applicable state and federal environmental regulations. However, the authorities of the two agencies are different, as noted here and in Chapter 1 of the final EIS under Agency Roles and Responsibilities.

A. DEQ DECISIONS, RATIONALE, AND COMPLIANCE WITH LEGAL AND POLICY MANDATES

The DEQ may deny the proposed hard rock operating permit application if it fails to meet the requirements of the Montana Metal Mine Reclamation (MMRA), the Montana Air Quality or Water Quality acts, and their regulations. Since 1986 DEQ and the Montana First Judicial District Court have interpreted MEPA as supplementing the basis upon which an operating permit under MMRA may be conditioned or denied. This meant that DEQ could also deny or modify a hard rock operating permit under MMRA in order to avoid or mitigate an impact that would significantly degrade the environment. The operator then had the option of revising the plan accordingly or appealing the decision through the courts. However, with the passage of HB 473, the 2001 state legislature removed MEPA as a means for conditioning (in this case requiring implementation of mitigations for impacts not specifically covered by state law or regulation) or denying a state permit. All changes to a proposed permit or denial of a permit must be tied directly to a specific state law or regulation. The permittee may request that the additional mitigations be incorporated into its exploration license and/or operating permit and then those mitigations would become enforceable conditions of the permit (75-1-201(5)(b), MCA).

All discharges authorized by an MPDES permit must meet applicable water quality standards. The effluent limits and permit conditions for discharges into state waters must not allow the formation of sludge deposits; result in floating debris; produce odors; create toxic concentrations harmful to human, animal, plant, and aquatic life; or create conditions capable of producing undesirable aquatic life. The MPDES permit's limits and conditions must also comply with Idaho's water quality standards, because the receiving water, the Clark Fork River, flows into the State of Idaho.

DEQ also is responsible for issuing Section 401 Certifications. DEQ can also waive certification if it is determined that there are minimal impacts to the quality of state waters (ARM 17.30.105(2)(a)).

An air quality permit to construct and operate a new or altered air pollution source cannot be issued unless the source is able to comply with the applicable regulations and requirements of the federal Clean Air Act and the Montana Clean Air Act, and any applicable control strategy contained in the Montana State Implementation Plan. The applicant must also demonstrate that the source will not cause or contribute to a violation of a Montana or national ambient air quality standard.

1. Decisions

a. Exploration License Application

As Director of DEQ, I hereby approve the plan of operations for the Rock Creek evaluation adit with additional modifications and mitigations as incorporated into Alternative V in the final EIS and as modified by this ROD. These changes to the proposed action are necessary to comply with the MMRA. The implementation of the additional modifications and mitigations 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 document 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. Any other stipulations identified as being applicable to the evaluation adit can only be added to the license 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 those mitigations 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

As Director of DEQ, I hereby conditionally approve the plan of operations for the Rock Creek Mine with additional modifications and mitigations as incorporated into Alternative V in the final EIS and as modified in this ROD. These changes to the proposed action are necessary to comply with the MMRA. The implementation of the

additional modifications and mitigations 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 final EIS 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 those mitigations 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.

My 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 will 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

As Director of DEQ, I hereby approve the MPDES permit as contained in the final EIS and as modified in this ROD. A copy of the decision letter is included in Attachment 4 of this document. 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 final EIS; therefore, will comply with Idaho's regulations.

During evaluation adit construction, mine water will be discharged only at Outfall 001 into the Clark Fork River. All monitoring and reporting requirements associated with that outfall must be complied with. The other outfalls will be used during mine construction, development, and operation as the facilities are installed and operated. Sterling must comply with the associated monitoring and reporting requirements for those four additional outfalls as well.

I considered requiring an additional stipulation to the MPDES permit to address remaining concerns about the timeliness of monitoring reports versus actual discharge conditions. The Water Resources Monitoring Plan, 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. A couple of editorial corrections have also been made to the Statement of Basis on file with DEQ.

d. Air Quality Permit Application

As Director of DEQ, I hereby approve the Air Quality Permit as analyzed in the final EIS. 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 included in Attachment 5 of this document.

I am requiring three additional mitigations be 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 mitigations 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) These were included in Alternative III analysis in Chapter 4 as possible mitigations but were not incorporated into Alternative V in the final EIS. These additional mitigations will provide an extra measure of protection.

e. *Section 401 Certification*

As director of DEQ, I hereby authorize the waiver of the 401 Water Quality Certification for the Rock Creek Mine. Based on the analysis contained in Chapter 4, Hydrology, and Wetlands and Non-wetland Waters of the U.S. of the final EIS, 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 401 certification concurrent with other DEQ decisions relative to the Rock Creek Mine. The letter waiving certification in Attachment 6.

2. **Rationale and Compliance with Legal and Policy Mandates**

This section explains how Alternative V satisfies the DEQ's statutory, regulatory, and policy mandates.

a. *Montana Air Quality Act*

Potential emission levels will not exceed ambient air quality standards. Sterling's air quality permit number 2414-01is issued as a Department Decision as part of this ROD. 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 for the Hard Rock Operating Permit requires concurrent reclamation on all surfaces, such as the outer slopes, that reach final grade during construction of the paste facility; this will greatly reduce the potential for blowing dust from this facility. The water management plan developed for the Hard Rock Operating Permit 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.

b. *Montana Hard-Rock Mining Impact Act, Property Tax Base Sharing Act, and Metal Mines License Tax Allocation statutes*

ASARCO prepared a Hard-Rock Mining Impact Plan for the Rock Creek Project in cooperation with 18 local government units in Sanders and Lincoln Counties, Montana. The plan was approved in October 1997. As required by the Hard Rock Impact Act, the plan identifies the increased need for services and facilities; the increased revenues; and the increased capital, operating and net operating costs expected to occur within each affected unit of local government as a result of the Rock Creek Mine. The plan requires that the mineral developer pay all increased capital and net operating costs identified in the plan. Impact payments may be made as property tax prepayments, grants, or facility impact bonds, as specified in the plan. The plan will trigger property tax base sharing under the Property Tax Base Sharing Act. Sterling has committed to comply with the terms of the Plan.

The terms of the plan may change over time. Under the conditions specified by the Impact Act or by the plan itself and at the initiative of one or more parties to the plan, the approved plan may be amended or adjusted to reflect actual circumstances. As required by the plan, the parties to the plan must reassess and, if necessary, amend the plan prior to the commencement of mine construction to ensure that the plan adequately reflects the conditions current at that time. Within certain constraints and procedures, the plan may also be adjusted or amended if the number of in-migrating mineral development employees (or in-migrating mineral development students) exceeds the number projected in plan by a specified "trigger" number, or if actual local government costs resulting from the mine exceed the costs projected in the plan or occur in services not provided for in the plan.

As provided by the 1997 Rock Creek Hard-Rock Mining Impact Plan, Sterling will pay $883,500 in grants and prepaid taxes during the projected impact period. Payments are expected to occur in years 1, 2, and 4 of mine construction and operation. Beginning in year 7 each local government is scheduled to start crediting to Sterling 20 percent of its prepaid property tax per year, assuming that statutory conditions are met and with the possible exception of school districts, because of statutory constraints. Prior to commencement of mine construction, Sterling will need to request that the Hard-Rock Mining Impact (HRMI) Board inform DEQ that Sterling is in compliance with the reassessment provisions of the plan and that Sterling has provided the Board with an acceptable financial guarantee, as required by statute, to cover its tax prepayment commitments in the reassessed plan.

Sterling and the affected counties are required to adjust the plan annually to provide the HRMI Board with the data and calculations needed to enable the Montana Department of Revenue to distribute between the affected counties, as required by law, 24 percent of the State's annual Metal Mines License Tax revenue. Each county must retain at least 37.5 percent of its metal mines license tax revenue in a trust reserve account until the mine closes or reduces its workforce by more than half of the average for the preceding five years. At that time, the county must distribute at least one-third of the trust reserve money among the affected school districts within the county. The county may use the remaining money to retire existing debt, to stabilize mill levies, for economic development purposes, or as grants or loans to other affected local government units within the county. After allocating part of its annual metal mines license tax revenue to its trust reserve account, the county distributes the remainder with one-third retained by the county for planning and economic development, one-third going to the affected elementary school districts, and one-third to the affected high school districts in the county.

c. *Montana Metal Mine Reclamation Act*

MMRA recognizes that mining is a basic and essential activity that contributes the economy of the state and the nation (82-4-301, MCA). The purpose of MMRA is to "provide for reclamation that mitigates post reclamation visual contrasts between reclamation lands and adjacent lands" and "affords some utility to humans or the environment" (82-4-301(1), MCA). It also recognizes that the degree of reclamation is controlled by its practicability. MMRA requires "the establishment, on a continuing basis, of vegetative cover, soil stability, water conditions, and safety conditions appropriate to the proposed post-mining land use" (82-4-302(2), MCA). Sterling may not depart from the approved reclamation plan in Alternative V without first obtaining written approval of the proposed change from the agencies.

At the Rock Creek Mine, the post-mining land use will be wildlife habitat. Reclamation will support this land use as required by MMRA requirements described above, as summarized below from the final EIS, and in part from Sterling's reclamation plan, which is amended by the agencies' requirements under Alternative V. As some of these requirements are based on MEPA/NEPA analysis, DEQ cannot require that they be included in the hard rock operating permit on its own[4].

[4] According to section 75-1-201(4)(a), MCA: "The agency may not withhold, deny, or impose conditions on any permit or other authority to act based on parts 1 through 3 of this chapter." Parts 1-3 define what must be analyzed in an EIS.

Reclamation of portions of the mine facilities will be performed concurrently with other mining activities as much as possible and will result in comparable stability and utility to that of adjacent undisturbed landscapes. This includes the outer slopes of the mill pad, the road corridor, and the outer slopes of each lift of paste tailings and the surface of the last lift in each segment or row of paste as the tailings paste facility progresses in a northwesterly direction towards the lower slopes of Government Mountain. Reclamation of each portion will be finished within 2 years after construction (i.e. the mill pad), completion (i.e. the last lift of each row of paste at the paste facility), and/or mine closure, whichever is appropriate. The ventilation adit and the portal of and waste rock dump at the evaluation adit will be reclaimed within 2 years of mine closure. The evaluation adit support facilities site will be reclaimed when both the mill site and the wastewater treatment plant are constructed and operational; only those portions that will be disturbed by the tailings paste facility will not be reclaimed immediately but will be stabilized with interim vegetation. The mill site will be reclaimed after all ore processing is completed and the mill facilities are decommissioned, dismantled, and removed from the site. The tailings paste facility will be considered completed when the last portion of the tailings are completely graded prior to topsoiling and revegetation. Unlike a traditional tailings impoundment there should be no 8-10 year delay for dewatering and consolidation of the tailings to facilitate the use of mechanized equipment on the tailings surface because the volume of water in the tailings paste is greatly reduced. However, the tailings seepage collection system will remain in place until seepage meets ground water standards and MPDES permit limits without treatment. Once that is achieved, the seepage collection system will be decommissioned and reclaimed. Ground water monitoring wells will remain in place for at least 20 years after mine closure. The mine water discharge pipeline will remain in place after mine closure until the mine water meets ground water standards without treatment. At that time the mine access adits will be closed and sealed and the portal areas reclaimed; if monitoring of the hydrogeology of the area indicates portal plugging should not be done, then the closure plan will be modified accordingly and will be subject to additional MEPA/NEPA analysis. Upon closure the pipelines will be removed at all stream crossings and those areas reclaimed; all other portions of the buried pipelines will be capped and will remain in place. When both the mine discharge and tailings seepage meet their appropriate ground water standards and permit limits, the wastewater treatment plant could be decommissioned, dismantled, and the site reclaimed, and the diffuser removed from the Clark Fork River.

Public concerns were raised as to the frequency and accuracy of water quality monitoring required by Sterling. The agencies will pursue the development of a Memorandum of Agreement or Understanding with Sterling where the agencies would conduct the 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. Sterling has agreed to this stipulation.

Erosion control during reclamation will be achieved consistent with Sterling's storm water management plan and BMPs listed in the permit. The storm water management plan is a component of Sterling's MPDES permit application. The contours of final reclamation combined with revegetation will effectively reduce long-term erosion to background levels. For the short term, Sterling must monitor reclamation, repair areas of excess erosion, and modify reclamation techniques as necessary to achieve long-term stability. Sterling will need to obtain a storm water permit prior to mine construction and request a Section 318 Authorization for a temporary waiver of turbidity.

There will be no accumulation of stagnant water in the mined area. Water will be stored temporarily in the mine workings to help control the volume of water passing through the water treatment plant, but will not be allowed to become stagnant. Storm water will be captured in several storm water ponds around the permit area, but the water will be routed either to the mill for use in the mill circuit or to the wastewater treatment plant for discharge to the river.

There are no open pits proposed for this project; therefore, there are no concerns about backfilling and pit lakes. Sterling's post-mining topographic plan for the tailings paste facility as modified by Alternative V will result in a landform that is stable and will blend in with the surrounding topography in the long term. The final grading plan will contain design features that will help control runoff and minimize erosion of the reclaimed facility. This will be accomplished by pushing the crest back toward Government Mountain[5] eliminating long straight slopes and ridgelines, flattening the slopes where possible, and using rocky soils to topsoil steeper slopes. Drainage ways will be incorporated into the grading plan to facilitate moving water off the reclaimed facility. A modified grading plan for the evaluation adit portal area will eliminate the flat porch and allow the site to blend in better with the surrounding terrain[6].

A geochemical testing and monitoring plan will ensure that only non-acid producing waste rock will be used to construct the mill pad and paste facility key buttresses. Any material that is identified as potentially acid producing (such as waste rock or unused ore at the evaluation adit) will be encapsulated in place, encapsulated within the tailings, or returned back underground. The tailings will also be subject to testing. A contingency plan, developed and approved prior to construction, will contain measures to handle tailings determined to be potentially acid producing or capable of leaching metals. These measures could include encapsulation or incorporation of neutralizing material into the paste at the paste plant or after it has already been deposited. All final grading will be made with non-noxious, nonflammable, and noncombustible solids. There will be no sanitary landfill on the mine site, although construction type debris could be buried in the tailings.

The soil salvage plan is modified to use a two-lift salvage plan and to salvage greater depths of soils so that the minimum replaced depth will be 24 inches at all facilities except at the evaluation adit. Replacing the soil in two lifts over ripped and scarified tailings or waste rock will provide a better contact between these materials, help reduce slippage and root barriers, and provide a deeper rooting zone than originally proposed by Sterling. Rocky soils with 20 percent rocks greater than 1 inch in diameter will be placed on slopes greater than 8 percent and along drainage ways; these rocky soils may occur naturally and will be salvaged for reuse or will be created by mixing lacustrine soils with crushed rock to obtain the volumes necessary. The lacustrine soils will be used on more gently sloping areas. These modifications will result in more stable slopes that are less susceptible to erosion. Direct hauling of topsoil whenever possible will help to maintain soil structure and fertility and increase plant diversity.

A major factor in helping reduce the visual impacts of the reclaimed facilities is the use of native grasses, forbs, trees, and shrubs. The final planting plan will incorporate planting designs that mimic surrounding vegetation patterns. Numerous reclamation

[5] Sterling voluntarily agreed to grading for visual purposes as allowed in 75-1-201(1)(b), MCA.
[6] Sterling voluntarily agreed to grading for visual purposes as allowed in 75-1-201(1)(b), MCA.

modifications have been included in Alternative V to facilitate the establishment of vegetation as quickly as possible. These include hand planting trees on steep slopes, and using shade cards and drip irrigation on newly planted trees and shrubs. The ability to plant vegetation on the outer slopes of the tailings paste facility and the mill pad as they are built will allow some vegetation to have nearly 30 years worth of growth prior to mine closure and will help screen these facilities from surrounding roads and lands even during mine operation. The reclaimed vegetation will have a function and general appearance similar to the surrounding natural vegetation. Noxious weeds will be controlled until the agencies decide that revegetation has been successful, and the bond is released.

All adits will be gated and closed according to the modified closure plan to prevent unauthorized access into the adits and sealed to minimize seepage from the mine workings. The only other safety issue that had been raised during the EIS process pertained to traffic issues. With the closure of the mine, mine-related traffic will be limited to reclamation staff, reducing traffic levels closer to pre-mine levels. Once the site is fully reclaimed and the bond released, there will be no mining-related traffic on the roads; if the Forest Service should decide it cannot maintain a paved road, then the company will remove the pavement and reconstruct the road per KNF instructions as either a gravel or dirt road. This might also decrease the amount of non-mining related traffic that had taken advantage of the improved road access during mine operation.

MMRA requires that the reclamation plan provide sufficient measures to prevent the pollution of air and water. Alternative V will achieve this. Compliance with the Montana Air and Water Quality Acts is documented in this section of the ROD for each act and in more detail in Chapter 4 of the final EIS. A 1000-foot buffer around Cliff Lake, the Copper and Moran Faults, and the north and south ore outcrops will help minimize and perhaps prevent impacts to wilderness lakes during mining and prevent the development of new springs and seeps from water stored underground during mining, as well as after mining ceases and the portals are sealed.

Sterling has submitted the required certifications under 82-4-335(9), MCA, documenting that the corporations and any partners, officers, directors, owners of 10 percent or more of any class of voting stock, and business association members are not currently in violation in Montana of any law, rule, or regulations of this state, or of the United States pertaining to air quality, water quality, or mined land reclamation.

Through this document, the plans for constructing, operating, and reclaiming the evaluation adit and the mine are approved as modified by the stipulations in Attachment 1. When the reclamation bonds have been submitted and replacement pages for the permit applications have been received, reviewed, and approved, an Exploration License and/or a Hard Rock Mine Permit will be issued. Sterling must first obtain the Exploration License, construct the evaluation adit, and collect all required data. Final DEQ approval to proceed with the construction and operation of the mine depends upon the agencies review of the data collected during evaluation adit construction as described in the Evaluation Adit Data Evaluation Plan in the revised Appendix K in Attachment 2. If the data confirms the assumptions used in the final EIS, the mine construction and operation can proceed as approved in this document. However, if the data indicates that impacts would be substantially different from or greater than those predicted in the final EIS, then additional MEPA/NEPA analysis would be required and modifications to the mine plan may be required as well. A revised decision would be based on that analysis.

d. *Montana Noxious Weed Act and County Weed Control Act*

Sterling will be responsible for noxious weed control within the permit area. The company will need to get its plan approved by the Forest Service for portions that apply to NFS lands and by the Sanders County Weed Board for all other lands. Immediate interim or final reclamation of all disturbed surfaces as required under Alternative V will help to minimize impacts from noxious weeds. Compliance with the plan and these acts will be verified with an annual check with a designated Forest Service or county representative to identify occurrences and determine appropriate control measures. Sterling has committed to limiting establishment and spread of noxious weeds resulting from soils disturbances and increased traffic in the area.

e. *Montana Private Property Assessment Act*

A taking or damaging checklist has been prepared, and it has been determined that modifications and mitigation measures described in the conditions above do not have any taking or damaging implications.

f. *Montana Water Quality Act*

The operating plan, reclamation plan, and water management plan as described in Alternative V and the MPDES permit application will effectively control the discharge of potential pollutants as described under the evaluation below. The geochemical testing and monitoring plan will identify which rock types and tailings, if any, have the potential to generate acid mine drainage and thus potentially increase the risk of pollutants reaching ground and surface waters in quantities above the permit limits and state standards. Materials which show potential for generating acid mine drainage will be handled to reduce the risk as outlined in the revised Appendix K in Attachment 2; waste rock will be returned underground or encapsulated in place, and tailings will be encapsulated within the paste facility. Several measures will be taken before mine water, tailings seepage, and storm water reaches the wastewater treatment plant to remove sediments which contain the majority of the metals in the drainage; these include filters, settling ponds, and mine sumps. A reservoir for storing up to 207.7 million gallons will be established in worked-out portions of the mine by year 27 to handle maximum water storage requirements. This will provide control over the volume of water going through the wastewater treatment plant and discharging into the Clark Fork River so that permit limits can be met.

Direct discharges to the Clark Fork River through the diffuser and storm water discharges from the tailings paste facility area will be monitored. The Clark Fork River will be sampled above and below the point of discharge as well as at the Idaho border. The effluent will also be sampled. Infiltration into the tailings facility and the waste rock beneath the mill site and at the evaluation adit will be minimized by grading and revegetating their surfaces. Any ground water contamination by tailings seepage will be detected by a series of monitoring wells at the boundary of the approved mixing zone beneath the facility. Water seeping through the mill pad will be intercepted by finger drains and collected in a pond. That water will be monitored to determine if it meets the specified limits and will only be allowed to discharge during a 10-year/24-hour storm event; otherwise, the water will be rerouted to the mill for reuse or discharge through the wastewater treatment facility.

DEQ completed a significance determination with regards to surface and ground water quality degradation in the Statement of Basis for Sterling's MPDES permit (see Appendix D in the final EIS for this document). Water discharging at or below the limits and under specified conditions as applies at the storm water discharge points would not degrade surface or ground water. An MPDES permit is required for all discharges to surface water or ground water.

Sterling will have to apply for a Section 318 Authorization for a short-term exemption of standards during construction, approximately 60 days before construction starts. Approval of that permit will be based on Sterling's commitment to implement all Best Management Practices specified in Alternative V and its permit application. This permit is used for such purposes as culvert installation, and working in or near live streams that may be impacted during the construction process. Sterling will also need to obtain a storm water permit prior to mine construction.

All discharges authorized under Sterling's MPDES Permit will be below levels that will affect human health or create chronic problems for freshwater life. Sterling is required to comply with water quality standards established by the Board of Environmental Review in WQB-7 and the limits established in the approved MPDES permit. The EIS analysis in the Hydrology section of Chapter 4, indicates that Sterling's plan of operation, reclamation plan, and water management plan will achieve these limits and standards. This permit will remain in force throughout the life of the project from construction of the evaluation adit through mine closure and final reclamation. It will be subject to review every 5 years and whenever major revisions to the plan of operations, reclamation plan, or water management plan are proposed.

g. *Federal Clean Water Act—Section 401 Certification*

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 if the project will protect surface waters or result in minimal impacts to surface water quality.

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 predicted in the final EIS 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. In addition, the limits required by the MPDES permit will result in no degradation of surface or ground waters from discharges of mine-related waters. A waiver of certification is appropriate.

B. KNF DECISIONS, RATIONALE, AND COMPLIANCE WITH LEGAL AND POLICY MANDATES

1. Decisions

As Kootenai National Forest Supervisor it is my decision to approve Sterling's plan of operations consistent with Alternative V of the final EIS and modified by this ROD. This approval will allow Sterling to utilize portions of 217 acres of NFS lands for road access, mill site location and operation, evaluation adit site and operation, air-intake ventilation adit location, utility corridors, and for a portion of the paste tailings facility. The plan of operations as approved will involve the closure of 5.22 miles of road for bear habitat, and allow the Chicago Peak Road to remain open to the public. 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. The amount of surface disturbance expected on NFS is approximately 140acres. This disturbance will be fully bonded for reclamation. A full disclosure of impacts as a result of my decision are described in Alternative V of the final EIS for the Rock Creek Project

This approval of a plan of operations is consistent with Alternative V, and this ROD stages Sterling's plan of operation. Although the entire plan is approved, Sterling is only authorized to proceed in stages, and to first implement the activities and necessary mitigations for the evaluation adit. Sterling's implementation of mine development can commence only after the agencies review the additional information from the evaluation adit; confirm there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and inform Sterling in writing of their review results.

2. Rationale

In making a decision on the Rock Creek Project, I had to consider if I had adequate information to determine the following:

a. Does the project comply with federal and state laws and/or regulations?

I find the information used to complete the final EIS is sufficiently thorough and current to make a decision on the Rock Creek Project. The final EIS document meets all the requirements of NEPA. The on-site data collection is extensive, the analysis procedures follow scientific methodologies, and the coordination with EPA, USFWS, States of Idaho and Montana began early and continued throughout the process. In addition, the information gained and experiences learned from the nearby Troy Mine assisted greatly in determining the effect on water resources. The final EIS explains that the Troy Mine and related facilities serve as a valuable analog and working model to help predict the impacts that would be expected for the Rock Creek project. The mine method at Troy (room and pillar), the ore deposit (low grade silver and copper minerals disseminated in Revett Formation quartzites), and the tailings (fine ground quartz) are essentially the same as those at Rock Creek.

As described in the final EIS and explained in parts of the Decision, I recognize the potential for effects on resources such as water, air, wildlife and the Cabinet Mountains Wilderness.

The 1897 Organic Act, its regulations at 36 CFR 228 Subpart A, and the 1955 Multiple Use Mining Act requires the Forest Service to reasonably regulate mining activities to

minimize adverse environmental effects on National Forest resources and ensure compliance with applicable environmental laws. If Sterling's proposal can be approved in a manner that will comply with all applicable environmental laws, the Forest Service has no authority to prohibit or to deny proposals that are reasonably necessary to mining of private mineral estate or the use of unpatented claims on National Forests subject to the 1872 Mining Law (U.S. v. Weiss, 642 F. 2d 296 (9th Cir., 1980)).

In order for a plan of operations to be approved, it must comply with the Forest Service locatable mineral regulations in 36 CFR 228 Subpart A. These regulations state, in part, that all operations shall be conducted, where feasible, to minimize adverse environmental impacts on National Forest surface resources, including compliance with all applicable federal and state air and water quality standards, and standards for the disposal and treatment of solid wastes. All practicable measures must be taken to harmonize operations with scenic values and maintain and protect fisheries and wildlife habitat that may be affected by the operation. If a proposed Plan of Operations is found to conflict with regulation, policy, or federal law, the Forest Service must notify the applicant that a revision of the proposed plan of operations is required. The applicant then has the option to either modify the Plan of Operations and resubmit it for approval or withdraw it.

I believe that with proper mine design, requirements of the necessary permits, adherence to the Biological Opinion, and thorough monitoring and administration the mining activities as approved will comply with federal and state laws and/or requirements.

b. Does the project meet the objectives of the Forest Service Minerals Policy?

The objectives of the Forest Service Minerals Policy are: Exploration, development, and production of mineral and energy resources and reclamation of activities are part of the Forest Service ecosystem management responsibility. The Forest Service 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 Service 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 believe this decision meets the objective of Forest Service policy. It provides for the functioning of ecological processes, and the protection of natural resources through the agency enforcement of the plan of operations requirements.

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

The 1987 Record of Decision for the Land and Resource Management Plan for the KNF recognized the potential for minerals development in the Cabinet Mountains Wilderness. The Forest Plan does not approve site-specific mineral development, but does direct that mining proposals be evaluated through the NEPA process. Through the preparation of the final EIS and site-specific management area changes, I believe this project is consistent with the direction in the Forest Plan.

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

In the past 3 years as Forest Supervisor, I have met with and listened to numerous individuals, interest groups, and government agencies regarding the Rock Creek mine proposal. The concerns that were raised for this project over the past 13 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 is a little more challenging. We 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. 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, 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 final EIS expressed concerns about the Forest Service's and State of Montana DEQ's ability and/or commitment to on-site administration. The DEQ Director and 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. The agencies will pursue the development of a Memorandum of Agreement or Understanding with Sterling where the agencies would conduct the 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. Sterling has agreed to this stipulation.

3. Compliance with Legal and Policy Mandates

a. Mining and Minerals Policy Act of 1970

A main objective of this act is 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.

KNF has met the objective of this act by approving the plan of operations as outlined in Alternative V of the final EIS. 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 mitigations 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 and Biological Opinion for Alternative V contained in Appendices B and E, respectively, in the final EIS.

b. 36 CFR 228 Subpart A

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 the final EIS 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.

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 as outlined in this ROD. 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 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.

If at any point during project life, the operation is shut down by the operator, 36 CFR 228.10 requires the following items to be implemented.

> "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."

It is my decision as Kootenai National Forest Supervisor to also require that:

- 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, KNF will consult with the operator, DEQ, FWP, EPA, USFWS 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, DEQ, FWP, EPA, USFWS 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.

The ROD incorporates all practicable means to avoid or minimize environmental harm from Alternative V and institutes a monitoring and enforcement program for the required mitigation. Alternative V will allow Sterling to exercise its rights to develop its mineral deposits consistent with applicable environmental laws. This decision, therefore, satisfies the requirements of the National Forest Management Act, the Organic Administration Act, the Federal Land Policy and Management Act of 1976, the 1872 General Mining Act, and the 1970 Mining and Minerals Policy Act.

c. *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 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 final EIS. The following is a discussion of each concern. Other than members of five Native American 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.

(1) 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 Hell Gate 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 mitigations will be required to minimize, eliminate, or avoid impacts to resources wherever possible and practicable.

Tribal government representatives and members of five 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 final EIS. 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.

(2) 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 III 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 some historic use of the area, they have not identified any specific places or items of tribal or religious interest.

(3) 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 may 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.

In conclusion, 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.

d. *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 Native Americans when a proposed land use might conflict with traditional Native American religious beliefs or practices. The act does not require that land uses, which conflict with Native American religious beliefs or practices, be denied.

Conflicts identified for Alternative V include visual and audible disruption from mining activities of some Native American 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 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 Native American values and how those values are placed on the traditional use. 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 Native Americans' 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.

e. *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 or archeological 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 mitigations are required. Sterling will be required to immediately inform the Forest Service 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 Graves Protection and Repatriation Act.

f. *Clean Water Act (Wetlands)*

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 predicted in the final EIS 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 final EIS, DEQ will waive 401 certification concurrent with this decision.

g. *Endangered Species Act*

KNF met its obligation to the Endangered Species Act by completing two Biological Assessments (BA) pursuant to the Endangered Species Act and in consultation with the US Fish and Wildlife Service (USFWS); one BA was for bull trout and the second BA covered terrestrial plant and animal species. The BAs, (Appendix B final EIS), concluded that the project will have "no effect" on water howellia and "is not likely to adversely affect" the bald eagle, peregrine falcon, gray wolf, or lynx or their habitats. However, the BA did document that Alternative V "may adversely affect" the grizzly bear and its habitat, as well as both the adfluvial and resident bull trout and their habitat in the mainstem of Rock Creek.

Numerous mitigations have been incorporated into Alternative V to reduce, eliminate, avoid, or minimize the impacts on these threatened and endangered species including the grizzly bear. A mitigation plan is appended to the BA for terrestrial species in the final EIS and includes 10 requirements to reduce mortality risk for the grizzly bear. Sterling will secure 2,350 acres of land (through conservation easements or land acquisition) to maintain habitat effectiveness. Sterling will secure 100 acres of land in addition to that listed above (through conservation easements or land acquisition) to reduce habitat constriction between the north and south habitat corridor in the Cabinet Mountains. Sterling will fund 5.22 miles of road closures to reduce mortality risk and maintain habitat effectiveness. Sterling will also establish a trust fund and/or post a bond to cover mitigation plan implementation costs.

The USFWS 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, the gray wolf, and the Canada lynx. The USFWS concluded, however, that if the project were to be implemented as proposed, it is likely to jeopardize the continued existence of the grizzly bear in the Cabinet Yaak Ecosystem. Because the USFWS concluded a jeopardary opinion for the grizzly, they are required by the Endangered Species Act to develop a Reasonable and Prudent Alternative (RPA) that would avoid the likelihood of jeopardizing the continued existence of a listed species. The requirements of the RPA for the grizzly bear, as outlined in the BO, have been incorporated into Alternative V in the final EIS. See the Alternative V description in Chapter 2 of the final EIS.

The BO from the USFWS is reproduced in its entirety in Appendix E of the final EIS. The RPA to avoid jeopardy includes a Management Plan to avoid jeopardy, the addition of a Law Enforcement and Information and Education staff positions to the Montana Department of Fish Wildlife and Parks solely dedicated to this project, an access management plan and monitoring plan for the grizzly bear. The USFWS also developed Reasonable and Prudent Measures (RPM) to minimize incidental take of the grizzly bear. The RPM includes terms and conditions that also were incorporated into Alternative V (Appendix E, final EIS).

On December 10, 2001, a report from the Selkirk/Cabinet/Yaak subcommittee to the Interagency Grizzly Bear Committee indicated a loss of 12 bears in the Cabinet/Yaak Ecosystem from 1999 through 2001. A USFWS research biologist explained the 12 bear losses consisted of seven from natural mortalities and five from human caused mortalities. Of the five human-caused mortalities, none were from the Cabinet portion of the ecosystem. The jeopardy opinion as outlined in the BO for this project was based, in

part, on bear mortalities from 1988 through 2000. The grizzly bear losses in 2001 included one from human causes and two natural mortalities. None of the 2001 losses were in the Cabinet portion of the ecosystem. The additional one year of mortality information does not constitute a changed condition from the information used in the BO to require re-consultation.

A number of aquatic/fisheries mitigations are included under Alternative V that will benefit bull trout. The main focus of most of these mitigations 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 in Attachment 2.

The USFWS also developed a BO for the potentially affected Columbia Basin bull trout distinct population segment (DPS) population and the Rock Creek bull trout population. It is the USFWS opinion that effects of the proposed mining operations and cumulative effects would not jeopardize the continued existence of the Columbia Basin DPS Bull Trout population. It is the USFWS opinion that the proposed mining operations comply with the Kootenai Forest Plan as amended by INFS. USFWS has made a determination of "May Affect" and that the project is "Likely to Adversely Affect" individual fish within the Rock Creek drainage.

The USFWS developed the RPM with terms and conditions that are incorporated into Alternative V as a means to reduce the impacts on incidental take of bull trout as a result of implementing the proposed action (Appendix E in the final EIS).

I believe that the terms, conditions and mitigation as outlined in the BO and the BA and incorporated into this decision will protect the bull trout populations in the Rock Creek drainage and Lower Clark Fork River from potential impacts related to this project.

h. *Forest Plan Conformance*

Management of NFS lands in the vicinity of the proposed Rock Creek Project is guided by the direction found in the Kootenai Forest Plan approved in September 1987. The Forest Plan guides all natural resource management activities and establishes management standards. The Forest Plan uses management areas 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 final EIS 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 final EIS, 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. However, this is not inconsistent 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.

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.

Forest Plan management area revisions as discussed in Chapter 4 of the final EIS and as shown in Figure 4-1 of the final EIS are in error. Table 6 of this ROD revises the actual acreages that are affected. This acreage change is the result of recalculation by computer of the Forest database used in the final EIS that was original done by hand. The new acreage calculations does not affect the analysis or conclusion contained in the Rock Creek Project final EIS. Therefore as a result of the analysis and conclusion in the final EIS and the objectives, contents and guidelines in the Kootenai Forest Plan, I have determined that a non-significant amendment to the Forest Plan is appropriate. This decision revises the management area designation on 217 acres of NFS lands (see Table 6). 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.

There was also a printer error for Figure 4-1 in the final EIS and that figure has been corrected and is attached to this ROD as Figure 3.

Table 6. 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	
	Final EIS Acres	Revised Acres	Final EIS Acres	Revised Acres	Final EIS 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

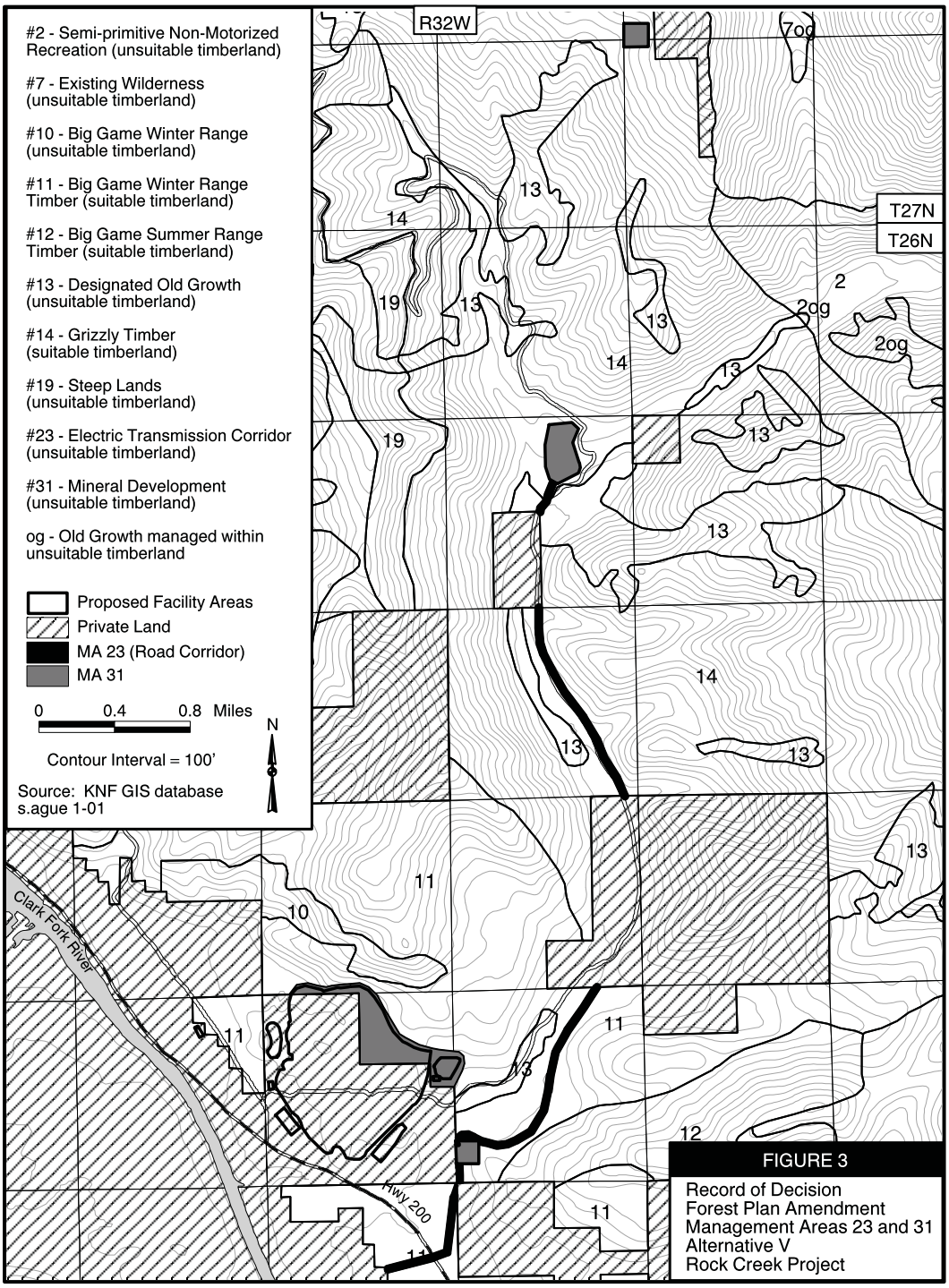

FIGURE 3

Record of Decision
Forest Plan Amendment
Management Areas 23 and 31
Alternative V
Rock Creek Project

I have determined that these changes are non-significant for the following reasons.

(1) 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.

(2) Location and Size. Management areas in the vicinity of the project are described in Chapter 3 of the final EIS. Figure 3-1 in the final EIS 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, which 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 mitigations 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.

(3) 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.

(4) 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 reversed once the

mine has been closed and all disturbed land reclaimed according to the approved reclamation plan.

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

The Road Use Permit will allow Sterling to upgrade and maintain FDR No. 150 as described in the final EIS, including relocating, widening, and paving the road between Montana Highway 200 and the mill site along with constructing several other small access roads. 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 mitigations required in Attachment 1 and has finalized the required traffic management plan.

No borrow has been identified as necessary for the mine facilities other than waste rock from the mine or material within the footprint 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 final EIS. (Table 2-17 in the final EIS) 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.

These permits are within the guidelines of the Forest Plan and my authority to approve. My decision to approve this plan of operations is not authorization to proceed the above stated activities. The permits, if needed, will be processed through the appropriate guidelines and any additional NEPA analysis that may be required to identify new issues such a recent listings of threatened and endangered species or KNF sensitive species.

i. 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)." 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. This Act grants Sterling such a right. KNF has met the conditions of this act by approving the plans of operations as defined by Alternative V of the final EIS and this ROD. The reasonable use is defined in Alternative V, and mitigations will be required as listed in Attachment 1 that minimize impacts on Federal resources.

j. 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 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 mitigations as stated in this ROD outline how the claims can be developed in a manner to meet the required applicable laws.

k. 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 received patent rights to the mineral estate for 99 lode mining claims (1,686 acres within the CMW and 123 acres of surface and mineral rights outside but adjacent to the CMW) from BLM in 1989 (see Figure 2). Sterling acquired those patents from ASARCO on October 14, 1999. Under the Wilderness Act, Sterling will be allowed to develop those rights if all other applicable laws and regulations are met. 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 that would allow the provisions of this act to be enforce.

C. ALTERNATIVES NOT SELECTED AND THE AGENCIES' RATIONALE

The following alternatives are those in the final EIS that were not selected as the basis for our decisions. If there is an agency-specific reason for that decision, it is included in a separate paragraph.

1. Alternative I: the No Action Alternative

We 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. 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 final EIS 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 we 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.

2. Alternative II: the Proposed Action

We did not select Alternative II, due to greater adverse environmental impacts as compared to Alternative V. Implementation of Alternative II would disturb 584 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 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 significantly 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 probably 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 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 mitigations and monitoring requirements proposed under the agency alternatives would further reduce impacts beyond what would be accomplished under Alternative II.

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

3. Alternative III: the Proposed Project with Modifications and Mitigations

We 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 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 risk of tailings and tailings water reaching surface waters should the impoundment fail compared to the 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.

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 II, 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 mitigations 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 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 mitigations 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 offset 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.

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

4. **Alternative IV: Modified Rock Creek Project with Mitigations.**

We 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 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 risk of tailings and tailings water reaching surface waters should the impoundment fail compared to the 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 mitigations, 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 probably 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 and final EISs, 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. We believe Alternative V minimized the risks that would remain under Alternative IV and did not increase impacts to other resources.

D. RECLAMATION BOND

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 stages 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 7 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 reclamation bond must be submitted according to MMRA regulations in ARM Title 17, Chapter 24, Subchapter 1 and USFS regulations in 36 CFR 228.15. KNF's guidance is found in the Forest Service Manual, 2843 Reclamation Bonding. 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.

1. **Evaluation Adit** (under a DEQ Exploration License)

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 cost analysis for the evaluation adit is appended to this document.

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

A preliminary estimate has been prepared for full mine build out. The reclamation liability 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, and contains numerous assumptions and conditions that are dependent on yet-to-be-completed studies and supplemental analytical work. Revisions to this estimate will be made after completion of the evaluation adit phase.

3. **Wastewater Treatment for Each Phase of the Rock Creek Project**

a. *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.

b. *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.

VIII. RIGHT TO ADMINISTRATIVE REVIEW (Appeal Processes)

The statutes under which our decisions are documented in this Record of Decisions are provided that our decisions may be appealed or challenged as described below.

A. APPEALS OF THE DEQ DECISIONS

Notice of the decisions and any permit issuance will be published in The Missoulian (Missoula, Montana), the Western News (Libby, Montana), The Daily Inter-Lake (Kalispell, Montana), the Sanders County Ledger (Thompson Falls, Montana), The Bonner Daily Bee (Sandpoint, Idaho), and the Spokesman Review (Spokane, Washington) as well in the Department's web page.

1. **Metal Mine Reclamation Act Permits and Licenses**

Under the Metal Mine Reclamation Act (MMRA), DEQ's decisions are subject to court appeal by the applicant and other parties who have standing for 90 days after a decision is published (82-4-349, MCA). Challenges to the decision under MMRA must be filed in state district court. In addition, the applicant has the right to request an administrative hearing on a permit denial if the applicant files a request for the hearing within 30 days of receipt of the notice. The administrative hearing request should be filed with at the following address: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

2. **Montana Pollution Discharge Elimination System Permit**

Section 75-5-403 and 75-5-611, MCA, of the Water Quality Act provides that a permit applicant may request a hearing on the denial of an application or modification of a permit by filing a written request for the hearing within 30 days of notice of the denial or modification. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

3. **Air Quality Permit**

The Clean Air Act of Montana provides that any person jointly or severally adversely affected by the final action regarding this Air Quality Permit may request a hearing before the Board of Environmental Review. The request for a hearing must be filed within 15 days after the department renders its decision and shall contain an affidavit setting forth the grounds for the request (MCA 75-2-211(10&11). Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

4. **Montana Environmental Policy Act**

Under 75-1-201(6)(a), a challenge that is based on an alleged failure of DEQ to comply with the Montana Environmental Policy Act must be filed in state district court within 60 days of the decision.

B. APPEALS OF THE USFS DECISIONS

The Notice of Appeal under either process described below must be sent to:

Regional Forester
USDA Forest Service, Northern Region,
PO Box 7669
Missoula, MT 59807

Detailed records of the environmental analysis are available for public review at the Kootenai National Forest Supervisor's Office, 1101 Hwy 2 West, Libby, MT 59823. Failure to file the appeal in compliance with the procedures identified in these regulations could result in dismissal of the appeal.

As previously state above in this ROD, if no appeals are received, implementation of this decision may occur on, but not before, five (5) business days from the close of the 45-day appeal filing period. If an appeal is received implementation may not occur for fifteen (15) days following the date of appeal disposition.

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

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 with 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 with direction provided at 36 CFR 251.90.

2. **Public Appeal Process (36 CFR 215)**

This ROD is also subject to appeal pursuant to 36 CFR Part 215.7. A written Notice of Appeal must be submitted within 45 days of the publication of the Notice of Decision (36 CFR 215.9) in a newspaper, The Daily Inter-Lake, Kalispell, Montana. Appeals must meet the content requirements of 36 CFR 215.14.

IX. APPROVALS

This Record of Decision is effective for each agency's authorized items of approval on signature.

/S/

_____ _____

JAN P. SENSIBAUGH Date
Director, Montana Department of Environmental Quality

/S/

_____ _____

BOB CASTANEDA Date
Forest Supervisor, Kootenai National Forest

Contact Persons

For additional information on the mining, operation, and closure plan, this Record of Decision, or the Environmental Impact Statement, please contact either John McKay, Project Team Leader, US Forest Service, Kootenai National Forest 1101 US Highway 2 West, Libby, MT 59823, or Warren McCullough, EMB Bureau Chief, DEQ, PO Box 200901, Helena, MT 59620-0901.

ATTACHMENT 1

TABLE OF APPROVED STIPULATIONS

AGENCY STIPULATIONS – MODIFICATIONS, MITIGATIONS, AND MONITORING REQUIREMENTS

The modifications and mitigations listed in Tables 1 and 2 respectively, and the monitoring plans listed in Table 3 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 final EIS. 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 attached to the ROD, 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 final EIS. 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. None of these items are significant changes but were added to provide additional measures of environmental protection or clarification of certain requirements.

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 Mitigations	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 final EIS. 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 are 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 final EIS.	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 crestlines 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 Mitigations	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 final EIS 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).

Modifications and Associated Mitigations	USFS Objectives and Authority for Requiring Modification	DEQ Objectives and Authority for Requiring Modification
3. When additional ventilation is required to maintain compliance with MSHA regulations, Sterling and the agencies will review air intake 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.	This requirement will help minimize the impact of the air-intake adit on mountain goats and wilderness users. The authority for this mitigation is 36 CFR 228.8(a), (b), (d), and (e) and 228.15.	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. 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 final EIS 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 final EIS so that the powerlines 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 Mitigations” 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 Mitigations	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 final EIS.	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 final EIS. 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 Mitigations	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 final EIS 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. Mitigations

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
<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 Appendix K the final EIS. (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	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).

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
	CFR 228.8(b), (c), (e), and (h).	
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/mitigations 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).
<u>Air Quality</u>		
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).

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 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 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS (pages 2-137 to143) and applicable portions of the Alternative III description (pages 2-76 to 80 of the final EIS). 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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*[1], 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 final EIS pages 2-141 through 2-143. These plans will include but are not limited to the following items:	The objective of these mitigations 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).

[1] In the final EIS 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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).
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 forb 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 final EIS.	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 final EIS 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 final EIS.	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 final EIS. 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).

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.	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 final EIS (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).

Mitigations		USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 storage and replacement.	A more detailed survey is needed to improve knowledge of the soil resources and identify the volume of soil types available for reclamation.	A more detailed survey is needed to improve knowledge of the soil resources and identify the volume of soil types available for 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
Rock Mechanics/Subsidence/Hydrofracturing		
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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS. These include but are not limited to the following items:	These mitigations (a-c) are 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 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 final EIS.	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 final EIS. These will include but are not limited to the following items.	These mitigations (b-c) are 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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.	These mitigations are 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 develop a more detailed 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, and the Biological Opinion in Appendix E of the final EIS. 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 USFWS 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 mitigations 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 mitigations 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 and the Biological Opinion in Appendix E of the final EIS.	These items (a-t) are required in the USFWS 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.

Mitigations		USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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.
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 help 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.	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.	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.	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.

Mitigations		USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
m.	*Sterling will acquire perpetual conservation easements or purchase replacement grizzly bear habitat (2,350 acres). Of this, 53 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 final EIS.	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 5.22 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, and 1.61 miles on FDR No. 2285.	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 USFWS. 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
Transportation, Roads, & Utilities		
43. *Sterling will develop a traffic management plan that will include but is not limited to the following items:	These mitigations (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 final EIS	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 mitigations 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.	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 mitigations are 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 mitigations are 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. This mitigation is authorized by 82-4-336(12), 82-4-351, 75-5-303, and 75-5-605, MCA. MCA.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
53. Mitigations to reduce sediment and erosion during construction and operation will include the following as defined in the final EIS.	The objective of these mitigations (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 final EIS 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 final EIS. 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS).	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). These mitigations are 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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
a. *Postoperational 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). These mitigations are 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, 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 pumpback wells.*[4] *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 pumpback 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 final EIS (see Alternative III for more details about conceptual pumpback 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). These mitigations are 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 final EIS 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 pumpback well construction was added per input from EPA, October 17, 2001.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS (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. KNF has no authority to require this mitigation	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 mitigations 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 final EIS:	These mitigations are 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.

Mitigations		USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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.

Mitigations	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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.

C. Monitoring Plans

Monitoring Plans	USFS Objectives and Authority for Requiring Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS 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 final EIS 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 final EIS and/or if the impacts will be substantially different or greater than disclosed in the final EIS, 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 mitigations 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 mitigations are working, it documents the presence's 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 USFWS 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.*	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 final EIS. 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 final EIS.	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 premining 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS. 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 final EIS. 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.*[5]	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 mitigations 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.

[5] 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.	This necessary to verify assumptions used in the final EIS analysis and to determine if changes to facility plans or additional mitigations are needed to maintain the level of water quality-related impacts at or below what is predicted in the final EIS. The authority for this mitigation is 36 CFR 228.8(b).	This mitigation necessary to verify assumptions used in the final EIS analysis and to determine if changes to facility plans or additional mitigations are needed to maintain the level of water quality-related impacts at or below what is predicted in the final EIS 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.	Necessary to confirm analyses in the final EIS 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 final EIS 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 USFWS 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 mitigations 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 Mitigations	DEQ Objectives and Authority for Requiring Mitigations
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 final EIS.	The objective of the mitigations 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 final EIS.	The objective of the mitigations 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 final EIS 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 would 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. Mitigations 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 Mitigations
- Paste Tailings Mitigations
- 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 ore body 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.

[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.

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 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 ore body), 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 stage.

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 Mitigations

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 Mitigations

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 final EIS in order for the construction of the mine development adits to progress into the ore body. *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 mitigations 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 mitigations must be in place for project advancement. Similarly, if unanticipated drainage flows or drainage quality did not have appropriate agency approved mitigations 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 mitigations 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 final EIS 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 final EIS. 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 ore body 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 ore body. 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. Metals in water samples would be preserved by adding nitric acid in the field to lower the pH to less than 2.0. 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 ore body.

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 ore body 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 mitigations to retard and stop any deleterious effects. Possible mitigations 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 final EIS. 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 final EIS, 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 final EIS. 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 final EIS 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 final EIS, then an additional EIS would be required. The project could not proceed beyond the evaluation adit construction stage 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 the Forest Service for use in determining the adequacy of the extra law enforcement provided by Sterling and if mitigations 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 USFWS 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.

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;

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

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

- 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. 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 USFWS 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

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

circumstances of the accident. Mitigations 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.

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

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 mitigations have 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.

<u>Monitoring Elements</u> (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 U.S. Fish and Wildlife Service 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)

- The Forest Service 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.
- Preproduction 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, 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 mitigations have 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 final EIS. 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 final EIS. 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 final EIS, 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 reverify 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, the Forest Service in consultation with the USFWS 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 in the Biological Assessment and requirements in the Biological Opinion.

n. Transportation Monitoring Report.[1] 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.

[1] The detail on the Transportation Monitoring Plan is not included in the final EIS but the agencies determined some monitoring was necessary in order to monitor the effectiveness of the traffic management plan.

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 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.*[2]

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 final EIS.

(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.

[2] The additional requirement of submitting laboratory data prior to formal monitoring reports was added after input from EPA, October 17, 2001.

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 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, USFWS, 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

MPDES PERMIT DECISION LETTER

Montana Department of
ENVIRONMENTAL QUALITY
Judy Martz, Governor
P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.state.mt.us

December 26, 2001

Heather Duval
Director of Corporate Development
Sterling Mining Company
424 S. Sullivan Rd., Suite 300
Veradale, WA 99037

RE: Montana Pollutant Discharge Elimination System Permit MT-0030287
Notice of Final Decision

Dear Ms. Duval:

This notice serves as notification of the Department of Environmental Quality's final decision to issue a Montana Pollutant Discharge Elimination System (MPDES) permit to the Sterling Mining Company. This decision is made pursuant to the Administrative Rules of Montana (ARM) Section 17.30.1378. The proposed permit contains modifications that were based on comments received during the public comment period. These changes are discussed in the fact sheet for this permit and are summarized below. The Department is issuing this permit under the authority of Sections 75-5-401 and 402, MCA and Sections 402 and 303 of the federal Clean Water Act.

The application for this permit was received November 19, 1993. The application was updated January 13, 1998 by Asarco Inc. to reflect changes made in the project due to the adoption of an alternative water management plan as identified in the draft Environmental Impact Statement. It was updated again on January 6, 2000 to reflect the change in ownership from Asarco Inc. to the Sterling Mining Company.

The Department developed a draft permit and fact sheet and issued a preliminary decision to issue the permit in Public Notice MT-96-03 (February 21, 1996). Two public hearings were held on the draft permit. The first was held on April 10, 1996 at the Noxon School in Noxon, Montana and the second was held on April 10, 1996 at the Sandpoint Middle School in Sandpoint, Idaho.

The following changes have been made to the proposed permit in response to public and agency comments on the draft permit and fact sheet:

1. An additional analysis was included in the fact Sheet to demonstrate that no statistical difference in water quality at the 95 percent confidence level could be detected at the Idaho border. The State of Idaho requested this analysis.
2. The monitoring frequency for all parameters has been increased, and effluent limits for phosphorus and selenium have been included in the permit, as requested by the State of Idaho.
3. The State of Idaho submitted comments regarding Idaho's narrative standard on excessive nutrients. The discharge must conform to the more stringent Special Resource Water designation, which prohibits degradation of existing water quality as defined by Idaho. A new section was added to the fact sheet regarding Idaho's Special Resource Water designation.
4. The original fact sheet and statement of basis contained a numeric error in calculating the reasonable potential for aluminum to exceed water quality standards. This error was corrected (see Table I.A.4.1). Because there would be no reasonable potential for aluminum to exceed water quality standards, the effluent limit for aluminum was removed from the permit consistent with federal regulations and guidance.
5. Several comments noted the lack of actual flow measurements in the Clark Fork River when Noxon Rapids Dam was not discharging. As a result of these concerns, the USGS, at the request of DEQ, conducted their annual routine monitoring during a shutdown of the Noxon Rapids Dam. Hydrometrics Inc., on behalf of the applicant, also conducted monitoring during this period. The results of these measurements are discussed in Section I.A.3 of fact sheet and statement of basis and were incorporated into water quality based effluent limits for Outfall 001. Effluent limits in the draft permit are based on the 7-day, 10-year low flow (3,610 cfs). Measured flow in the river during closure of the Noxon dam was determined to be 365 cfs, which is much lower than the original estimate of 1,440 cfs used in the draft permit for critical flow. During these periods of reduced flow, nondegradation based water quality standards for metals would be exceeded. Because the dam is closed nightly for up to 8 hours and longer on weekends, the effluent limits would be based on the new lower flow.
6. An instream monitoring requirement was added to the permit in response to comments from the Environmental Protection Agency (EPA). Upstream monitoring will be required for constituents of concern. Nutrient and related constituents will be monitored upstream and downstream of the discharge. The permittee would also be required to conduct tracer studies to verify the mixing zone predictions.

Responses to all public comments on the permit are included in the Final Environmental Impact Statement for the Rock Creek Mine project [USFS and DEQ, 2001].

After the draft permit was issued, the U.S. District court in Missoula issued an order stating that 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. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA. et al., CV 97-35-M-DWM, District of Montana, Missoula Division (September 21, 2000). The Montana Water Quality Act (MWQA) authorizes the issuance of point source discharge permits on a listed water body pending completion of a TMDL provided 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 Department finds that this permit complies with the District court's order and the (MWQA) because the receiving water are not listed as impaired on either the 1996 or 2000 303(d). Effluent limitations and permits conditions are based on compliance with Montana's Nondegradation Policy and federal treatment requirements. This permit and Statement of Basis will be submitted to EPA for approval of the TMDL under Section 303(d) of the Clean Water Act.

In accordance with ARM 17.30.1378(2)(a), the Department's final decision to issue this permit is effective February 1, 2002. Pursuant to 75-5-403, MCA, the permitee may appeal this decision prior to the effective date of the permit. The appeal must be in writing and state the nature of the appeal. An appeal of the permit is before the Board of Environmental Review and must adhere to the procedures of 75-5-611(4), MCA.

A copy of the discharge permit should be made available to the person in charge of the wastewater treatment facilities. Please take note of the monitoring requirements in Part I of the permit and the requirements for submittal of work plans in Part V of the permit. Preprinted Discharge Monitoring Reports (DMRs) will be submitted to you soon. These reports must be submitted monthly and signed by a responsible corporate official in accordance with Part IV.G of your discharge permit.

If you have any question regarding the permit, please contact Tom Reid in the Water Protection Bureau at (406) 444-5329 or toreid@state.mt.us.

Sincerely,

/S/

_____

Jan P. Sensibaugh, Director
Department of Environmental Quality

cc: Gwen Jacobs, EPA
Gwen Fransen, Regional Administrator
Idaho Dept. of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

ATTACHMENT 5

AIR QUALITY PERMIT

Montana Department of
ENVIRONMENTAL QUALITY
Judy Martz, Governor
P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.state.mt.us

December 26, 2001

Frank Duval
Sterling Mining Company
424 S. Sullivan Rd.
Veradale, WA 99037

Dear Mr. Duval:

The Department of Environmental Quality (Department) has made its decision on the air quality permit application for construction and operation of an underground silver/copper mine. The application was given permit number 2404-01. The Department's decision may be appealed to the Board of Environmental Review (Board). A request for hearing must be filed by January 10, 2001. If no appeal is filed, this permit shall become final on January 11, 2002.

Procedures for Appeal: Any person jointly or severally adversely affected by the final action my request a hearing before the Board. Any appeal must be filed before the final date stated above. The request for a hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Adminstrative Procedures Act. Subm,it requests for a hearing in triplicate to: Chairman, board of Environmental Review, P.O. Box 200901, Helena, MT 59620.

Conditions: See attached.

For the Department,

/S/

David L. Klemp
Air Permitting Supervisor
Air and Waste Management Bureau
(406) 444-3490

DK:

Enclosure

Air Quality Permit

Issued to:	Sterling Mining Company P.O. Box 868 Troy, MT 59935	Permit #2414-01 Original Application Received: 12/15/87 Supplemental Information Received: 12/4/95, 5/29/97, 7/24/98 Original Preliminary Determination Issued: 3/5/96 Revised Preliminary Determination Issued: 1/23/98 Department Decision Issued: 12/26/01 Final Permit Decision:

An air quality permit, with conditions, is granted to Sterling Mining Company (Sterling), pursuant to Section 75-2-204 and 211, Montana Codes Annotated (MCA), as amended, and Administrative Rules of Montana (ARM), 17.8.701 *et seq*. as amended, for the following:

SECTION I: Permitted Facilities

An underground silver/copper mine and processing facility known as the Rock Creek Project located primarily in Sections 3 and 28, Township 25 North, Range 32 West and Section 34, Township 27 North, Range 32 West, Sanders County.

SECTION II: Limitations and Conditions

A. Maximum ore production (measured as throughput at the primary crusher) shall be limited to 10,000 tons during any 24 hour rolling period and 3,540,000 tons during any 12 month rolling period. Maximum diesel fuel consumption by underground equipment shall be limited to 306,365 gallons during any 12 month rolling period. Maximum propane consumption by the propane fired heaters shall be limited to 610,000 gallons during any 12 month rolling period. Maximum Ammonium Nitrate/Fuel Oil (ANFO) use shall be limited to 2761 tons during any 12 month rolling period. By the 25th day of each month, Sterling shall total the process amounts for the previous twelve months to verify compliance with the monthly rolling averages. These records must be maintained on-site and be available for inspection for a period of 5 years (ARM 17.8.710).

B. Sterling shall install, operate, and maintain a catalyst to control nitrogen oxides (NOx) on each temporary propane generator. The stack height of each generator shall be a minimum of 5 meters above ground level (ARM 17.8.710).

C. Particulate stack emissions are limited to 0.05 grams per dry standard cubic meter. This applies to the baghouse controlling emissions from surface ore handling. Within 180 days after initial start up of the ore processing facilities, Sterling shall conduct performance tests on the baghouse to verify compliance with this limitation. The need for future testing will be determined by the Department of Environmental Quality (Department). Detailed descriptions of the baghouse (make, model, flowrate, etc.) shall be submitted to the Department prior to the commencement of construction. All performance tests shall be conducted in

accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.340, 17.8.710, 17.8.105, 17.8.106, and 40 CFR Part 60, Subpart LL).

D. Sterling shall perform particulate and NOx emissions testing of the exhaust ventilation adit (evaluation adit) to verify and evaluate emission and deposition estimates contained in the application. Concentrations should be measured near the point of generation inside the mine and at the point of exhaust to the atmosphere. The specific emission limitations which are applicable at the point of exhaust to the atmosphere are 1.0 tons per year of particulate less than 10 microns (PM-10) and 29.9 tons per year of NOx. Testing methodology must be approved in advance by the Department (ARM 17.8.105, 17.8.106, and 17.8.710).

E. Process fugitive emissions are subject to an opacity limitation of 10%. Other fugitive emissions are limited to 20% opacity. Baghouse stack emissions are limited to 7% opacity (40 CFR Part 60, Subpart LL, ARM 17.8.308 and ARM 17.8.340).

F. Sterling shall furnish the Department the following notification(ARM 17.8.710):

1. Date adit advancement or construction is commenced postmarked no later than 30 days after such date.

2. Anticipated date of initial start up of milling operations postmarked not more than 60 days nor less than 30 days prior to such date.

3. Actual date of initial start up of milling operations postmarked within 15 days after such date (40 CFR Part 60, ARM 17.8.340).

4. Make, model, year of manufacture, and date of installation of each catalyst used to control NOx emissions on the temporary propane generator.

G. Compliance with emission and opacity standards and testing requirements shall be as specified in 40 CFR Part 60, where applicable.

H. Sterling shall operate an ambient air quality monitoring network as described in Attachment 1 of this permit. The monitoring plan will be periodically reviewed by the Department and revised if necessary (ARM 17.8.710).

I. Sterling shall maintain an adequate level of dust control from wind erosion at the tailings disposal area. The potential emissions from the proposed paste tailings management system are much less than from a conventional slurry tailings system. Adequate dust control may include but is not limited to; chemical stabilization of some areas, development of a detailed sprinkler system operating plan, and operation and upgrading of the sprinkler system. The need for any additional dust control at the site will be evaluated by the Department based on the air quality monitoring results and visual observations (ARM 17.8.710 and 17.8.715).

J. Sterling must take reasonable precautions to minimize fugitive dust with respect to all construction and operation activities related to the project. This would include watering and/or chemical stabilization of roads and work areas on an as-necessary basis and adequate control of any process or material handling operations (ARM 17.8.715 and 17.8.308).

K. Sterling shall comply with all applicable standards, limitations, and the reporting, record keeping, and notification requirements contained in 40 CFR Part 60 Subpart LL (ARM 17.8.340 and 40 CFR Part 60).

L. Sterling shall supply the Department with annual production information for all emission points required by the Department in the annual emissions inventory request. Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emissions inventory request. Information shall be in units as required by the Department (ARM 17.8.505).

In addition, Sterling shall submit the following information annually to the Department 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 the Department may request (ARM 17.8.710)

Sterling shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.705(1)(r), that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emissions unit.

The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r)(iv) (ARM 17.8.705).

Section III: General Conditions

A. Inspection - The recipient shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS,

CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the permittee of the responsibility for complying with any applicable federal, or Montana statute, rule or standard, except as specifically provided in ARM 17.8.701, *et seq*. (ARM 17.8.717).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Permit Inspection - As required by ARM 17.8.716, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked. If after 3 years Sterling desires to keep the permit active but has not commenced construction, an alteration application could be submitted. This process would essentially allow for permit renewal and would provide an updated review of Best Available Control Technologies and other applicable rules.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operating fee, as required by that Section and rules adopted thereunder by the Board.

Attachment 1

AMBIENT AIR MONITORING PLAN
STERLING MINING COMPANY
ROCK CREEK PROJECT
Permit #2414-01

1. This ambient air monitoring plan is required by air quality permit #2414-01 which applies to Sterling's silver/copper mining operation located at Rock Creek, approximately 3 miles east of Noxon, Montana. This monitoring plan may be modified by the Department. All current requirements of this plan are considered conditions of the permit.

2. Sterling shall operate and maintain three air monitoring sites in the vicinity of their silver/copper mine and facilities. The exact locations of the monitoring sites must be approved by the Department and meet all the siting requirements contained in the Montana Quality Assurance Project Plan, including revisions; the EPA Quality Assurance Manual, including revisions; and Parts 50, 53 and 58 of the Code of Federal Regulations, or any other requirements specified by the Department.

3. Sterling shall start monitoring for particulate matter less than 10 microns (PM_{10}) at the commencement of construction of the mill facilities or the tailings disposal area. Sterling shall analyze for metals as described below on the PM_{10} filters once the mill facilities and the tailings impoundment are operational. Sterling shall continue monitoring for at least 1 year after normal production is achieved. Sterling may request an annual review of the air monitoring data and, at that time, the data will be reviewed and the Department will determine the extent of monitoring which is warranted. The Department may require continued air monitoring to track long-term impacts of emissions from the facility or require additional ambient air monitoring or analyses if any changes take place in regard to quality and/or quantity of emissions or the area of impact from the emissions.

4. Sterling shall monitor the following parameters at the sites and frequencies described below:

AIRS # and Site Name	UTM Coordinates	Parameter	Frequency
30-089-XXXX "Plant Area"	UTM Zone 11 N 53XXXXX E 59XXXX Elev. 2XXX ft.	PM_{10} [1] As,Cu,Cd,Pb,Zn[2]	Every third day "
30-089-XXXX "Tailings - Upwind"	UTM Zone 11 N 53XXXXX E 59XXXX Elev. 2XXX ft.	PM_{10} As,Cu,Cd,Pb,Zn	Every third day "
30-089-XXXX "Tailings - Downwind"	UTM Zone 11 N 53XXXXX E 59XXXX Elev. 2XXX ft.	PM_{10} /PM_{10} Collocated[3] As,Cu,Cd,Pb,Zn Wind Speed and Direction, Sigma Theta[4], Temperature	Every third/sixth day " Continuous "

[1] PM_{10} = particulate matter less than 10 microns.
[2] As = Arsenic, Cu = Copper, Cd = Cadmium, Pb = Lead, Zn = Zinc.
[3] The requirement for a collocated PM_{10} sampler may be waived if the monitor operator operates a collocated PM sampler at another site.
[4] Sigma Theta = Standard Deviation of Horizontal Wind Direction.

5. Data recovery for all parameters shall be at least 80 percent computed on a quarterly and annual basis. The Department may require continued monitoring if this condition is not met.

6. Any ambient air monitoring changes proposed by Sterling must be approved in writing by the Department.

7. Sterling shall utilize air monitoring and quality assurance procedures which are equal to or exceed the requirements described in the Montana Quality Assurance Project Plan, including revisions; the EPA Quality Assurance Manual including revisions; 40 CFR Parts 50, 53 and 58 of the Code of Federal Regulations; and any other requirements specified by the Department.

8. Sterling shall submit quarterly data reports within 45 days after the end of the calendar quarter and an annual data report within 90 days after the end of the calendar year. The annual report may be substituted for the fourth quarterly report if all information in 9 below is included in the report.

9. The quarterly report shall consist of a narrative data summary and a submittal of all data points in AIRS format. This data may be submitted in ASCII files or on 3½ diskettes (IBM-compatible format). The narrative data summary shall include:

a. A topographic map of appropriate scale with UTM coordinates and a true north arrow showing the air monitoring site locations in relation to the mine and facilities, the Cabinet Mountains Wilderness Area, the town of Noxon, and the general area;

b. A hard copy of the individual data points;

c. The quarterly and monthly means for PM_{10}, each of the metals, and wind speed;

d. The first and second highest 24-hour concentrations for PM_{10} and each of the metals;

e. The quarterly and monthly wind roses;

f. A summary of the data collection efficiency;

g. A summary of the reasons for missing data;

h. A precision and accuracy (audit) summary;

i. A summary of any ambient air standard exceedances; and

j. Calibration information.

10. The annual data report shall consist of a narrative data summary containing:

a. A topographic map of appropriate scale with UTM coordinates and a true north arrow showing the air monitoring site locations in relation to the mine and facilities, the Cabinet Mountains Wilderness Area, the town of Noxon, and the general area;

b. A pollution trend analysis;

c. The annual means for PM_{10}, wind speed, and each of the metals;

d. The first and second highest 24-hour concentrations for PM_{10} and each of the metals;

e. The annual wind rose;

f. An annual summary of data collection efficiency;

g. An annual summary of precision and accuracy (audit) data;

h. An annual summary of any ambient standard exceedance; and

i. Recommendations for future monitoring.

11. The Department may audit, or may require Sterling to contract with an independent firm to audit, the air monitoring network, the laboratory performing associated analyses, and any data handling procedures at unspecified times. On the basis of the audits and subsequent reports, the Department may recommend or require changes in the air monitoring network and associated activities in order to improve precision, accuracy and data completeness.

Permit Analysis
Sterling Mining Company
Rock Creek Project
Permit #2414-01

I. Introduction

Sterling submitted the original air quality permit application (#2414-00) for the Rock Creek Project on December 15, 1987. Following the submittal of additional information that application was deemed complete on June 8, 1988. Subsequently, Sterling requested a temporary suspension of the review process. On August 22, 1995 and December 4, 1995, Sterling submitted updated modeling analyses in support of the application. The original Preliminary Determination on the application was issued March 5, 1996. Sterling submitted revisions to the application on March 28, 1997, and May 28, 1997. This revised Preliminary Determination reflects the updated proposal and the revised application was given number 2414-01 for clarification. Based on comments received from the public, the Department of Environmental Quality (Department) requested additional clarification regarding the deposition factor for NOx and the emissions from the temporary generators. The additional information was submitted by Sterling on July 24, 1998.

Sterling has proposed to construct a 10,000 ton-per-day (3.54 million tons per year) mine and mill complex to extract copper and silver ore from a mineral deposit underlying a portion of the Cabinet Mountains Wilderness, about 13 miles northeast of Noxon, in Sanders County, Montana. The project is similar in scope and operation to Sterling's inactive Troy Mine in Lincoln County, Montana. Sterling anticipates a 1 to 1.5 year period for constructing an evaluation adit, in addition to a 3-year period for mine construction and development with limited ore production. Full production would begin after that and is estimated to last for 30 years. The full production life would depend upon metal prices, engineering, and other factors that determine financial viability. Post-mining reclamation is estimated to last a few years.

Ore would be initially processed in an underground crusher. The above-ground ore-processing complex would further grind the ore, using a semi-autogenous mill (wet process) to liberate metal-bearing sulfides. Sulfides would then be removed by flotation and the concentrate transported by slurry pipeline to the Miller Gulch rail siding and ultimately shipped to an off-site smelter.

The mill complex, including surface conveyor, office building, shop, sewage treatment plant and warehouse, would be located at the confluence of the East and West Fork of Rock Creek. Tailings would be transported as a slurry to a paste plant at the tailings disposal area located about five miles away. There it would be dewatered to make a paste (20 percent by weight). Approximately 3.5 million tons per year of tailings would be deposited in a series of panels allowing for concurrent reclamation.

The proposed evaluation (exploration) adit would be driven prior to other work on the project in an attempt to better understand the configuration of the ore body. During the

mine production phase, this adit would serve as an additional ventilation (exhaust) opening and as a secondary escapeway. Conventional mining methods would be employed for the 1-year adit construction period. Two propane generators would be used for power needs. Access would be by existing roads.

Mine development would include driving two parallel adits directly northeast of the mill site. The north adit would be used as a conveyor adit and the south as a service adit for mine access. A level working area at the portal would be constructed by cutting into the hill to create a vertical face for adit construction. Adit size is dictated by ventilation requirements and dimensions of mining equipment. Each adit would be approximately 25 feet wide by 20 feet high.

Electric ventilation fans would initially use the conveyor adit for intake and the service adit for exhaust. The evaluation adit would be used for primary exhaust removal when the underground workings reach it.

The changes to the original proposal which reduce emissions and air quality impacts are summarized below.

A. Paste Technology Tailings Management - A tailings paste, with a much lower water content than a slurry, would be generated. This allows for alternative construction methods. Paste tailings would be deposited in panels with some concurrent reclamation and reduced exposed tailings area reducing the potential for wind erosion.

B. Electric Underground Mining Equipment - Most underground mobile equipment would be electric powered. The diesel fueled equipment which would be used are classified as clean burning. Air pollutant reductions of about 60 percent are estimated from these changes.

C. Propane Generators - Cleaner burning propane generators would be used during the evaluation adit development phase of the operation.

D. Concentrate Slurry - Processed concentrate would be transported from the plant site to the Miller Gulch rail siding by slurry pipeline rather than by haul trucks, eliminating the emissions associated with hauling.

E. Semi-Autogenous Grinding (SAG) Mill - The surface dry milling operation (secondary crushing) would be replaced by a fully wet milling operation (SAG mill), reducing particulate emissions.

II. Applicable Rules and Regulations

The following are partial quotations of some applicable rules and regulations which apply to the operation. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available upon request from the Department. Upon request, the

Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

   Sterling shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring;
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide;
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide;
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide;
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone;

6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide;
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter;
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility;
9. ARM 17.8.222 Ambient Air Quality Standard for Lead;
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}; and
11. ARM 17.8.230 Fluoride in Forage.

Sterling must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into an outdoor atmosphere from any source installed after November 23, 1968, that exhibits an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate.

   (2) Under this rule, Sterling shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.

6. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This section incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   Subpart LL - Metallic Mineral Processing Plants – Requires opacity limitations of 10% on process fugitives emissions and 7% on baghouse stack emissions and a stack particulate limitation of 0.05 grams per dry standards cubic meter.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This section requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. The original application on this project was submitted prior to implementation of this rule. The rule would apply to future permitting actions.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including but not limited to:

1. ARM 17.8.701 Definitions. This rule is a list of applicable definitions used in this subchapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.704 General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use of the permitted equipment.

3. ARM 17.8.705 When Permit Required--Exclusions. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter, or use any air contaminant sources which have the potential to emit more than 25 tons per year of any pollutant.

4. ARM 17.8.706 New or Altered Sources and Stacks--Permit Application Requirements. This rule requires that a permit application be submitted prior to installation, alteration or use of a source. Sterling has submitted the required permit application.

5. ARM 17.8.707 Waivers. ARM 17.8.706 requires that a permit application be submitted 180 days before construction begins. This rule allows the Department to waive this time limit. The Department hereby waives this time limit.

6. ARM 17.8.710 Condition of Issuance of Permit. This rule requires that Sterling demonstrate compliance with applicable rules and standards before a permit can be issued. Also, a permit may be issued with such conditions as are necessary to assure compliance with all applicable rules and standards. Sterling has demonstrated compliance with all applicable rules and standards as required for permit issuance.

7. ARM 17.8.715 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability which is technically practicable and economically feasible, except that best available control technology (BACT) shall be utilized. The required BACT analysis is included in Section III of the permit analysis.

8. ARM 17.8.716 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.717 Compliance with Other Statutes and Rules. This rule states that nothing in the subchapter shall be construed as relieving Sterling of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.101, *et seq.*

10. ARM 17.8.720 Public Review of Permit Applications. This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. The public notice for the original application was published in the Sanders County Ledger.

11. ARM 17.8.731 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.733 Modification of Permit. An air quality permit may be modified for changes in any applicable rules and standards adopted by the Board or changed conditions of operation at a source or stack which do not result in an increase in emissions because of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.

13. ARM 17.8.734 Transfer of Permit. This section states an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

   This facility is not a PSD source since this facility is not a listed source and the site's potential to emit is below 250 tons per year of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. Potential to Emit (PTE) > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule,

   b. PTE > 100 tons/year of any pollutant, or

   c. Sources with the PTE > 70 tons/year of PM-10 in a serious PM-1 nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #2414-01 for Sterling, the following conclusions were made:

   a. The facility's PTE is less than 100 tons/year for any pollutant.

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year of all HAPs.

   c. This source is not located in a serious PM-10 nonattainment area.

   d. This facility is not subject to any current NSPS.

e. This facility is not subject to any current NESHAP standards.

f. This source is not a Title IV affected source nor a solid waste combustion unit.

g. This source is not an EPA designated Title V source.

Based on these facts, the Department has determined that Sterling will be a minor source of emissions as defined under Title V.

III. Existing Air Quality

Sterling performed baseline air quality monitoring in the area during 1985 and parts of 1986. Given the lack of new air pollutant sources in the area, the monitored levels are assumed to still be representative of current conditions. Current air pollutant sources include logging activities, vehicle traffic, and home heating/wood burning. The following table summarizes the baseline monitoring results.

Baseline Air Monitoring Summary

Pollutant	Site	Time Interval	Concentration ($\mu g/m^3$)[1]	Ambient Standard
TSP[2]	Highway 200[3]	Annual Average	16.5	NA
		Annual Average	11.5	NA
		24-Hour Maximum	56.9	NA
TSP	Mill[4]	Annual Average[5]	23.2	NA
		Annual Average[5]	19.0	NA
		24-Hour Maximum	69.9	NA
PM10[6]	Highway 200	Annual Average	10.4	50
		Annual Average	6.6	50
		24-Hour Maximum	41.2	150
Lead	Mill	90-Day Average	0.08	1.5
Lead	Highway 200	90-Day Average	0.13	1.5

[1] $\mu g/m^3$ - micrograms per cubic meter of air samples.
[2] TSP - total suspended particulate - measured with high volume sampler.
[3] proposed tailings impoundment.
[4] proposed mill site.
[5] annual averages for the mill site are based on partial year data.
[6] PM10 - Particulate matter with a diameter of 10 microns or less.

IV. Emission Inventory and Control Technology Review

The following table lists the primary emission sources for the project, along with the emission control equipment and practices to be used. These emission control practices

have been determined to represent BACT for this project and are consistent with practices on similar operations.

Estimated Pollutant Emission Inventory and Emission Controls

Source/Activity	Pollutant	Uncontrolled Emissions (tons/year)	Type of Control Equipment/Practice	Estimated Control Efficiency (percent)	Controlled Emission (tons/year)
Blasting	PM10 NOx SO_2 CO	0.3 19.4 1.5 92.5	Stemming, Drill Hole Size Optimization, Rubble Watering Control Overshooting Control Overshooting, Low Sulfur Fuel Oil Control Overshooting	--- --- --- ---	0.3 19.4 1.5 92.5
Diesel Equipment	PM10 NOx SO_2 CO HC	-- -- -- -- --	Particulate Matter Trap Renewal: Low Ash Fuel DITA Engines[1] Low Sulfur Diesel Oil Frequent Tune-ups to Manufacturer's Specs Frequent Tune-ups to Manufacturer's Specs Evap. Control System Maintenance	--- -- --- --- --- ---	0.1 7.0 0.3 4.8 3.2
Space Heating Propane Comb.	PM10 NOx CO HC	0.1 3.5 0.8 0.2	Use Propane, Routine Maintenance Schedule Maintain Near-Stoichiometric Atmosphere Maintain Near-Stoichiometric Atmosphere Routine Fuel Delivery and Burner System Inspection/Renewal	--- --- --- ---	0.1 3.5 0.8 0.2
Primary Crushing	PM10	15.0	High Efficiency Wet Scrubber	98	0.3
Surface Milling	PM10	--	Wet Process	--	Neg.
Ore transfer	PM10	106.2	Baghouse	99	1.1
Road Dust	PM10	---	Paving	---	Neg.
Tailing Impoundment	PM10	--	Paste Tailings, Concurrent Reclamation	--	3.7

Note: The service adit and later the exploration adit are the emission points for blasting, diesel equipment, space heating, and primary crushing. [1]DITA - Direct Injection Turbo-Charged Aftercooling

The total estimated emissions, by pollutant, are as follows:

Pollutant	Tons/Year
Particulate Matter less than 10 microns (PM-10)	5.6
Nitrogen Oxides (NOx)	29.9
Sulfur Dioxide (SO_2)	1.8
Carbon Monoxide (CO)	98.1
Hydrocarbons (HC)	3.4

There would also be short-term emissions associated with the development of the evaluation adit (approximately 1 year). These would occur prior to the operational phase emissions listed above. The pollutant of most concern would be NOx from two propane

generators used to supply power at the site located approximately 2 kilometers northeast of the proposed plant site. Total NOx emissions from these generators are estimated at 8.06 tons per year. These emissions will be controlled with add-on NOx controls. The add-on control includes a stack height on each generator of 5 meters. CO and HC emissions are estimated at 83.4 and 4.5 tons per year, respectively. Particulate emissions from the adit development operations and material handling should be negligible. BACT for these generators has been determined to be proper operation according to manufacturer specifications and continuous use of the added stack height of 5 meters above ground level.

A specific air quality concern is the potential for wind erosion from the tailings disposal area. When tailings surfaces are allowed to dry, there is significant potential for wind erosion to occur, given the fine texture of tailings material. Under the proposed paste tailings system, the exposed tailings surface is drastically reduced, given concurrent reclamation. There would also be a lack of the open, flat tailings surfaces typical of conventional tailings impoundments, which are more conducive to wind erosion. The need for supplemental dust control, such as watering, would be evaluated by the Department through ongoing air quality monitoring and visual observation.

Another specific concern is the potential air quality impact to the Cabinet Mountains Wilderness. This area is designated as Class I under the Prevention of Significant Deterioration (PSD) regulations. The review of PSD requirements is carried out primarily through the analysis of permit applications for "major stationary sources." The Rock Creek Project is not classified as a major stationary source because estimated emissions by individual pollutant type are less than 250 tons per year. Although the PSD regulations do not apply directly to the proposed project, many of the specific PSD requirements have been applied. These include:

1) preconstruction and post-construction ambient air monitoring,
2) computer simulation modeling of emission impacts, and
3) an analysis of visibility impacts.

The impact analyses in Section V summarize the predicted air quality impact at the wilderness boundary. Compliance with the Class I and II increments has been demonstrated. (Note: The state's position is that increment consumption is not applicable to this project because it is a minor source in an area where the baseline has not been triggered. The Environmental Protection Agency's position is that the baseline is triggered for the entire state and all sources consume increment).

Section II.D of the permit requires emissions testing of the evaluation adit for NOx and particulate. The purpose of this testing is to evaluate and verify the emission estimates used in the application. Of special concern are the estimates of deposition rates in the adit prior to release to the atmosphere. By measuring the concentrations just downstream of the generation point and at the outlet, deposition and/or absorption rates as well as actual emissions can be determined. It is assumed portable ambient monitors would be used; however, the final methodology will be developed at that time.

Concentrations of potentially toxic trace metals in the particulate emissions were also analyzed in the original application. Specific metals included were lead, arsenic, cadmium, antimony, chromium, zinc, copper, and iron. This type of analysis is required for most large mining operations to identify whether any of these metals are present in sufficient quantities in the ore and/or tailings to create a hazardous condition from airborne particulate levels. The modeled TSP concentrations were multiplied by the mass fraction (percentage) of each metal in the ore and tailings. (Metals contents were based on data from the Troy Project.) The resulting metals concentrations were then added to the measured background levels in the area. Predicted concentrations of lead are well below state and federal ambient air quality standards. There are no standards for the other metals. Concentrations for those metals are, therefore, compared against guideline values used by the Department. All concentrations were predicted to be below the guideline values.

V. Impact Analyses

Computer dispersion modeling was used to predict PM-10, NOx, and SO_2 concentrations resulting from this operating scenario. The results are included in Table V-1 and indicate compliance with state and federal ambient air quality standards. Table V-2 compares the modeling results to PSD increments. The modeling details, as well as the analysis of the short-term impacts related to the evaluation adit development, are included in the application.

TABLE V-1
COMPARISON OF MAXIMUM PREDICTED CONCENTRATIONS
WITH NATIONAL AND MONTANA AMBIENT AIR
(Production Scenario)

Time Interval	**Maximum Contribution ug/m^3**	**Background Concentration ug/m^3**	**Contribution Plus Background ug/m^3**	**MAAQS/NAAQS**
PM_{10} 24-hour[(a)]	5.16	41.20	46.4	150
PM_{10} Annual [(b)]	2.00	10.54	12.54	50
SO_2 1-hour	257.1	35.0	292.1	1,316
SO_2 3-hour	67.09	26.0	93.1	1,300
SO_2 24-hour	12.16	11	23.2	263
SO_2 Annual [(b)]	0.52	3	3.52	53
NO_2 1-hour	-	-	0.159 ppm	0.30 ppm
NO_2 Annual [(b)]	-	-	7.17	100

(a) 24-hour concentration expressed as high, second-high values.
(b) Annual modeled contributions expressed as arithmetic mean.

TABLE V-2
COMPARISON OF MAXIMUM MODELED CONCENTRATIONS
WITH APPLICABLE PSD INCREMENTS

Pollutant	**Time Interval**	**Class I Predicted Concentration ug/m^3**	**Class II Predicted Concentration ug/m^3**	**Class I Increment ug/m^3**	**Class II Increment ug/m^3**
PM_{10}	24-hour	1.3	5.16	8	30
PM_{10}	annual	0.075	2.00	4	17
SO_2	3-hour	16.5	67.09	25	512
SO_2	24-hour	3.36	12.16	5	91
SO_2	annual	0.19	0.52	2	20
NO_2	annual	2.41	4.74	2.5	25

Computer dispersion modeling was used to predict NOx concentrations resulting from the temporary propane-fired electrical generators. The results are included in Table V-3 and indicate compliance with state and federal ambient air quality standards. Table V-4 compares the modeling results to PSD increments. The modeling details, as well as the analysis of the short-term impacts related to the evaluation adit development, are included in the application.

TABLE V-3
COMPARISON OF MAXIMUM PREDICTED CONCENTRATIONS
WITH NATIONAL AND MONTANA AMBIENT AIR
(Development Scenario)

Time Interval	**Contribution Plus Background ug/m^3**	**MAAQS/NAAQS**
NO_2 1-hour	0.222 ppm	0.30 ppm
NO_2 Annual [(b)]	17.3	100

(b) Annual modeled contributions expressed as arithmetic mean.

TABLE V-4
COMPARISON OF MAXIMUM MODELED CONCENTRATIONS
WITH APPLICABLE PSD INCREMENTS

Pollutant	**Time Interval**	**Class I Predicted Concentration ug/m^3**	**Class I Increment ug/m^3**
NO_2	annual	1.62	2.5

An updated visibility analysis was also done using the VISCREEN MODEL. The estimated reduction in visual range caused by plumes was well below the perceptible

level. The screening criteria for visibility impairment related to contrast was also not exceeded.

A concern for acid deposition impacts to some wilderness lakes had been raised due to their low neutralizing capacity. The proposed project site facilities are located about 2.7 to 4.5 miles from upper and lower Libby lakes. The Libby lakes meet the criteria for key Air Quality Related Values (AQRV) in the Class I wilderness area. Both lakes are positioned on the crest of the Cabinet Mountains in small Revett Quartzite watersheds. The lake watersheds have very limited mineral weathering, poorly developed soils, and sparse vegetation. The low amount of alkalinity (which neutralizes acid deposition from rain, snow, and dry deposition) results in the high sensitivity of the Libby lakes to acid deposition induced chemical change.

Potential acid deposition effects on upper and lower Libby Lakes from the Sterling Rock Creek Project and cumulative effects for the Noranda Montanore project were evaluated using the Model of Acidification of Groundwater in Catchments/With Aggregated Nitrogen Dynamics (MAGIC/WAND). The estimated changes in acid anions and base cations are not sufficient for the MAGIC/WAND model to project any changes in pH or alkalinity in upper and lower Libby lakes for either the Sterling emissions only or Sterling and Montanore cumulative emissions. The modeling results are due to the relatively low levels of project mine emissions and associated low dispersion model projections of percent increases in nitrogen and sulfur deposition to the Libby lakes. The full report from the U. S. Forest Service is on file with the Department.

VI. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VII. Montana Environmental Policy Act (MEPA) Compliance

A Draft, Supplemental Draft, and Final Environmental Impact Statement on this project have been prepared by the Department and the U. S. Forest Service.

Permit Analysis prepared by: Pat Driscoll
Date: August 1, 1997
Updated by: Vickie Walsh
Date: February 26, 2001

ATTACHMENT 6

SECTION 401 CERTIFICATION WAIVER

Montana Department of
ENVIRONMENTAL QUALITY
Judy Martz, Governor
P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.state.mt.us

December 26, 2001

Rodney Schwartz
U.S. Army Corps of Engineers
Attn. CENWO-OD-R
106 S. 15th St.
Omaha, NE 68102

Subject: 199370003 Rock Creek Project—Sterling

Dear Mr. Schwartz:

The Montana Department of Environmental Quality (DEQ) waives 401 Water Quality Certification for the subject project. This decision is based on analysis contained in the Wetlands and Non-wetland Waters of the U.S. and Hydrology sections in Chapter 4 and the 404(b)(1) Showing in Appendix F of the final EIS that indicate minimal impacts to the quality of state waters. The results of the analysis is consistent with administrative rule 17.30.105(2)(a).

Do not hesitate to contact me if you have any questions at (406)444-4626 or jeryan@state.mt.us.

Sincerely,

/S/

Jeff Ryan
Water Quality Wetland Specialist

cc: Allan Steinle, COE

ATTACHMENT 7

RECLAMATION BONDING CALCULATION FORMS

Evaluation Adit Construction and Reclamation
Mine Construction, Operation, and Reclamation

STERLING MINING COMPANY
ROCK CREEK PROJECT
EVALUATION ADIT RECLAMATION BOND COST ESTIMATE

Date: 12/04/2001
Status: Draft

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 facilites	$51,237				
Water Line Removal ($) =	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

			Reference/Notes
1) PORTAL CLOSURE			
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 =		$24,224	(DOZSIM, 2000)
Dump Top Ripping			
Assume dump top dimensions = 500' x 150'			
Ripping depth (ft) =	2		
Estimated volume to be ripped (cy) =	5,555		
Estimated D8 ripping production @ 75% efficiency (cy) =	225		
Estimated ripping cost ($) =		$3,350	
Topsoil & Revegetation			
Use CAT 966 loader or equivalent to transport topsoil			
Use D8 dozer to spread topsoil			
Assume lime addition for dump top @ 30TCaCO3/1000T rock			(MDEQ, 2001)
Total lime addtion needed (T) =	540		
Cost of lime delivered ($/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	(Zort.-Land. 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' lenghts; 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 dispsosal (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)
	Estimted 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 recirculation 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 comploinace tracking, site security, miscellaneous fiscal responsibilities
4) Direct cost expenses to include bur are not limited to: insurance, lease requiremnts, 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 opversight
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. mg.r @ $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

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